SigOFIT Optical-fiber Isolated Probe

User Manual

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Warranty

Micsig warrants that this product will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If any such product proves defective in materials or workmanship during this warranty period, Micsig, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Parts, modules and replacement products used by Micsig for warranty work may be new or reconditioned to like new performance. All replaced parts, modules and products become the property of Micsig.

Standard accessories are NOT covered in main body warranty.

The bending radius of the optical isolation probe must not be less than 8cm, otherwise it will lead to fiber breakage. **Damage to the fiber cable is NOT covered by the warranty**.

The warranty will be void in the following cases, but repair services are provided free of labor charges and only parts are charged:

a. Damage to any accessory caused by improper use, maintenance, or storage by the consumer.

b. Damage caused by force majeure factors, such as natural disasters, etc.

Micsig will refuse to provide repair service or provide repair service for a fee in the following cases:

a. Unable to provide product packaging or anti-counterfeit labels on product packaging.

b. The content of the security label is altered, or blurred and unrecognizable.

c. Disassembled by any person not authorized by Micsig. (e.g., changing wires, disassembling internal components, etc.)

d. No sales voucher or sales voucher content does not match the product.

Contents

General Safety Summary

Please read the following safety precautions carefully to avoid personal injury and to prevent damage to this product or any equipment connected to this product.

To avoid possible hazards, be sure to use this product in accordance with the regulations.

Products are only available to personnel with relevant technical training.

To avoid fire or personal injury

Connect and disconnect the equipment properly.

- Only use the testing wires and accessories that are provided with the product or specified by Micsig.
- Before connecting the probe to the circuit under test, connect the probe output terminal to the oscilloscope.
- When connecting to the powered circuits recommended in this manual, maintain a safe distance from the power-optical converter and attenuator.
- Disconnect the power to the circuit under test before connecting or disconnecting the probe.
- Before disconnecting the probe from the oscilloscope, first disconnect the probe input terminal from the circuit under test.

Observe all terminal ratings.

To avoid fire or shock hazard, observe all rating and markings on the product. Consult the product manual for further ratings information before making connections to the product. Do not apply a potential lowest that exceeds the maximum rating.

Do not operate without covers.

Do not operate this product with covers or panels removed. Hazardous voltage exposure is possible.

Do not operate with suspected failures.

If you suspect that there is damage to this product, have it inspected by qualified service personnel.

Disable the product if it is damaged. Contact Micsig's designated service personnel to conduct the inspection.

Avoid exposed circuitry. Do not touch exposed connections and components when power is present.

Do not operate in an explosive atmosphere.

Keep product surfaces clean and dry.

Clean with a dry cloth only.

Terms in this manual.

The following terms may appear in this manual:

Warning: Indicating conditions or practices that could result in injury or loss of life.

CAUTION: Indicating conditions or practices that could result in damage to this product or other property.

Maintenance Safety Summary

Only qualified maintenance personnel with the relevant qualifications may perform maintenance operations. Please read the "Maintenance Safety Summary" and "General Safety Summary" before performing any maintenance operations.

Do not make repairs alone: Do not make internal repairs or adjustments to this product unless there is someone on site who can provide first aid and resuscitation measures.

Disconnect the power supply: To avoid electric shock, disconnect the power supply of the equipment first, and then disconnect the power cord from the main power supply.

Caution when servicing with electricity: Dangerous voltages or currents may be present in this product. Disconnect the power and test leads before removing the protective panel and performing soldering or component replacement.

To avoid electric shock, do not touch the exposed connectors.

Compliance Information

This section lists the Safety and Environmental standards with which the instrument complies.

Safety compliance

Equipment type

Test and measuring equipment.

Pollution level description

A measure of the contaminants that could occur in the environment around and within a product. Typically, the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.

- Pollution Degree 1. No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.
- Pollution Degree 2. Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.
- Pollution Degree 3. Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.
- Pollution Degree 4. Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.

Pollution degree rating

Pollution degree 2.

Overvoltage category descriptions

The overvoltage category is classified according to IEC60664 standard and is divided into four classes CAT I, CAT II, CAT III and CAT IV.

- Category I. Circuits not directly connected to a mains supply.
- Category II. Circuits directly connected to the building wiring at utilization points (socket outlets and similar points).
- Category III. In the building wiring and distribution system.
- Category IV. At the source of the electrical supply to the building.

Overvoltage category

Overvoltage category II

Environmental Notes

This section provides information about the environmental impact of the product.

Product end-of-life handling

When recycling instruments or components, observe the following guidelines:

Equipment Recycling: Production of this equipment required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. To avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.

This symbol indicates that the product complies with the relevant requirements of the EU Directives 2012/96/EC and 2006/66/EC on Waste Electrical and Electronic Equipment (WEEE) and Batteries.

Introduction

The Micsig SigOFIT™ optical-fiber isolated probe offers a galvanically isolated measurement solution for accurately resolving high bandwidth, high voltage differential signals in the presence of large common mode voltages with the excellent common mode rejection capability within its bandwidth range.

Key Features:

- Exclusive SigOFIT™ optical isolation technology, common mode voltage up to 85kVpk.
- Differential voltages range ±6250Vpk (attenuator dependent).
- CMRR up to 122dB at 200MHz and up to 108dB at 1GHz.
- Fast response, calibration in 1 second, delivers accurate signal output in real time, the DC gain accuracy is better than 1%.
- It can switch between 0 dB and 20 dB, enabling a single attenuator to have two measurement ranges to improve the signal-to-noise ratio.
- BNC interface, suitable for all brands of oscilloscopes.

Applications:

Power device evaluation, current parallel measurement, EMI and ESD troubleshooting;

Motor drive design, power converter design, electronic ballast design;

Design and analysis of GaN, SiC, IGBT half/full bridge devices;

Tests of inverters, UPS and switching power supplies;

Safety isolation test for high voltage, high bandwidth applications;

Wide voltage, wide band test applications; Floating measurements

Probe description

Optical-Electrical Converter

The Optical-Electrical Converter (O-E Converter herein after) can restore the optical signal transmitted by the Electrical-Optical converter (E-O Converter herein after) to an electrical signal and input to the oscilloscope. The buttons on the O-E converter are to control the probe and the LEDs indicate the operating status of the probe.

Button Description:

Button Description:

Optical-Electrical Converter (O-E Converter)

Button: Cali.

Short press to start Auto calibration, calibration time is usually less than 1 second, no need to wait. During calibration, no need to disconnect the test connection. LED will flash during calibration, the buzzer sounds one time indicates a successful calibration, three times indicates a failed calibration, press Cali. button again if failed.

Button: Gain

Press to switch between 0dB(1X) and 20dB(100mX). Select the appropriate gear according to the test range, which can effectively improve the signal-to-noise ratio.

Over-voltage Alert

When Gain (Power) button flashes rapidly and hearing a rapid "DiDiDiDi..." buzzer sound, it means the input voltage is out of range, please select a suitable attenuator.

Over-heating Warning:

When hearing a “DiDi" sound every 2 seconds, it means the temperature of the Optical-Electrical (O-E) converter is overheated, please check whether the dissipation port is blocked.

Communication Status Alert

When an internal communication error is detected in the probe, the Gain and Cail indicators will flash simultaneously, accompanied by a short beeping sound from the buzzer.

Electrical-Optical Converter

The Electrical-Optical (E-O) converter converts the electrical signal from device under test into an optical signal and transmits it via optic fiber to the Optical-Electrical (O-E) converter.

The E-O converter of SigOFIT probe is powered over fiber, no additional power supply required.

Electrical-Optical Converter

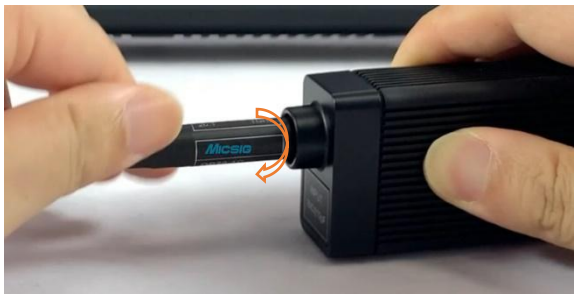
E-O converter attenuators

The Attenuator is used to connect the electro-optical converter to the device under test. Please refer to the Technical Specifications for the selectable models of the Attenuator.

Attenuating tip

Install the attenuator

As shown in the figure below, screw the attenuator into the E-O converter end till firmly tightened.



How to choose an attenuator:

⚠ Caution: Please select proper attenuator for the measurement to avoid damage to the Electrical-Optical converter or degradation of performance due to over-voltage.

Please select the attenuator with the lowest attenuation ratio allowed by the tested signal range.

The attenuator should be selected based on the peak voltage (or rms voltage) of the signal under test. Please refer to the technical specifications to select the appropriate attenuator.

Precaution requirements

Measurement System Precautions

SigOFIT probe contains high quality components and should be handled with care to avoid damage or degradation of performance due to improper handling. Please consider the following precautions when handling fiber optic cable and electrical-to-optical converter end connections:

- **DO NOT excessively bend fiber-optic cable. Avoid tight radius (< 8cm) bends, crushing, crimping, twisting, pulling or otherwise stressing cables.**
- **DO NOT block the heat dissipation port on the Optical-Electrical converter (or O-E Converter), otherwise the probe may be overheated and damaged.**
- Do not put heavy objects on the fiber cable, such as running over with a chair.
- When disassembling and moving the probe, please hold the converter body by hand, do not lift or drag the cable.
- Accidental drop of the E-O or the O-E converter may result in damage to internal optical components.
- Please check damage to the fiber cable, (as shown below) please stop use when there is damage to the flexible braided cable or the soft rubber sheath.
- When not in use, store the SigOFIT probe in its factory fitted carrying case.

Environmental requirements

The maximum operating environmental ratings after the measurement system is correctly connected.

Features	Status	Environmental requirements
Temperature	Working	Optical-Electrical converter: 0° C ~ +40° C
		Electrical-Optical converter: 0° C ~ +40° C
	Non-working	Optical-Electrical converter: -20° C ~ +70° C
		Electrical-Optical converter: -20° C ~ +70° C
Humidity	Working	Optical-Electrical converter: 5% to 85% RH (relative humidity) below +40° C; 5% to 45% RH at +40° C ~ +50° C, non-condensing
		Electrical-Optical converter: 5% to 85% RH (relative humidity) below +40° C; 5% to 45% RH at +40° C ~ +50° C, non-condensing
	Non-working	Optical-Electrical converter: 5% to 85% RH below +40° C; 5% to 45% RH at +40° C ~ +85° C, non-condensing
		Electrical-Optical converter: 5% to 85% RH below +40° C; 5% to 45% RH at +40° C ~ +85° C, non-condensing
Altitude	Working	3000 meters
	Non-working	12,000 meters

Safety requirements

The high common-mode voltage range of SigOFIT optically isolated probe can be applied to measurements where high-frequency and high-voltage common-mode signals are present. Please read and understand all precautions when measuring with this product.

Warning: Electric shocks may occur when using this measurement system. The system is used to isolate the personnel from dangerous input voltages (common voltage); the plastic housing of the Electrical-Optical converter and the shielding of the attenuator do not provide safe isolation.

Keep a safe distance from the Electrical-Optical converter and the attenuator when the measurement system is connected to an energized circuit as recommended in this manual. When making measurements on energized circuits, do not touch radio frequency burn hazard area.

Safe distance from electro-optical converters and attenuators when measuring high-voltage common-mode signals:

Common model voltage (AC)	10kV or below	10 kV ~ 35 kV	> 35 kV
Safe distance	>0.7m	>1m	>1.5m

Warning: Do not disassemble the electrical-optical converter or the optical-electrical converter. They contain a laser source which may result in laser exposure.

Warning: To avoid the risk of electric shock, do not connect the measurement system directly to an energized circuit. Always disconnect the test circuit before installing or removing the attenuating tip from the test circuit. The plastic housing the converter and the shielded end of the attenuator do not provide isolation.

Warning: To avoid the risk of electric shock or RF burn when the circuit under test is energized, do not touch the electrical-optical converter and its attenuator while testing. Always maintain a distance of 1 meter or more from the electrical-optical converter during the test. Be sure to review the instrument's maximum ratings and derating curves for more information on RF burn areas.

Warning: To avoid possible damage to the device, do not connect the probe of the electrical-optical converter connection to a high impedance part of the circuit. Additional capacitance may cause damage to the circuit. Please connect the probe connected to the electrical-optical converter to the low impedance part of the circuit. Note: Touching the electrical-optical converter or attenuator while measuring high frequency common mode signals will increase capacitive coupling and may reduce the common mode loading of the test circuit.

Warning: To prevent arc flash caused by different potentials, do not place the electrical-optical converter end attenuator in a circuit with different voltages

Connection

Operation Steps

1、Solder the MMCX/MCX jack or coaxial lead to the test board

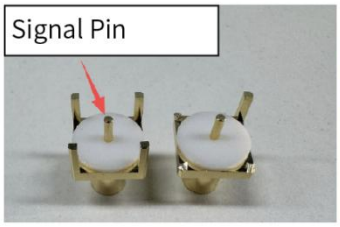
Notice:

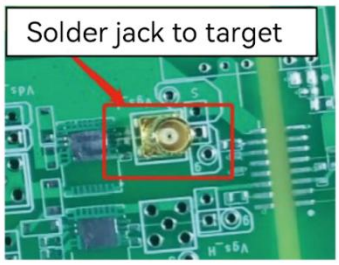
1) When testing Vgs signal, the signal pin (in the middle) of the MMCX/MCX jack must be connected to the G-end of the MOSFET.

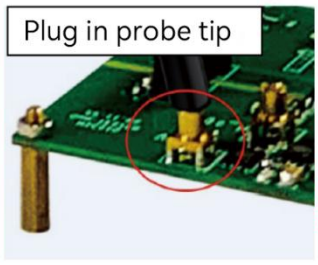
2) Solder the MMCX/MCX jack directly to the test point, try NOT to use extension lead, it may bring unsatisfactory test results.

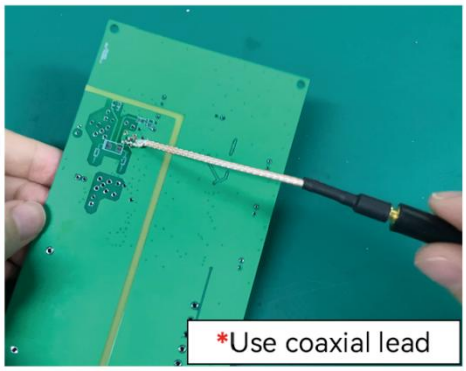
3) For easy soldering, suggest to cut three of the four ground pins around the base, just keep one.

4) Under the condition permitting, try to use the MMCX/MCX jack as much as possible. The coaxial cable may affect the test result.







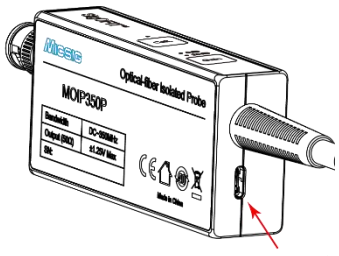


*Attention:
Use the MMCX/MCX jack for connection to the fullest extent possible. The coaxial cable may affect the test result.

2、Connect the Optical-fiber Isolated Probe to oscilloscope.

3、Set the oscilloscope input impedance to 50Ω, set corresponding attenuation ratio and delay time on the oscilloscope.

4、Connect attenuating tip to the Electrical–Optical (E-O) converter.



Power probe with standard Type-C charger

5、Power the SigOFIT probe by connecting USB-C cable to O-E Converter using standard charger.

6、Plug in the attenuating tip to MMCX/MCX jack, when hearing a "click", it means that the connection is successful.

7、Power ON the test board.

8、Adjust the oscilloscope settings and proceed normal test.

*In addition to the above instructions, Micsig also provides a rich variety of attenuator connection interfaces with the object under test, offering you multiple convenient and efficient measurement methods. Welcome to contact our sales or agents for consultation.

Auto calibration and manual Zero

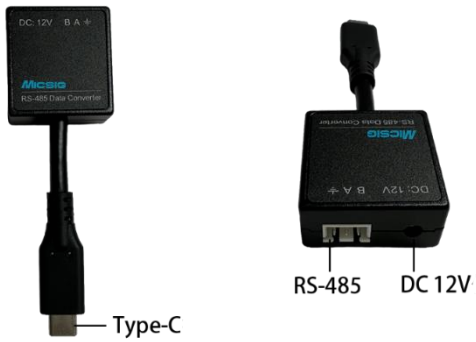
The SigOFIT probe has auto-calibration function that automatically corrects the gain accuracy. Always press Cali. button to get better results before get final test readings. No need to disconnect the test during calibration. Auto calibration can be completed in 1 second.

Remote control

Micsig SigOFIT Optical-fiber Isolated Probe MOIP Series supports remotely sending serial port commands to achieve self-calibration and 0dB/20dB gear switching functions.

Operation steps

1. Connect to the optical isolation probe: Insert the type-C interface of the RS-485 data converter into the photoelectric reducer connected to the optical isolation probe;
2. Power supply: Use the standard adapter to insert into the DC 12V interface of the RS-485 data converter for power supply;
3. Connect to the computer: Connect the RS-485 interface of the RS-485 data converter to the computer.
4. Send commands on the computer side



RS-485 data converter (optional)

Serial port command list:

Serial port command	Execute command
AA 09 02 55 A8 F8	0dB/20dB gear switching
AA 09 00 F7	Self-calibration

Technical Specifications

All technical specifications are typical values unless otherwise indicated.

Technical specifications are valid when:

- Probe is calibrated at 23°C ±5°C ambient temperature
- Probe is powered by normal power supply
- The temperature, altitude, and humidity of the environment in which the probe is located cannot exceed the limits of the stated environmental requirements.

Electrical Characteristics

Model	MOIP200P	MOIP350P	MOIP500P	MOIP1000P
Bandwidth	200MHz	350MHz	500MHz	1GHz
Rise time	≤1.75ns	≤1ns	≤700ps	≤450ps
Output Voltage Range	±1.25V	±1.25V	±500mV	±500mV
Noise	<450μVrms		<450μVrms	
Propagation delay	15.42ns（2m fiber length）		16ns（2m fiber length）	
Power supply	DC 12V			
DC Gain accuracy	1%			
Common mode voltage range	85kVpk			
Fiber cable length	2m (Customizable)			
Interface	Universal BNC			

Attenuating tips

SigOFIT Model	Attenuator Model	Jack type	Attenuation ratio	Voltage range	Non-destructive voltage (Max.)	Input impedance
MOIP200P	OP20-3 **(Standard)**	MMCX	20:1 @0dB	±25V	1000Vpk	4.47MΩ ‖ 4pF
			2:1 @20dB	±2.5V		
	OP50-3	MMCX	50:1 @0dB	±62.5V	1000Vpk	4.19MΩ ‖ 2pF
			5:1 @20dB	±6.25V		
	OP200-3	MCX	200:1 @0dB	±250V	1000Vpk	9.03MΩ ‖ 2pF
			20:1 @20dB	±25V		
	OP1000-3	MCX	1000:1 @0dB	±1250V	2500Vpk	20.94MΩ ‖ 1pF
			100:1 @20dB	±125V		
	OP2000-3	MCX	2000:1 @0dB	±2500V	2500Vpk	20.52MΩ ‖ 1pF
			200:1 @20dB	±250V		
	OP5000-3	LCX	5000:1 @0dB	±6250V	8000Vpk	40.82MΩ‖ 2.4pF
			500:1 @20dB	±625V		
MOIP350P	OP20-3 **(Standard)**	MMCX	20:1 @0dB	±25V	1000Vpk	4.47MΩ ‖ 4pF
			2:1 @20dB	±2.5V		
	OP50-3	MMCX	50:1 @0dB	±62.5V	1000Vpk	4.19MΩ ‖ 2pF
			5:1 @20dB	±6.25V		
	OP200-3	MCX	200:1 @0dB	±250V	1000Vpk	9.03MΩ ‖ 2pF
			20:1 @20dB	±25V		
	OP1000-3 **(Standard)**	MCX	1000:1 @0dB	±1250V	2500Vpk	20.94MΩ ‖ 1pF
			100:1 @20dB	±125V		
	OP2000-3	MCX	2000:1 @0dB	±2500V	2500Vpk	20.52MΩ ‖ 1pF
			200:1 @20dB	±250V		
	OP5000-3	LCX	5000:1 @0dB	±6250V	8000Vpk	40.82MΩ‖ 2.4pF
			500:1 @20dB	±625V		
			1000:1 @20dB	±500V		

SigOFIT Model	Attenuator Model	Jack type	Attenuation ratio	Voltage range	Non-destructive voltage (Max.)	Input impedance
MOIP500P	OP20-5	MMCX	20:1 @0dB	±10V	1000Vpk	4.47MΩ ‖ 4pF
			2:1 @20dB	±1V		
	OP50-5 **(Standard)**	MMCX	50:1 @0dB	±25V	1000Vpk	4.19MΩ ‖ 2pF
			5:1 @20dB	±2.5V		
	OP100-5	MMCX	100:1 @0dB	±50V	1000Vpk	4.10MΩ ‖ 2pF
			10:1 @20dB	±5V		
	OP2000-5	MCX	2000:1 @0dB	±1000V	2500Vpk	20.52MΩ ‖ 1pF
			200:1 @20dB	±100V		
	OP5000-5 **(Standard)**	MCX	5000:1 @0dB	±2500V	2500Vpk	40.92MΩ ‖ 1pF
			500:1 @20dB	±250V		
	OP10000-5	LCX	10000:1 @0dB	±5000V	8000Vpk	40.82MΩ‖ 2.4pF
			1000:1 @20dB	±500V		
MOIP1000P	OP20-1G	MMCX	20:1 @0dB	±10V	1000Vpk	4.47MΩ ‖ 4pF
			2:1 @20dB	±1V		
	OP50-1G **(Standard)**	MMCX	50:1 @0dB	±25V	1000Vpk	4.19MΩ ‖ 2pF
			5:1 @20dB	±2.5V		
	OP100-1G	MMCX	100:1 @0dB	±50V	1000Vpk	4.10MΩ ‖ 2pF
			10:1 @20dB	±5V		
	OP2000-1G	MCX	2000:1 @0dB	±1000V	2500Vpk	20.52MΩ ‖ 1pF
			200:1 @20dB	±100V		
	OP5000-1G **(Standard)**	MCX	5000:1 @0dB	±2500V	2500Vpk	40.92MΩ ‖ 1pF
			500:1 @20dB	±250V		
	OP10000-1G	LCX	10000:1 @0dB	±5000V	8000Vpk	40.82MΩ‖ 2.4pF
			1000:1 @20dB	±500V		

*According to the adapter type of the attenuator, for the MMCX type, it is standardly equipped with 5 MMCX jacks and 1 MMCX coaxial lead; for the MCX type, it is standardly equipped with 5 MCX jacks and 1 MCX coaxial lead; for the LCX type, it is standardly equipped with 1 LCX coaxial lead

Attenuating tip jack type	Standard kit
MCX	5 x MCX jacks + 1 x MCX coaxial lead
MMCX	5 x MMCX jacks + 1 x MMCX coaxial lead
LCX	1 x LCX coaxial lead

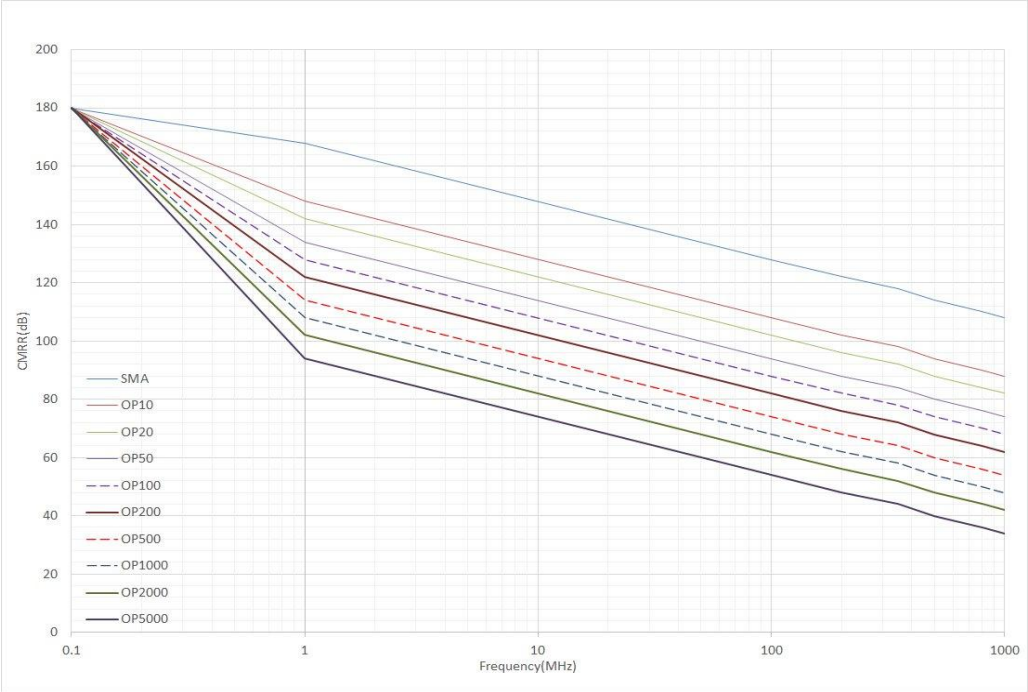
Jack and coaxial lead

Accessory name	Voltage range	Non-destructive voltage (Max.)
MCX jack	±2500V	< 2500Vpk
MMCX jack	±62.5V	< 1000Vpk
MCX coaxial lead	±2500V	< 2500Vpk
MMCX coaxial lead	±62.5V	< 1000Vpk
LCX coaxial lead	±6250V	< 8000Vpk

Mechanical characteristics

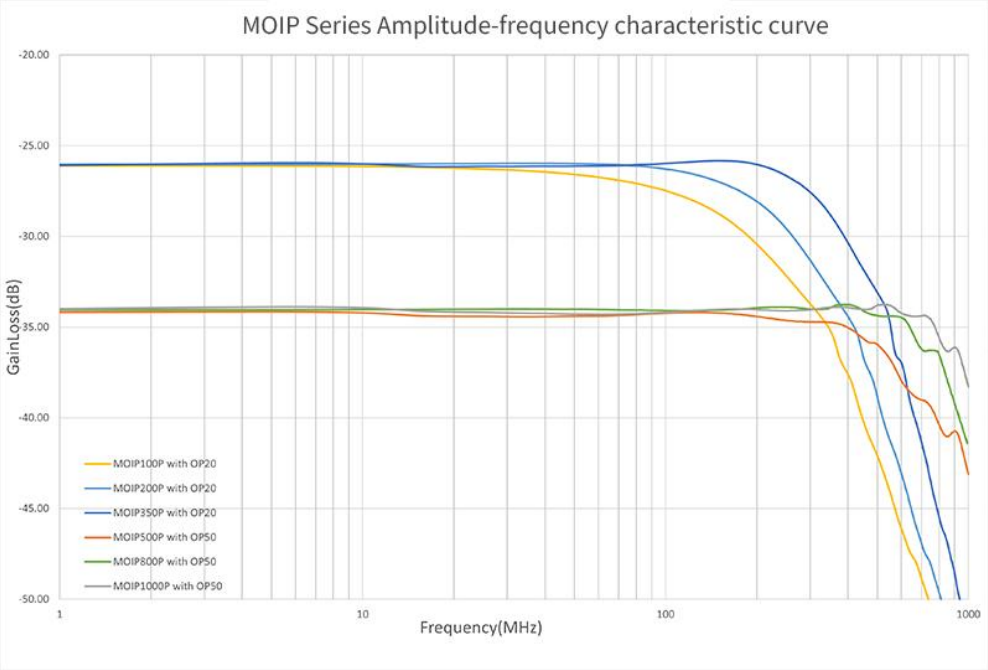
Characteristics	Parameters
Optical-Electrical (O-E) converter size	9.8*4.5*2.1cm
Electrical–Optical (E-O) converter size	11*4*2.3cm
Optical cable length	2m

Amplitude frequency characteristic curve



▲Amplitude-frequency characteristics of different SigOFIT probes Attenuator

Attenuating tip CMRR curve



▲Common mode rejection capabilities of different attenuators (0dB) at various frequencies.

Maintenance Service

This section provides information on the maintenance of the SigOFIT probe.

Troubleshooting

The LED light indicate working states of the SigOFIT probe, if the Green light is not ON, possible problems that you might encounter when taking measurements. Use the tables as a quick troubleshooting reference before contacting Micsig for service.

Failure phenomenon	Possible causes and solutions
Signal amplitude does not match as expected	• The input signal may out of the oscilloscope display range • Ensure that the input signal is within the range
DC measurement error exists	• Whether the oscilloscope or the probe itself has zero drift, please zero the equipment before measurement • Check if the oscilloscope is on AC coupling • Adjust the time base of the oscilloscope to more than 1ms • DC measurement should observe the average value on the oscilloscope
Big noise, unable to accurately measure weak signal	• Select the probe with lower attenuation to connect the E-O converter • Ensure the oscilloscope attenuation ratio is consistent with the SigOFIT probe • Set the oscilloscope vertical scale to a smaller value • Pay attention to the noise floor of the oscilloscope and the probe itself
No signal is captured and the waveform is a straight line at the zero point	• Check oscilloscope coupling settings • Check whether the probe is powered on

Maintenance

Do not expose the probe to harsh weather conditions, the probe is not waterproof.

⚠ Note: The probe is not waterproof and to prevent damage to the probe, do not expose it to sprays, liquids or solvents. Avoid wetting the inside when performing exterior cleaning of the probe.

Do not wipe the probe with chemical cleaners.

Clean the outer surface of the probe with a dry, non-linting soft cloth or a soft bristle brush.

When not in use, store the SigOFIT probe in the suitcase provided by Micsig.

Ordering Information

Accessories	MOIP200P	MOIP350P	MOIP500P	MOIP1000P
20X Attenuator OP20-3	Standard 1 pc	Standard 1 pc	X	X
1000X Attenuator OP1000-3	X	Standard 1 pc	X	X
50X Attenuator OP50-5	X	X	Standard 1 pc	X
5000X Attenuator OP5000-5	X	X	Standard 1 pc	X
50X Attenuator OP50-1G	X	X	X	Standard 1 pc
5000X Attenuator OP5000-1G	X	X	X	Standard 1 pc
MMCX jack	Standard 5 pcs	Standard 5 pcs	Standard 5 pcs	Standard 5 pcs
MMCX coaxial lead	Standard 1 pc	Standard 1 pc	Standard 1 pc	Standard 1 pc
MMCX five-hole connector	Standard 1 pc	Standard 1 pc	Standard 1 pc	Standard 1 pc
MCX jack	Optional	Standard 5 pcs	Standard 5 pcs	Standard 5 pcs
MCX coaxial lead	Optional	Standard 1 pc	Standard 1 pc	Standard 1 pc
Carrying Suitcase	Standard			
Probe Mount	Standard			
USB type-C	Standard			
Power adapter	Standard			
Quick user guide	Standard			
Calibration Certificate	Standard			
Packing list	Standard			
Other Attenuating tip(s)	Please refer to the Attenuating tip configuration table for optional choice			

Optional accessory set ordering information

Set type	Set included
MCX set	5 x MCX jacks + 1 x MCX coaxial lead
MMCX set	5 x MMCX jacks + 1 x MMCX coaxial lead
LCX set	1 x LCX coaxial lead
MCX dupont line set	1 x MCX dupont line + pin header
MMCX dupont line set	1 x MMCX dupont line + pin header
MCX IC clip set	1 x MCX dupont line + 1 pair of IC clip
MMCX IC clip set	1 x MMCX dupont line + 1 pair of IC clip
MMCX five-hole connector set	1 x MMCX five-hole connector + pin header
RS-485 Data converter set	1 x RS-485 Data converter + power adapter

Attenuator

OP20-x	Attenuator of 20X
OP50-x	Attenuator of 50X
OP100-x	Attenuator of 100X
OP200-x	Attenuator of 200X
OP1000-x	Attenuator of 1000X
OP2000-x	Attenuator of 2000X
OP5000-x	Attenuator of 5000X
OP10000-x	Attenuator of 10000X

Remarks:

OPXX-* is attenuator tip, XX refers attenuation ratio, * refers bandwidth.

e.g. OP50-5 is an attenuator tip with 50X, bandwidth of 500MHz.

Refer to following Attenuating tip configuration table choose applicable attenuating tip:

Model No.	**Standard Tip(s)**	**Optional Tip(s)**
MOIP200P	OP20-3	OP50-3, OP200-3 OP1000-3, OP2000-3, OP5000-3
MOIP350P	OP20-3 OP1000-3	OP50-3, OP200-3 OP2000-3, OP5000-3
MOIP500P	OP20-3 OP1000-3	OP20-5, OP100-5, OP2000-5, OP10000-5
MOIP1000P	OP50-1G OP5000-1G	OP20-1G, OP100-1G OP2000-1G, OP10000-1G

Supported oscilloscope

Any oscilloscope with standard BNC interface and 50Ω impedance.

Introduction to other optional attenuator connectors

The MOIP series of optical isolation probes from Micsig support the use of multiple connectors to connect to the circuit under test. The following table shows the introduction of various connectors. Different connectors may affect the accuracy of the test results. Please try to select the standard connector for connection. If you need an optional connector, please consult the customer service for purchase.

Connectors	Jack type	Note
Adapter	MMCX MCX	Solder the adapter on the circuit, and then insert the attenuator directly into the adapter
Coaxial lead	MMCX MCX LCX	Solder the coaxial extension line to the test point, and then connect the attenuator.
Five-hole connector + Pin header (optional)	MMCX	Solder the pin header on the circuit. Then, after the five-hole connector is connected to the attenuator, insert it into the pin header.
Dupont line + Pin header (optional)	MMCX MCX	Solder the pin header on the circuit. Then, after the extension line is connected to the attenuator, insert it into the pin header.
Dupont line + IC clip (optional)	MMCX MCX	The extension line is connected to the IC clip, and then to the attenuator. Just clamp the signal test point with the IC clip.

After Sales Service / Service Support

Optical-fiber Isolated Probe main body warranty for **1 year** (extendable with extra charge).

The SigOFIT probe contains high-quality components and should be treated with care, **Damage to the fiber optic cable is NOT covered by the warranty.**

Standard accessories are NOT covered in main body warranty.

Micsig provides one-on-one exclusive technical support service.

During the warranty period, Micsig will be responsible for providing free maintenance for any malfunctions caused by quality issues within the normal use of the product that have not been disassembled or repaired.

The warranty will be invalid in the following cases, but repair services can be provided, free of labor costs, and only parts fees will be charged:

a. Any damage to accessories caused by improper use, maintenance, or storage by consumers.

b. Damage caused by force majeure factors, such as natural disasters.

Micsig will refuse to provide repair services or provide paid repair services in the following situations:

a. Unauthorized dismantling, such as changing wires, dismantling internal components, etc.

b. No sales voucher or the content of the sales voucher does not match the product.

* Micsig reserves the right of final interpretation for the content hereinabove;
* It is subject to update without prior notice;
* Please contact local distributor for any inquiry or send us email directly.

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