

TA369 8-channel MSO pod

for PicoScope[®] 6000E Series

USER'S GUIDE
BENUTZERHANDBUCH
GUÍA DEL USUARIO
MANUEL D'UTILISATION

사용 설명서
MANUALE UTENTE
ユーザーガイド
用戶指南



Distribution in the UK & Ireland

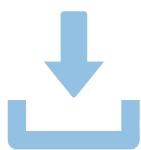


Characterisation,
Measurement &
Analysis

Lambda Photometrics Limited
Lambda House Batford Mill
Harpenden Herts AL5 5BZ
United Kingdom

E: info@lambdaphoto.co.uk
W: www.lambdaphoto.co.uk
T: +44 (0)1582 764334
F: +44 (0)1582 712084

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English

Introduction

This digital probe pod is suitable for PicoScope 6000E Series mixed-signal oscilloscopes (MSOs).

Warranty

Pico Technology Ltd. ("Pico") warrants this oscilloscope accessory for normal use and operation within specifications for a period of five years from date of shipment and will repair or replace any defective product which was not damaged by negligence, misuse, improper installation, accident or unauthorized repair or modification by the buyer. This warranty is applicable only to defects due to material or workmanship. Pico disclaims any other implied warranties of merchantability or fitness for a particular purpose. Pico will not be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of use or data, interruption of business and the like), even if Pico has been advised of the possibility of such damages arising from any defect or error in this manual or product.

Disposal

Your help and efforts are required to protect and keep our environment clean. Therefore either return this product at the end of life to the manufacturer or ensure WEEE-compliant collection and treatment yourself.



Safety

To prevent possible electrical shock, fire, personal injury, or damage to the product, carefully read this safety information before attempting to install or use the product. In addition, follow all generally accepted safety practices and procedures for working with and near electricity.

The product has been designed and tested in accordance with the European standard publication EN 61010-1: 2010 (Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use). The product left the factory in a safe condition.

The following safety descriptions are found throughout this guide:

A **WARNING** identifies conditions or practices that could result in injury or death.

A **CAUTION** identifies conditions or practices that could result in damage to the product or equipment to which it is connected.

Symbols

These safety and electrical symbols may appear on the product or in this guide:

Symbol	Description	
	Earth (ground) terminal	Terminal can be used to make a measurement ground connection. The terminal is NOT a safety or protective earth.
	Possibility of electric shock	
	Caution	Appearance on the product indicates a need to read these safety and operation instructions.
	Do not dispose of this product as unsorted municipal waste.	

WARNING

To prevent injury or death use the product only as instructed. Protection provided by the product may be impaired if used in a manner not specified by the manufacturer.

Maximum input ranges

The table below and markings on the product indicate the threshold range and maximum input voltage for the TA369 MSO pod. The threshold is the voltage at which the MSO pod distinguishes logic 1 from logic 0, and the maximum input voltage is the maximum voltage that can be applied without risk of damage to the instrument.

WARNING

To prevent electric shock, do not attempt to connect voltages outside the maximum input voltage range.

Model	Threshold range	Maximum input voltage (DC + AC peak)
TA369	±8 V	±40 V

WARNING

Signals exceeding the voltage limits in the table below are defined as “hazardous live” by EN 61010.

Signal voltage limits of EN61010-1:2010		
±70 V DC	33 V AC RMS	±46.7 V pk max.

Do not use the TA369 MSO pod to directly measure hazardous live voltages. Do not allow the MSO pod, probes or cables to come into contact with exposed hazardous live conductors.

To prevent electric shock, take all necessary safety precautions when working on equipment where hazardous live voltages may be present.

Do not exceed the voltage rating marked on any accessory. If an accessory is not marked with a voltage rating on either the connector, cable or body, or if a protective finger guard is removed, then do not exceed the EN61010 “hazardous live” limits above. When connecting one or multiple accessories and the instrument together, the lowest voltage rating in the chain applies to the whole chain.

WARNING

To prevent injury or death, do not connect the MSO pod directly to the mains (line power).

WARNING

The TA369 MSO pod is designed for measurement of logic-level signals only. To prevent injury or death, do not allow the probes, pod or interconnecting cables to come into contact with exposed conductors exceeding the input voltage rating of ±40 V pk max, or to come into contact with hot or sharp surfaces that may cause damage.

WARNING

To prevent injury or death, do not use the product if it appears to be damaged in any way, and stop use immediately if you are concerned by any abnormal behavior.

Grounding

WARNING

The MSO pod's ground connection through the oscilloscope interface is for measurement purposes only. The MSO pod does not have a protective safety ground.

Never connect the ground input (chassis) to any electrical power source. To prevent personal injury or death, use a voltmeter to check that there is no significant AC or DC voltage between the MSO probe ground and the point to which you intend to connect it.

CAUTION

Applying a voltage to the ground input is likely to cause permanent damage to the MSO pod, oscilloscope, the attached computer, and other equipment.

To prevent measurement errors caused by poor grounding, always use the digital interface cable supplied with the MSO pod.

Environment

WARNING

To prevent injury or death, do not use in wet or damp conditions, or near explosive gas or vapor.

CAUTION

To prevent damage, always use and store your MSO pod in appropriate environments.

	Storage	Operating	For quoted accuracy
Temperature	-20 °C to +60 °C	0 °C to +40 °C	15 °C to 30 °C
Max. humidity (non-condensing)	5 to 95 %RH	5 to 80 %RH	
Max. altitude	2000 m		
Pollution degree	2 (As defined in IEC 61010-031. Non-conductive pollution with occasional temporary conductivity due to condensation.)		

Care of the product

The MSO pod contains no user-serviceable parts. Repair, servicing and calibration require specialized test equipment and must only be performed by Pico or an approved service provider. There may be a charge for these services unless covered by the Pico five-year warranty.

Inspect the MSO pod and all probes, connectors, cables and accessories before use for signs of damage.

WARNING

To prevent electric shock do not tamper with or disassemble the MSO pod, probes, case parts, connectors or accessories.

CAUTION

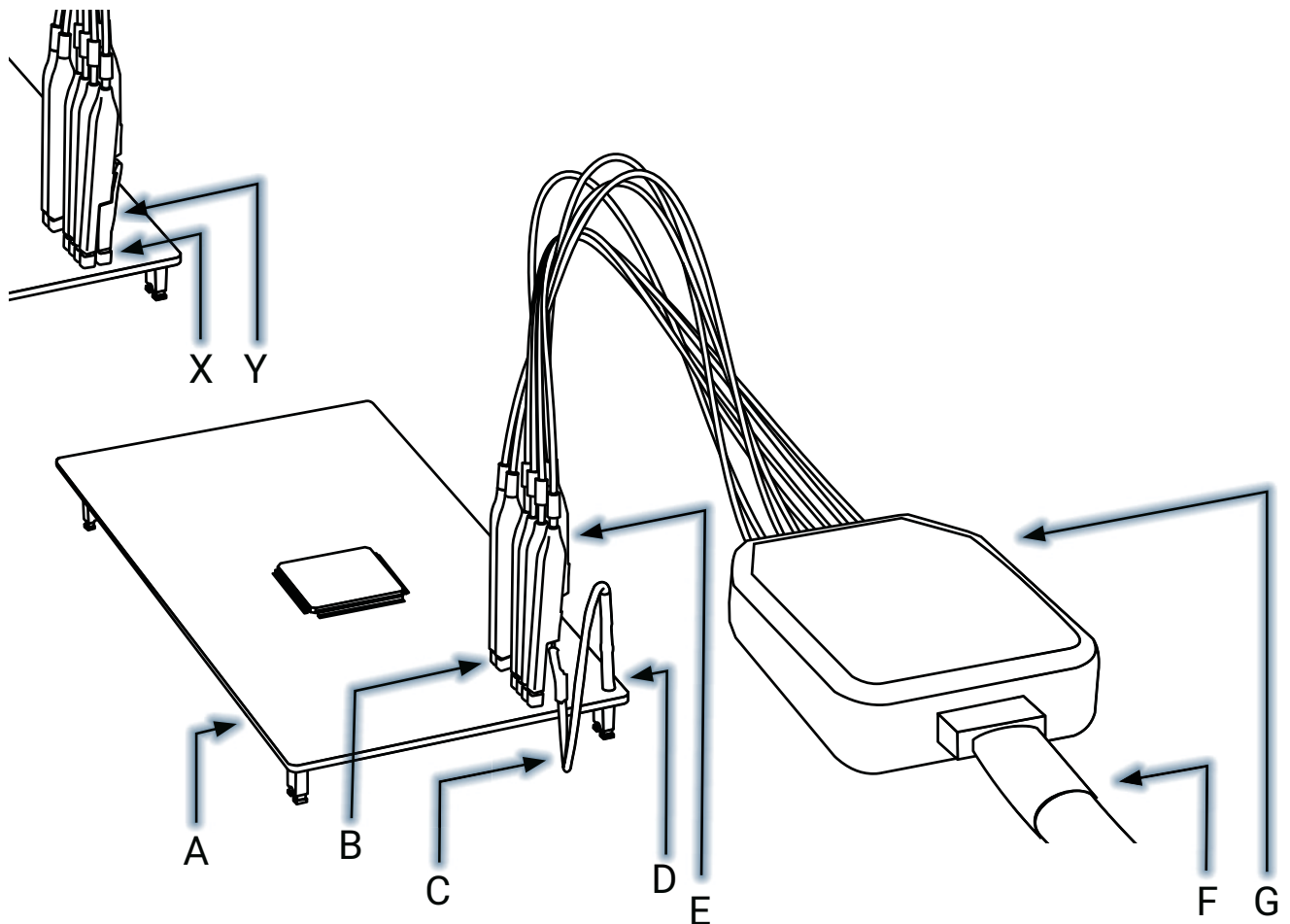
When cleaning the product, use a soft cloth and a solution of mild soap or detergent in water. To prevent electric shock, do not allow liquids to enter the MSO pod or probe casings, as this will compromise the electronics or insulation inside.

Accessories

The TA369 MSO pod is provided with several accessories designed to make probing and measurement simpler. Please take a moment to familiarize yourself with these accessories and their uses.

Accessories included	Order code	Quantity	
MSO grabbers (set of 12)	TA139	1	
MSO ground lead	MI490	8	
MSO ground clip 1-way	TA362	8	
MSO ground clip 4-way	TA363	1	
MSO ground clip 8-way	TA364	1	
MSO digital interface cable	TA365	1	

Typical connections

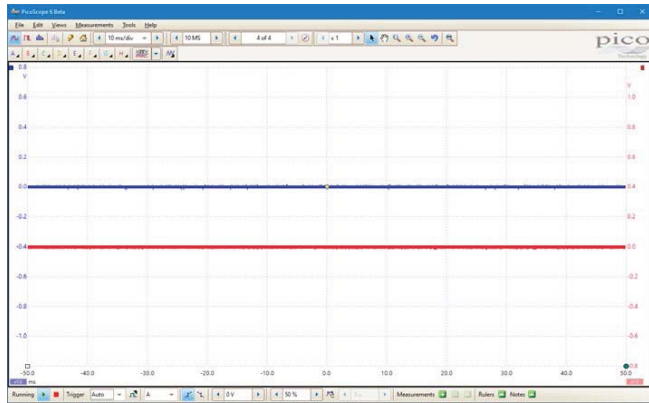


- A: Circuit board under test
- B: Test header on circuit board
- C: MSO ground lead
- D: Ground pin on circuit board
- E: MSO probe head
- F: Digital interface cable to MSO port of PicoScope 6000E Series oscilloscope
- G: TA369 MSO pod (up to two per PicoScope oscilloscope)
- X: Ground pin on circuit board
- Y: MSO ground clip

Hints:

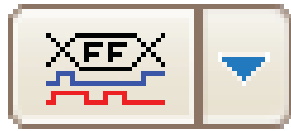
- For best performance with high-speed signals, connect the ground terminal of each probe to the circuit ground as close as possible to the signal under test. Use either the ground leads (C) or the ground clips (Y) supplied. The ground clips enable the probe to fit on a pair of 0.1"-pitch header pins.
- Ungrounded probes will share the ground path with grounded probes, lowering performance and causing crosstalk between digital channels.

Using in PicoScope 6

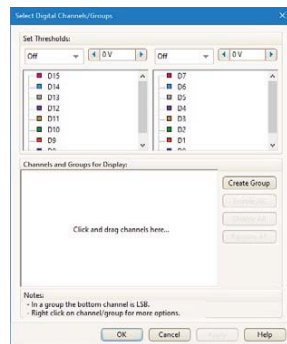


1. When you start PicoScope 6 with a TA369 MSO pod for the first time, only the analog channels will be visible.

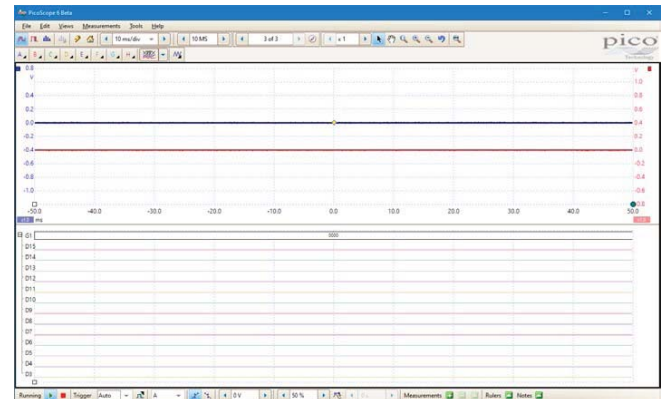
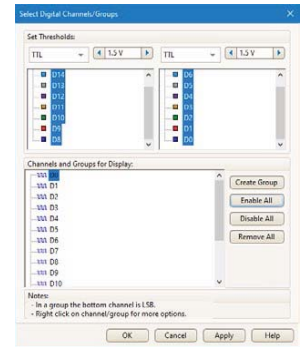
2. The MSO button in the toolbar shows that your oscilloscope has mixed-signal capability.



3. Click the MSO button to open the MSO setup dialog.



4. Drag the digital channels that you wish to view from the upper boxes into the lower, empty box.



5. Click **Enable All**, then **OK**. The PicoScope display will then change to show the selected digital inputs.

Further information

For advice on operating the TA369 MSO pod in PicoScope 6, see the [PicoScope 6 User's Guide](#).

Consult www.picotech.com for information on using the PicoScope SDK, which allows you to control the MSO pod and oscilloscope from your own software application.

For technical specifications, see the [PicoScope 6000E Series Data Sheet](#) at www.picotech.com.

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