



# PicoScope® 9400 Series

Sampler-extended real-time oscilloscopes

QUICK START GUIDE



## Contents

<i>Introduction</i> .....	1
<i>Step 1: Installing the PicoSample 4 software</i> .....	1
<i>Step 2: Safety information</i> .....	1
<i>Step 3: Connecting your PicoScope SXRTO</i> .....	3
<i>Input and output connections</i> .....	3
<i>Front-panel indicators</i> .....	4
<i>LAN connection instructions</i> .....	4
<i>Additional information</i> .....	4



## Introduction

Thank you for purchasing a PicoScope 9400 Series sampler-extended real-time oscilloscope. The instrument is a high-bandwidth real-time oscilloscope with 1 TS/s equivalent-time sampling. This guide explains how to install the PicoSample 4 software and connect your PicoScope. It also contains important safety information and advice on accessing user manuals and technical support.

We recommend that you follow Steps 1 to 3 in order:

- Step 1: Install the PicoSample 4 software
- Step 2: Read the PicoScope 9400 Series safety information
- Step 3: Connect the PicoScope

## Step 1: Installing the PicoSample 4 software

### 1.1 System requirements

To ensure that PicoSample 4 operates correctly, you must use a computer with the system requirements shown in the table below.

Item	Specifications
Operating system	Microsoft Windows 7, 8 or 10, 32-bit and 64-bit versions
Processor, memory, free disk space	As required by the operating system
Ports	USB 2 or 3

### 1.2 Installing the software

- Run the PicoSample-4\_Setup.exe file directly from the flash drive provided with your PicoScope.
- Follow the on-screen instructions to install the software. Do not connect the PicoScope until the installation is complete.
- You can try out the software by clicking the new **PicoSample 4** icon on your desktop and then selecting and connecting the demo device.

For more information on the software, please refer to the built-in help.

## Step 2: Safety information

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) and EN61010-2-30: 2010 (Requirements for Testing and

Measuring Circuits). 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.

### 2.1 Symbols

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

Symbol	Description
	Chassis terminal
	Possibility of electric shock
	Caution
	Do not dispose of this product as unsorted municipal waste

Appearance on the product indicates a need to read these safety and operation instructions.

### WARNING

This product and accessories are for professional use by trained and qualified technicians only. To prevent injury or death use the product only as instructed and use only accessories that have been supplied or recommended. Protection provided by the products may be impaired if used in a manner not specified by the manufacturer.

### 2.2 Maximum terminal ratings

Observe all terminal ratings and warnings marked on the product.

The table below and/or markings on the product indicate the full-scale measurement range and overvoltage protection range. The full-scale measurement ranges are the maximum voltages that can be accurately measured by the instrument and the overvoltage protection ranges are the maximum voltages that may be applied without risk of personal injury or damage to the instrument.

### WARNING

To prevent electric shock, do not attempt to connect voltages outside the overvoltage protection range.

Input/output	Overtoltage protection	Full-scale measurement range
Channels CH1 to CH4	±1.4 V (DC + peak AC)	±800 mV
CAL output	±2 V (DC + peak AC)	–
TRIGGER output	±2 V (DC + peak AC)	–

### WARNING

Signals exceeding the voltage limits in the table below are defined as “hazardous live” by EN 61010. To prevent electric shock, take all necessary safety precautions when working on equipment where hazardous live voltages may be present.

#### Signal voltage limits of EN61010-1:2010

±70 V DC	33 V AC RMS	±46.7 V pk max.
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### WARNING

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

### CAUTION

To avoid causing permanent damage to the PicoScope and other connected equipment, do not exceed the overvoltage protection range on any terminal.

## 2.3 Grounding

### WARNING

The PicoScope’s ground connection through the USB cable is for measurement purposes only. The PicoScope 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 PicoScope ground and the point to which you intend to connect it.

### CAUTION

To avoid causing permanent damage to the PicoScope, the attached computer, and other equipment, do not apply a voltage to the ground input.

To prevent measurement errors caused by poor grounding, always use the high-quality blue USB cable supplied with the oscilloscope.

## 2.4 External connections

### WARNING

To prevent injury or death, only use the power cord and adaptor supplied with the product. These are approved for the voltage and plug configuration in your country.

#### External DC power supply

Voltage	Current (no accessories)	Current (with accessories)
12 V DC ± 5%	2.6 A max.	3.3 A max.

### CAUTION

Take care to avoid mechanical stress or tight bend radii for all connected leads, including all coaxial leads and connectors. Mishandling will cause deformation of sidewalls, and will degrade performance and accuracy.

## 2.5 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 PicoScope in appropriate environments.

Temperature, operating	+5 °C to +40 °C
Temperature, storage	-20 °C to +50 °C
Temperature, for quoted accuracy	+15 °C to +25 °C
Humidity, operating	Up to 85 %RH (non-condensing) at +25 °C
Humidity, storage	Up to 95 %RH (non-condensing)
Altitude	Up to 2000 m
Pollution degree	2

## 2.6 Care of the product

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

Inspect the instrument and all probes, connectors, cables and accessories before use for signs of 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 operations.

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

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

### CAUTION

Do not block the air vents at the back of the PicoScope as overheating will damage the instrument.

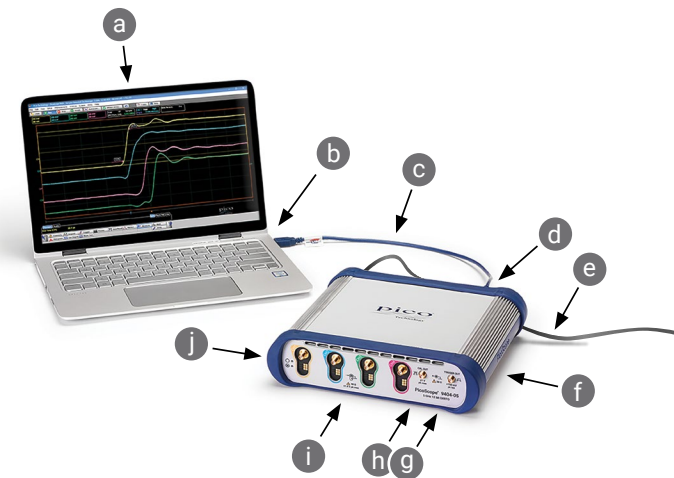
Do not insert any objects through the air vents as internal interference will cause damage to the instrument.

To prevent dirt ingress, fit dust caps to all unmated connectors and remove them only during connection.

## Step 3: Connecting your PicoScope SXRT0

1. Make sure that you have installed the PicoSample 4 software. You will not be able to use the PicoScope without it.
2. If the software is running in demo mode, close it before you connect the PicoScope.
3. Connect the PicoScope to your PC using the USB cable supplied. See the diagram below.
  - a. PC
  - b. PC USB port
  - c. Pico USB cable
  - d. PicoScope USB and LAN ports
  - e. DC power cable
  - f. PicoScope device
  - g. Trigger output
  - h. Calibration signal output
  - i. Input channels\* 1-4 (50  $\Omega$  input impedance)
  - j. Power and status LEDs

\* with power and control interfaces for future accessories



4. Wait for your computer to install the device. While doing so it will display a message or icon in the taskbar telling you it has found the device.
5. Run the software by clicking the new **PicoSample 4** icon on your desktop. PicoSample 4 will automatically detect and identify your PicoScope.
6. In the **Connect Device** dialog that appears, select the PicoScope and click **Connect Device**. Once the device is connected, you can use the oscilloscope.

For more detailed instructions on setting up your PicoScope device, download the *User's Guide and Data Sheet*.

## Input and output connections

The *PicoScope 9400 Series User's Guide* contains a detailed description of input and output connections.

## Front-panel indicators

Upper LED: Red when oscilloscope uninitialized. Flashing green while initializing. Steady green when correctly set up.

Lower LED: Flashing green while searching for USB connection. Flashing red while searching for LAN connection. Flashing amber indicates triggering.

## LAN connection instructions

Default IP address: 192.168.0.221

To change the IP address:

1. Connect the oscilloscope's USB port to the PC.
2. Click **Help > About... > TCP/IP Properties**. The **TCP/IP Properties** dialog opens.
3. If changes are required, click **Set New TCP / IP Properties** and in the **Confirm** dialog click **OK**. Enter the desired address in the second **TCP/IP Properties** dialog.

To switch to the LAN interface:

1. Make any necessary adjustments to the LAN settings under the **System** menu.
2. Make sure that there is no USB connection.
3. Turn off the scope.
4. Connect the LAN connector to your Local Area Network (LAN).
5. Turn on the scope.

## Additional information

### Documentation

The *Data Sheet* contains the latest specifications for your PicoScope device. We recommend that you print a copy and keep it for easy reference. For detailed information on operating and installing your product, you should consult its *User's Guide*. You can download PDF copies of all documentation relevant to your oscilloscope, including the *Programmer's Guide*, from [www.picotech.com/downloads](http://www.picotech.com/downloads).

### Software updates and replacement

You can download the latest versions of the PicoSample 4 software free of charge from [www.picotech.com/downloads](http://www.picotech.com/downloads).

### Writing your own software

A software development kit with all the drivers and other files you will need to develop your own custom programs is installed with the PicoSample 4 software. Pico also maintains repositories of examples in various programming languages on GitHub, at [github.com/picotech](https://github.com/picotech).

### Technical support

Regularly updated technical support information can be found on the Pico Technology technical support web page and users' forum at [www.picotech.com/tech-support](http://www.picotech.com/tech-support).

### Warranty and returns

Your oscilloscope is supplied with a five-year return-to-manufacturer warranty. Accessories are guaranteed for one year from the date of purchase. You may also return your PicoScope for any reason within 14 days of purchase for a refund. For terms and conditions, visit [www.picotech.com/about](http://www.picotech.com/about).

### Free newsletter

Pico Technology sends out a free monthly newsletter by email. This gives news of product launches, software upgrades and application notes as well as hints and advice. We treat your email details as confidential and will not pass them on to any third party. To subscribe, visit [www.picotech.com/signup](http://www.picotech.com/signup).









**United Kingdom global headquarters:**

Pico Technology  
James House  
Colmworth Business Park  
St. Neots  
Cambridgeshire  
PE19 8YP  
United Kingdom

 +44 (0) 1480 396 395  
 [sales@picotech.com](mailto:sales@picotech.com)


**North America regional office:**

Pico Technology  
320 N Glenwood Blvd  
Tyler  
Texas 75702  
United States

 +1 800 591 2796  
 [sales@picotech.com](mailto:sales@picotech.com)

**Asia-Pacific regional office:**

Pico Technology  
Room 2252, 22/F, Centro  
568 Hengfeng Road  
Zhabei District  
Shanghai 200070  
PR China

 +86 21 2226-5152  
 [pico.china@picotech.com](mailto:pico.china@picotech.com)

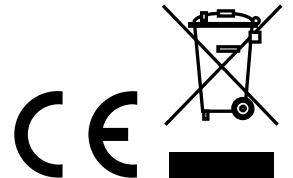
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