TiePie Engineering from Scientech

Speed up your Innovation with a WiFi Oscilloscope

WiFiScope Connection possibilities

WIFi connected

Using a computer based oscilloscope was never easier than with the WiFiScope WS4 DIFF: simply switch it on and start the software on the computer:

- no power cables required as it is battery powered and can operate hours on a fully charged battery

- no interface cables required as it uses WiFi to connect to the computer

This allows you to measure fully floating, fully isolated from your computer. The WiFiScope WS4 DIFF can be placed near any test subject that may be hard to reach, or on moving objects, where wired connections are not possible.

Because the WiFiScope WS4 DIFF is not connected to the computer, there is no risk of damaging the computer.

LAN connected

When measuring in remote locations where a wired network is available, the WiFiScope WS4 DIFF can also be used through its LAN port. Measurements can then be performed from any location via the network, without having the computer to be close to the test subject.

LAN Cable, CAT 5e or better, 100m max.

Using its 1 Gbit LAN connection, the WiFiScope WS4 DIFF can achieve higher streaming performance than via WiFi.

USB connected

When wireless measuring or LAN connected measuring is not required or not possible, the WiFiScope WS4 DIFF can also be connected via its USB port. This gives the benefit of even higher streaming performance.

USB Cable, 5m max.

Hardware features

The WiFiScope WS4 DIFF is a 4 channel differential USB oscilloscope with a maximum sampling speed of 50MSa/s and 128 kpoints memory per channel. The differential input channels enable safely measuring, without risk of creating a short circuit through the oscilloscope. The WiFiScope WS4 DIFF is delivered with a complete measurement software package that offers all you need for your measurement applications.

Rugged industrial design

The WiFiScope WS4 DIFF features a rugged design. Its enclosure is fitted with rubber protectors at the front and the rear. These protect the WiFiScope WS4 DIFF against damage by mechanical shocks. The rubber helps absorbing shocks and protects the connectors at the front and the rear of the WiFiScope WS4 DIFF, these fall within the protected zone.

Additionally, the rubber prevents your WiFiScope WS4 DIFF from sliding. The rubber protectors have special notches that simplify stacking instruments. Holes are included that allow to connect a strap to hang the instrument near the test subject.

Differential Input

The WiFiScope WS4 DIFF features four isolated differential input channels. This makes it the ideal instrument to perform measurements in high voltage circuits, amplifiers, switch mode power supplies, power inverters etc. No more risk of creating short circuits through your oscilloscope!
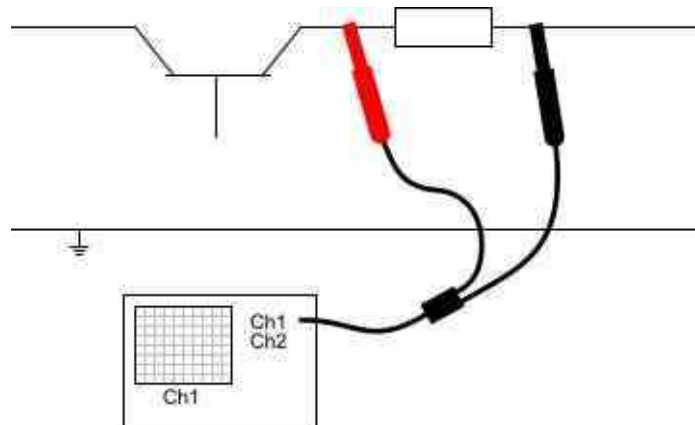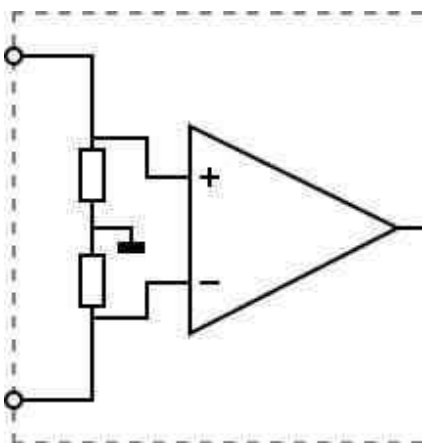
Fast continuous streaming

Besides measuring in block mode, the WiFiScope WS4 DIFF is also capable of performing continuous streaming measurements. This will create a continuous uninterrupted data stream to the computer. The data can then be displayed on the screen and/or saved to disk.

Software features

Versatile multi channel oscilloscope software

The WiFiScope WS4 DIFF is delivered with the versatile multi channel oscilloscope software, which transforms the WiFiScope WS4 DIFF into an oscilloscope, spectrum analyzer, data logger, multimeter and protocol analyzer.

Some of the powerful features of the multi channel oscilloscope software are indicated below, for a full description of the multi channel oscilloscope software, refer to the multi channel oscilloscope software pages.

Quick Setup

To simplify setting up the measurements, the multi channel oscilloscope software contains a large number of Quick Setups, for almost any application. A Quick Setup contains the basic settings for a specific measurement as well as additional information regarding the selected Quick Setup, like e.g. how your Handyscope and/or accessories need to be connected. Quick Setups can also contain reference signals. After loading the Quick Setup, that specific measurement can be performed and if needed, small adjustments to the setup can be made.


The Quick Setups are carefully organized in a tree structure, ordered by application. Just a few mouse clicks allow to perform a complex measurement.

Flexible signal displays

The multi channel oscilloscope software scope, spectrum analyzer and datalogger offer an ultimately flexible way to display all aspects of the measured signals. They can have one or more graphs, each displaying one or more signals, where each graph can display different parts of a signal. Graphs can display the signal(s) of your Handyscope in Yt mode, in XY mode or as frequency spectrum, with or without interpolation. Colors of all items in a graph can be set to any required value. Graph dimensions can be adjusted to any required size, graphs can be located in one single window or in separate windows, which can be located anywhere on the desktop.
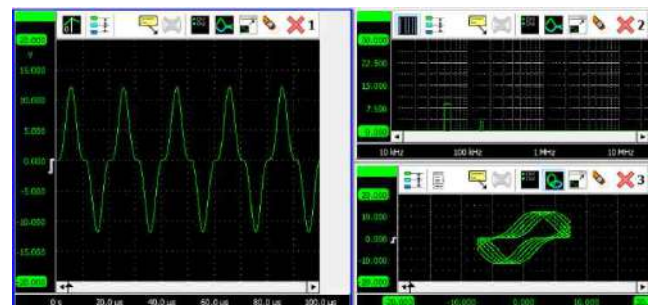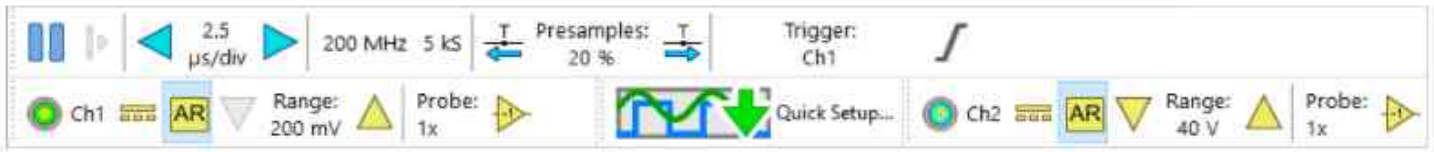
Touchscreen friendly toolbars

An oscilloscope toolbar and channel toolbars are available for each detected Handyscope. The convenient toolbars provide clear buttons for all settings of the oscilloscope and its channels. They show the current settings of the oscilloscope and allow to change all settings. The large buttons are very suitable for touchscreen operation.

The toolbars are fully configurable through the program settings. You can set the button size, add or remove buttons and change the order of the buttons.

Many automatic measurements

The multi channel oscilloscope software features many automatic measurements, that can be performed on the measured signals of your Handyscope or on a selection of the measured signals. Using the automatic measurements in the oscilloscope, any detail of your signal is revealed. Two sets of cursors, both horizontal and vertical, can be used to indicate a part of the signal that needs to be examined thoroughly. The automatic measurements include e.g.: Mininum, Maximum, Top-Bottom, RMS, Mean, Variance, Standard deviation, Frequency.
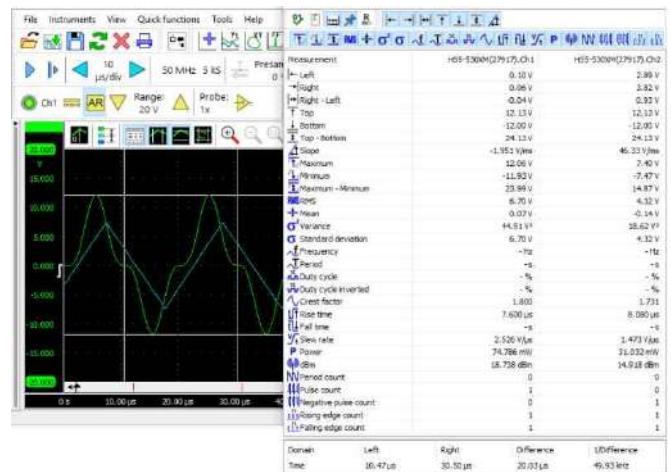
The measurement results are shown in a special value window that can be positioned anywhere on your computer screen. A convenient toolbar allows you to enable or disable a measurement with a single click. The measurement results can be copied to the clipboard e.g. to use them in reports. When printing the graphs, the cursors and measurements results are also included.

Multimeter

The multimeter in the multi channel oscilloscope software turns your Handyscope into a multimeter can be used to measure or monitor specific properties of a signal, like True RMS value, frequency, maximum value etc. The multi channel oscilloscope software multimeter can have any number of fully configurable displays, either displaying the measured value as a number or using a gauge display. When using a gauge display, it can be very helpful when adjusting a circuit for a specific property, e.g. adjusting an offset to zero.

Technical Specification

Acquisition system

Number of input channels	:	4 analog
CH1, CH2, Ch3, CH4	:	Isolated Female BNC

Type	:	Differential input		
Resolution	:	12, 14, 16 bit user selectable		
DC Accuracy	:	0.3 % of full scale ± 1 LSB		
Ranges (Full scale)	:	±200mV	±2V	±20V
		±400mV	±4V	±40V
		±800mV	±8V	±80V
Coupling	:	AC/DC		
Impedance	:	2 MO / 40 pF		
Maximum input voltage (in all ranges)	:	±200 V (DC + AC peak < 10 kHz)		
		with 1:10 attenuator ±300 V (DC + AC peak < 10 kHz)		
Maximum Common Mode voltage	:	200 mV to 800 mV ranges : 2 V		
2 V to 8 V ranges	:	20 V		
20 V to 80 V ranges	:	200 V		
Common Mode Rejection Ratio	:	-48 dB		
Bandwidth (-3dB)	:	DC to 50 MHz maximum		
AC coupling cut off frequency (-3dB)	:	1 Hz		
Channel Isolation	:	500 V		
Channel Separation	:	-80 dB		

Maximum sampling rate	:	WS4 DIFF-50	WS4 DIFF-25
12 bit	:	50 MSa/s	25 MSa/s
14 bit	:	3.125 MSa/s	3.125 MSa/s
16 bit	:	195.3 kSa/s	195.3 kSa/s

Maximum streaming rate	:	WS4 DIFF-50	WS4 DIFF-25
12 bit	:	500 kSa/s	250 kSa/s
14 bit	:	480.8 kSa/s	250 kSa/s
16 bit	:	195.3 kSa/s	195.3 kSa/s

Sampling clock source

Internal	:	Quartz
Accuracy	:	±0.01 %
Stability	:	±100 ppm over -40 °C to +85 °C
Time base aging	:	±5 ppm/year

External On extension connector

Voltage	:	3.3 V TTL, 5 V TTL tolerant
Frequency range	:	95 MHz to 105 MHz
Memory	:	128 kpoints per channel

Trigger

System	:	Digital, 2 levels
Source	:	CH1, CH2, CH3, CH4, AND, OR, digital external
Trigger modes	:	Rising edge, falling edge, inside window, outside window
Level adjustment	:	0 to 100 % of full scale
Hysteresis adjustment	:	0 to 100 % of full scale
Resolution	:	0.025 % (12 bits)
Pre trigger	:	0 to 131071 samples, 1 sample resolution
Post trigger	:	0 to 131071 samples, 1 sample resolution
Trigger hold-off	:	0 to 1048576 Samples, 1 sample resolution

Digital external trigger

Input	:	Extension connector
Range	:	0 to 3.3 V (5 V max)
Coupling	:	DC

Interface

Interface

USB	:	2.0 High Speed (480 Mbit/s)
Network	:	1 Gbps
WiFi	:	802.11

Power Requirements

Power	:	From USB, external input or built-in battery
Consumption	:	12 V_{DC} 2 A max
External power	:	From power adapter
Internal battery	:	Li-ion
Capacity	:	7000 mAh, 3.7 V

Physical

Instrument

Height	:	44 mm (1,7 inch)
Length	:	187 mm (6.7 inch)
Width	:	215 mm (5.2 inch)
Weight	:	791 g (27.9 ounce)

I/O connectors

Channel 1, 2, 3, 4	:	Isolated BNC
LAN	:	RJ45 socket
USB	:	USB 3.0 type B Super Speed socket
Extension connector	:	D-sub 25 pins female
Power	:	3.5 mm power socket

System requirements

PC I/O connection	:	USB 2.0, USB 3.0 or USB 3.1
		RJ45
		WiFi
Operating system	:	Windows 10, 32 and 64 bits
		Linux (via own developed software using the LibTiePie SDK)

Operating Environment

Operating

Ambient temperature	:	20°C to 25°C for rated accuracy (10°C to 40°C without specifications)
Relative humidity	:	10 % to 90 %, non condensing

Charging

Ambient temperature	:	0°C to 35°C
Relative humidity	:	10 % to 90 %, non condensing

Storage

Ambient temperature	:	0°C to 35°C
Relative humidity	:	5 % to 95 %, non condensing

Certification and Compliances

CE mark compliance	:	Yes
RoHS	:	Yes

Package contents

The WifiScope WS5 is delivered with:

Carry case	:	Carry case BB453
Instrument	:	WiFiScope WS4 DiFF
Measure leads	:	4 x Measure lead TP-C812B, Differential BNC -> 4 mm banana plug
Attenuator	:	4 x Differential attenuator TP-DA10
Accessories	:	Ground compensation Cable TP-GCC150
		Handyscope / WiFiScope power supply
		USB3 cable, 1.5 m long
		network cable, 3 m long
		Probe compensation cable TP-DB9-BNC-30 (only with option SafeGround)
Software	:	for Windows 10, via website
Drivers	:	for Windows 10, via website
Software Development Kit	:	for Windows 10 and Linux, via website
Manuals	:	instrument manual and software user's manuals
		color printed and digital, via website

Subject to Change