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Handyscope HS4 DIFF USB Ωscilloscope

TiePie Engineering from Scientech

Speed up your innovation with a USB oscilloscope

The Handyscope HS4 DIFF is a 4 channel differential USB oscilloscope with a maximum sampling speed of 50MSa/s and 128 Kpts memory per channel. The differential input channels enable safely measuring, without risk of creating a short circuit through the oscilloscope. The Handyscope HS4 DIFF is delivered with a complete measurement software package that offers all you need for your measurement applications.

Differential inputs

The Handyscope HS4 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 Handyscope HS4 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.

Combining multiple Handyscope HS4 DIFFs

When one Handyscope HS4 DIFF does not offer enough input channels, the Handyscope HS4 DIFF can be coupled to one or more other instruments. This allows to make a combined instrument which will enable simultaneous measuring on all channels of all combined instruments.

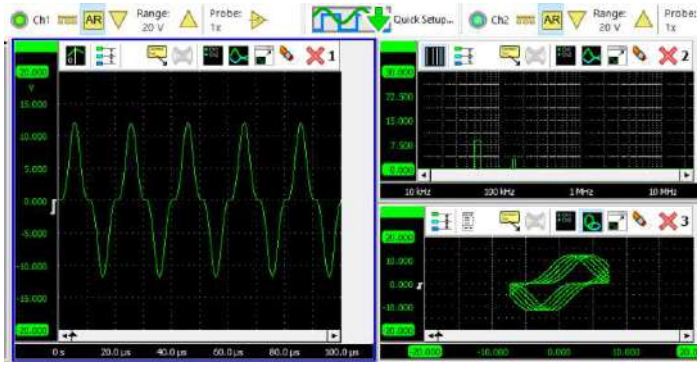
Software features

Versatile multi channel oscilloscope software

The Handyscope HS4 DIFF is delivered with the versatile multi channel oscilloscope software, which transforms the Handyscope HS4 DIFF into an oscilloscope, spectrum analyzer, data logger, multimeter and protocol analyzer.

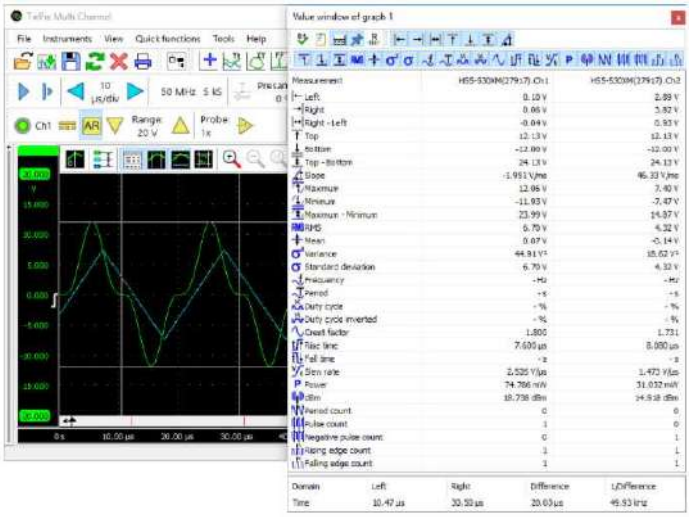
Some of the powerful features of the multi channel oscilloscope software are indicated below, for a full description of the multi channel oscilloscope software, refer to the multi channel oscilloscope software pages.

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.

Many automatic measurements



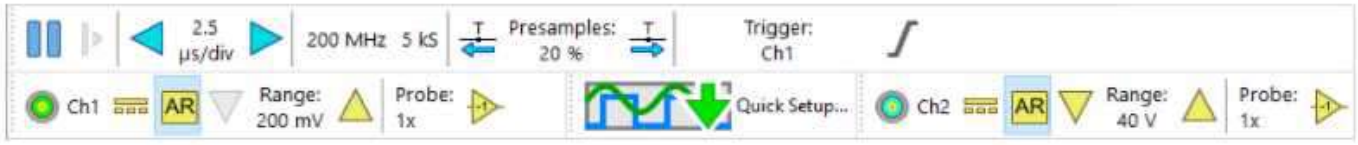
The multi channel oscilloscope software features many automatic measurements, that can be performed on the measured signals of your Handyscope or on a selection of the measured signals. Using the automatic measurements in the oscilloscope, any detail of your signal is revealed. Two sets of cursors, both 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.

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.



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.

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Technical Specification

Acquisition system

Number of input channels	:	4 analog			
CH1, CH2, CH3, CH4	:	BNC			
Type	:	Differential			
Resolution	:	12, 14, 16 bit user selectable			
Accuracy	:	0.25 % of full scale ± 1 LSB			
Ranges (Full scale)	:	±200mV	±2V	±20V	
		±400mV	±4V	±40V	
		±800mV	±8V	±80V	
Coupling	:	AC/DC			
Impedance	:	2 MΩ / 40 pF			
Maximum input voltage (in all range)	:	±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	:	HS4D-50	HS4D-25	HS4D-10	HS4D-5
12 bit	:	50 MSa/s	25 MSa/s	10 MSa/s	5 MSa/s
14 bit	:	3.125 MSa/s	3.125MSa/s	3.125 MSa/s	3.125 MSa/s
16 bit	:	195.3 kSa/s	195.3 kSa/s	195.3 kSa/s	195.3 kSa/s
Maximum streaming rate	:	HS4D-50	HS4D-25	HS4D-10	HS4D-5
12 bit	:	500 kSa/s	250 KSa/s	100 KSa/s	50 KSa/s
14 bit	:	480.8 kSa/s	250 kSa/s	99.2 kSa/s	50 kSa/s
16 bit	:	195.3 kSa/s	195.3 kSa/s	97.7 kSa/s	48.8 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	:	Ωn extension connector			
Voltage	:	3.3 V TTL, 5 V TTL tolerant			
Frequency range	:	95 MHz to 105 MHz			
Memory	:	128 Kpts per channel			

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Trigger

System	:	Digital, 2 levels
Source	:	CH1, CH2, CH3, CH4, AND, ΩR, 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); (USB 1.1 Full Speed (12 Mbit/s) and USB 3.0 compatible)

Power Requirements

Power from USB port	:	500 mA max (2.5 W max)
Power via external power input / extension connector	:	1500 mA max (7.5 W max)
Minimum voltage	:	4.5 V_{DC}
Maximum voltage (SN# >12941)	:	14 V_{DC}

Physical

Instrument height	:	25 mm (1 inch)
Instrument length	:	170 mm (6.7 inch)
Instrument width	:	140 mm (5.2 inch)
Cord length	:	1.8 m (70 inch)
Weight	:	460 g (16 ounce)

I/O connectors

Channel 1, 2, 3, 4	:	Isolated BNC
USB	:	fixed cable with USB 2.0 and USB 1.1 type A connector
Extension connector	:	D-sub 25 pins female

System requirements

PC I/Ω connection	:	USB 2.0 High Speed (480 Mbit/s); (USB 1.1 Full Speed (12 Mbit/s) and USB 3.0 compatible)
Ωperating System	:	Windows 10 and Linux (via LibTiePie SDK)

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Operating Environment

Ambient temperature	:	0 to 55°C
Relative humidity	:	10 to 90%, non condensing

Storage Environment

Ambient temperature	:	-20 to 70°C
Relative humidity	:	5 to 95%, non condensing

Certification and Compliances

CE mark compliance	:	yes
RoHS	:	yes

Package contents

The Handyscope HS4 is delivered with:

Cary case	:	Carry case BT341
Instrument	:	Handyscope HS4 DIFF
Measure leads	:	4 x Measure lead TP-C812B, Differential BNC -> 4 mm banana plug
Differential attenuator	:	4 x Differential attenuator TP-DA10
Accessories	:	external power cable for USB port
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

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Related Products

Differential Probe
SI-9002

Current clamp
TP-CC80

Current clamp
TP-CC600

Current clamp
TP-CC400

Measure Lead
TP-C812B

Measure Lead
TP-C1812B

Back Probe
TP-BP85

Alligator Clip
TP-AC80I

Test Probe
TP-TP90 Set

Alligator Clip
TP-AC50B Set

Accelerometer
TP-ACC20

Differential attenuator
TP-DA10

Carry case Bt341

Rubber Protector
TP-RP-HS

Alligator Clip
TP-AC101

Alligator Clip
TP-AC5

Milliohm Meter
TP-MM3000

Subject to Change

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