

## TiePie Engineering from Scientech



## Speed up your innovation with a USB oscilloscope

This professional powerful computer controlled USB oscilloscope features four input channels. The Handyscope HS4 oscilloscope features a user selectable 12 bit, 14 bit or 16 bit resolution (14 bit effective, SNR 95 dB), 200 mV to 80 V full scale input range and 128 Ksamples record length per channel. Four Handyscope HS4 oscilloscope models are available, with a maximum sampling rate of respectively 5 MSa/s, 10 MSa/s, 25 MSa/s or 50 MSa/s on all four channels simultaneously.

## **Fast Continuous streaming**

Besides measuring in block mode, the Handyscope HS4 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 HS4s**

When one Handyscope HS4 does not offer enough input channels, the Handyscope HS4 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.

Ch1 = AR V Range: A Probe: A Quick Setup	$\bigcirc \text{ Ch5 } \underset{\text{RR}}{\text{Int}} \bigvee \begin{array}{c} \text{Range:} \\ 4 \nu \end{array} & \begin{array}{c} \text{Probe:} \\ 1 \chi \end{array} \end{pmatrix}$
Ch2 = Rev 2 Range: A Probe: A Tx	Ch6 = AR V Range: A Probe:
O Ch3 500 MR ▼ Range: △ Probe: →	Ch7 ■ AR ▼ Ange: △ Probe: → 4 ∨ △ 1x
O Ch4 == AR V Range: △ Probe: →	Cho === AR V Range: A Probe: 1x

## Software features

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#### Versatile multi channel oscilloscope software

The Handyscope HS4 is delivered with the versatile multi channel oscilloscope software, which transforms the Handyscope HS4 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.

#### 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.

## Analyze fast serial communication protocols

To analyze or debug your serial communications, simply measure the signal(s) transferring the protocol with your Handyscope and have them analyzed and decoded by one of the multi channel oscilloscope software protocol analyzers. The decoded information from the serial communications can be shown in tables, in graphs and in the multimeter.

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A protocol analyzer is a useful tool when developing a hardware and/or software implementation of a communication bus. It can also be used when debugging device or bus failures.

## 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.



## 24/7 Data logging

Measuring long term signal changes with your Handyscope is done with the multi channel oscilloscope software Data logger. The data logger logs your signal, continuously uninterrupted at high speed, 24 hour a day, 7 days a week. Results are immediately shown on the screen and all data can be stored to disk. A convenient toolbar lets you navigate through the stored files to find the important moments in the measurement.

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## **Technical Specification**

Acqu	isition system										
Numb	er of input channels	:	4 analog								
CH1, CH2, CH3, CH4			BNC								
	Туре	:	Single ended								
	Resolution	:	12, 14, 16 bit user selectable								
	Accuracy	:	0.25 % of ful	ll scale ± 1 LSE	3						
	Ranges (Full scale)	:	±200mV ±2V ±20V								
			±400mV	±4V	±40V						
			±800mV	±8V	±80V						
	Coupling	:	AC/DC								
	Impedance	:	1 MO / 30 pF								
	Maximum input voltage (in all range)	:	±200 V (DC + AC peak < 10 kHz)								
	Maximum input voltage										
	1:10 probe (in all ranges)	:	±600 V (DC + AC peak < 10 kHz)								
	Bandwidth (-3dB)	:	DC to 50 MHz maximum								
	AC coupling cut off frequency (-3dB)	:	1 Hz with 1x	probe							
Maxin	num sampling rate	:	HS4-50	HS4-25	HS4-10	HS4-5					
	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					
Sampl	ing clock source										
	Internal	:	Quartz								
	Accuracy	:	±0.01 %								
	Stability	:	±100 ppm over -40 °C to +85 °C ±5 ppm/year								
	Time base aging	:									
	External	:	Extension co	onnector							
	Voltage	:	3.3 V TTL, 5 V	V TTL tolerant	t						
	Frequency range	:	95 MHz to 1	05 MHz							
Memo	bry	:	128 Kpts per	- channel							

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## Handyscope HS4 USB oscilloscope

## 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); (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)
Maximum voltage (SN# >12941)	:	$12 V_{DC}$
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	:	480 g (17 ounce)
I/O connectors		
Channel 1, 2, 3, 4	:	BNC
USB	:	fixed cable with USB 2.0 and USB 1.1 type A
Extension connector	:	D-sub 25 pins female
System requirements		
PC I/O connection	:	USB 2.0 High Speed (480 Mbit/s); (USB 1.1 Full Speed (12 Mbit/s) and USB 3.0 compatible)
Operating 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

The Handyscope HS4 is delivered with:

## Package contents

Instrument	:	Handyscope HS4
Probe	:	4x Oscilloscope Probe 1:1-1:10 - HP-3060
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





## **Related Products**



Oscilloscope Probe 1:100 HP-9258



Differential Probe SI-9002



Oscilloscope Probe 1:1 - HP-2022



Current clamp TP-CC80



Current clamp TP-CC600



Current clamp TP-CC400



Accelerometer TP-ACC20



Rubber Protector TP-RP-HS



Milliohm Meter TP-MM3000