

A 2 channel, 100 MHz USB oscilloscope with arbitrary waveform generator



The **Handyscope HS3** is a two channel single-ended USB oscilloscope with a maximum sampling speed of 100 MSa/s and 128 KSamples memory per channel. Additionally the Handyscope HS3 is equipped with a 2 MHz arbitrary waveform generator, with an output range of -12 V to 12 V (24 V_{pp}). The **Handyscope HS3** is delivered with Multi Channel oscilloscope software, a complete measurement software package that offers all you need for your measurement applications.

Key specifications

Oscilloscope / Spectrum analyzer / Voltmeter

12 bit resolution (14 and 16 bit enhanced resolution)
100 MSa/s sampling
50 MHz bandwidth
128 Kpoints memory per channel
0.2 % DC vertical accuracy
100 ppm timebase accuracy

Arbitrary Waveform Generator

Up to 2 MHz sine, square, triangular and arbitrary waves
-12 to 12 V output (24 V _{pp})
50 MSa/s, 14 bit, 128 KSamples arbitrary waves
900 µV RMS noise level

Models

The Handyscope HS3 is available in four different models that distinguish in maximum sampling rate:

Model	Max. sampling speed
HS3-100	100 MSa/s
HS3-50	50 MSa/s
HS3-25	25 MSa/s
HS3-10	10 MSa/s

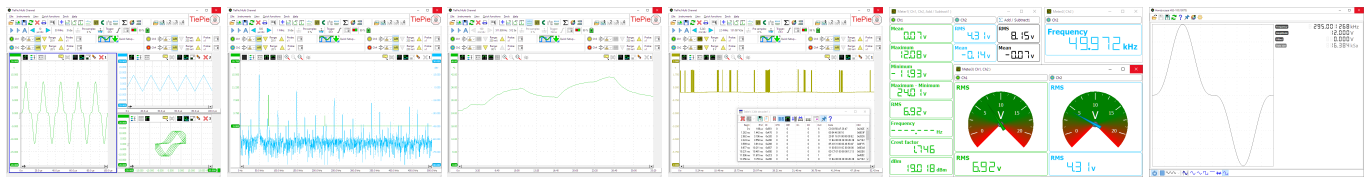
Package contents

The Handyscope HS3 models are delivered with:

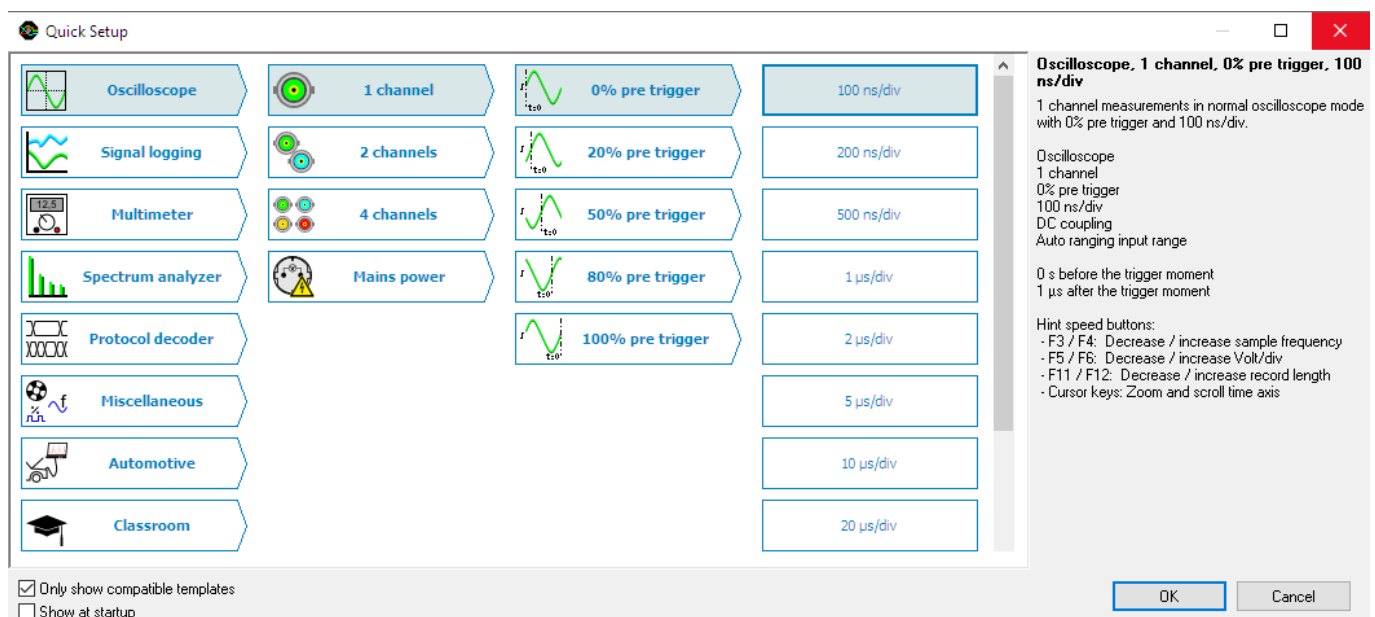
Amount	Item
1	Handyscope HS3
2	Oscilloscope probe HP-3250I
1	Instrument manual
1	Software manual

Multi Channel oscilloscope software

The Handyscope HS3 is standard delivered with the **Multi Channel oscilloscope software**, the world's most versatile measuring software package. Together with the Handyscope HS3, it can be used as Oscilloscope, Spectrum analyzer, Data logger, Multimeter, Protocol analyzer and Arbitrary Waveform Generator.



When knowledge or experience are insufficient to setup a measurement instrument correctly and quickly, using **measurement templates** is a must. The TiePie engineering Multi Channel oscilloscope software provides a large amount of ready to use measurement templates. Most measurement templates are designed to allow performing an advanced measurement in just a few mouse clicks.



You select the measurement template from a tree structure and the instrument will be fully set up. A measurement template contains all settings for a specific measurement as well as additional information regarding the selected template, like e.g. how the instrument and/or accessories need to be connected. Templates can also contain reference signals that show what to expect. Just a few mouse clicks allow to perform a complex measurement. No need to worry or even know about the complex and difficult settings of the instrument itself, you can focus completely on the test subject you are working on.

Work efficiently and save your precious time using the unique measurement templates.

Read more about the Multi Channel oscilloscope software at www.tiepie.com/software

Specifications

Oscilloscope

Acquisition system				
Number of input channels	2 analog, female BNC			
Type	Single-ended			
Resolution	User selectable via software			
Native	8, 12 bit			
Enhanced	14, 16 bit			
DC Accuracy	0.2 % of full scale $\pm$ 1 LSB			
Bandwidth (-3dB)	50 MHz			
AC coupling cut off frequency (-3dB)	$\pm$ 1.5 Hz			
Noise				
200 mV range, 12 bit, 50 MSa/s	210 μ V _{RMS}			
200 mV range, 16 bit, 195 kSa/s	50 μ V _{RMS}			
Input ranges (full scale)	$\pm$ 200 mV	$\pm$ 2 V	$\pm$ 20 V	
	$\pm$ 400 mV	$\pm$ 4 V	$\pm$ 40 V	
	$\pm$ 800 mV	$\pm$ 8 V	$\pm$ 80 V	
Coupling	AC / DC			
Impedance	1 M Ω / 40 pF			
Maximum voltage	200 V (DC + AC peak < 10 kHz)			
Maximum voltage with 1:10 probe	600 V (DC + AC peak < 10 kHz)			
Maximum sampling rates	depending on model, on all channels simultaneously			
Model	HS3-100	HS3-50	HS3-25	HS3-10
8 bit	100 MSa/s	50 MSa/s	25 MSa/s	10 MSa/s
12 bit	50 MSa/s	50 MSa/s	25 MSa/s	10 MSa/s
14 bit	3.125 MSa/s	3.125 MSa/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	10 kSa/s			
Sampling source				
Internal	Quartz			
Accuracy	$\pm$ 0.01 %			
Stability	$\pm$ 100 ppm over -40 °C to 85 °C			
Time base aging	$\pm$ 5 ppm per year			
External	LVTTL, on extension connector			
Input range	100 MHz $\pm$ 2 %			
Memory	128 Kpoints per channel			
8 bit	256 Kpoints per channel			
12, 14, 16 bit	128 Kpoints per channel			

Trigger	
System	Digital, 2 levels
Source	CH1, CH2, digital external, OR, Generator Start, Generator New Period, Generator Stop
Trigger modes	Rising / falling edge, inside / outside window
Level adjustment	0 to 100 % of full scale
Hysteresis adjustment	0 to 100 % of full scale
Resolution	0.025 % (12 bits)/0.006 % (14/16 bits)
Pre trigger	0 to 128 Kpoints (full record length), 1 sample resolution
Digital external trigger	
Input	Extension connector
Range	0 to 3.3 V (5 V max)
Coupling	DC

Arbitrary Waveform Generator

Arbitrary Waveform Generator			
Waveforms	Sine, triangle, square, DC, noise and arbitrary		
Number of output channels	1 analog, female BNC		
DAC resolution	14 bit @ 50 MSa/s		
Output range	-12 V to 12 V		
Amplitude			
Range	0.12 V	1.2 V	12 V
Resolution	13 bit		
Accuracy	0.4 %		
DC offset			
Range	-12 V to 12 V		
Resolution	13 bit		
Coupling	DC		
Impedance	50 Ohm		
Bandwidth	DC to 2 MHz		
Noise level	0.12 V range	1.2 V range	12 V range
	900 μ V RMS	1.3 mV RMS	1.5 mV RMS
Sweep	-		
System characteristics			
System	DDS		
Memory	256 KiSamples		
Maximum Sampling rate	50 MHz		
Sampling source	internal		
Accuracy	$\pm$ 0.01 %		
Stability	$\pm$ 100 ppm over -40 °C to +85 °C		

Other

I/O connectors	
Front	
	
CH1 ... CH2	Female BNC
Rear	
	
USB	Fixed cable with USB type A plug, 1.8 m
Extension connector	D-sub 25 pins female
Power	3.5 mm power socket

Interface	
Interface	USB 2.0 High Speed (480 Mbit/s) (USB 1.1 Full Speed (12 Mbit/s) and USB 3.0 compatible)

Physical				
Instrument	Height	Length	Width	Height
	25 mm	170 mm	140 mm	40 g
Cord length	1.8 m			

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 / 11

Environmental conditions		
	Operating	Storage
Ambient temperature	0 °C to 55 °C	-20 °C to 70 °C
Relative humidity (non condensing)	10 % to 90 %	5 % to 95 %

Power Requirements	
Power from USB port	500 mA max (2.5 W max)
Power via external power input	1500 mA max (7.5 W max)
Minimum voltage	4.5 VDC
Maximum voltage	14 VDC

Certifications and Complies	
CE mark compliance	Yes
RoHS	Yes
EN 55011:2016/A1:2017	Yes
EN 55022:2011/C1:2011	Yes
IEC 61000-6-1:2019 EN	Yes
IEC 61000-6-3:2007/A1:2011/C11:2012	Yes

Probes	
	HP-3250I



Attenuation settings	X1	X10
Bandwidth	6 MHz	250 MHz
Rise time	58 ns	1.4 ns
Input impedance	1 M Ω (scope impedance)	10 M Ω (incl. 1 M Ω scope impedance)
Input capacitance	56 pF + scope capacitance	13 pF
Compensation range	-	10 to 30 pF
Working voltage (DC + peak AC)	300 V, 150 V CAT II	600 V, 300 V CAT II

Package



Instrument	Handyscope HS3
Accessoires	2 x Oscilloscope probe HP-3250I external power cable for second USB port
Drivers	For Windows 10 / 11 via website
Software	For Windows 10 / 11 via website
Software Development Kit	For Windows 10 / 11 and Linux, via website
Manual	instrument and software manuals
Total package weight	Approx. 2 kg

Warranty

Warranty	Two year standard, five years optional, covering all parts and labor, excluding probes
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Customer service

TiePie engineering instruments are designed, manufactured and tested to provide high reliability. In the unlikely event you experience difficulties, the TiePie engineering instruments are fully warranted for two years. This warranty includes:

- No charge for return shipping
- Long-term 7-year support
- Upgrade to the latest software at no charge

Ordering information

Handyscope HS3 Model	Order code
100 MSa/s, 2 year warranty	HS3-100
50 MSa/s, 2 year warranty	HS3-50
25 MSa/s, 2 year warranty	HS3-25
10 MSa/s, 2 year warranty	HS3-10

Available option for the Handyscope HS3 is **W5**: With the extended warranty option, warranty is five years on parts and labor. Add **-W5** to the order code.



TiePie engineering
Koperslagersstraat 37
8601 WL Sneek
The Netherlands

Tel.: +31 515 415 416
Fax: +31 515 418 819
E-mail: sales@tiepie.nl
www.tiepie.com

