Scientech

# Speed up your innovation with a USB oscilloscope

The Handyscope HS3 is a powerful 100 MSa/s USB oscilloscope that can also be used as a multimeter, spectrum analyzer, data logger or protocol analyzer. This USB oscilloscope also contains a function / arbitrary waveform generator that is able to produce every signal that is needed. Together with the 2 measurement channels this oscilloscope is an excellent measurement tool to troubleshoot circuits.

Continuous streaming

Besides measuring in block mode, the Handyscope HS3 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.

## Arbitrary Waveform Generator

The integrated Arbitrary Waveform Generator operates fully independent from the measuring system of the Handyscope HS3. It has a 50 MSa/s sampling clock, a 256K samples deep waveform memory, a 14 bit output resolution and a ± 12 V output range. The arbitrary function generator allows you to generate test signals for your measurements in any shape you like. Several standard signal shapes are available and it is possible to regenerate previously measured signals.
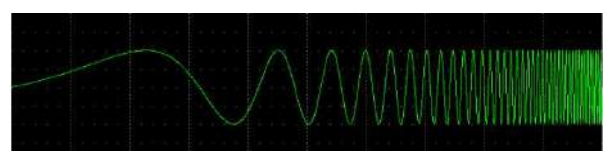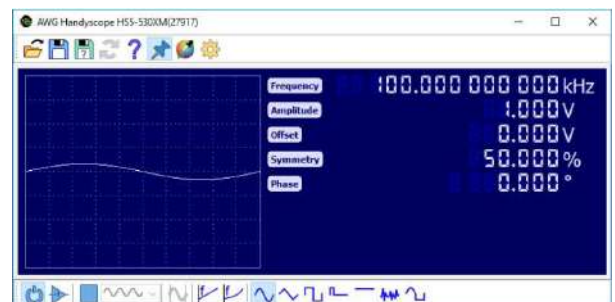
Sweep mode

Combining multiple Handyscope HS3s

When one Handyscope HS3 does not offer enough input channels, the Handyscope HS3 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.
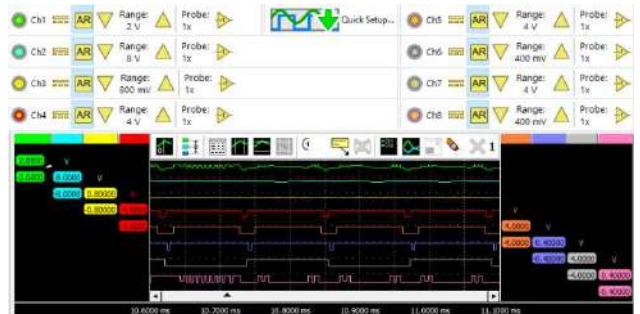
Software features
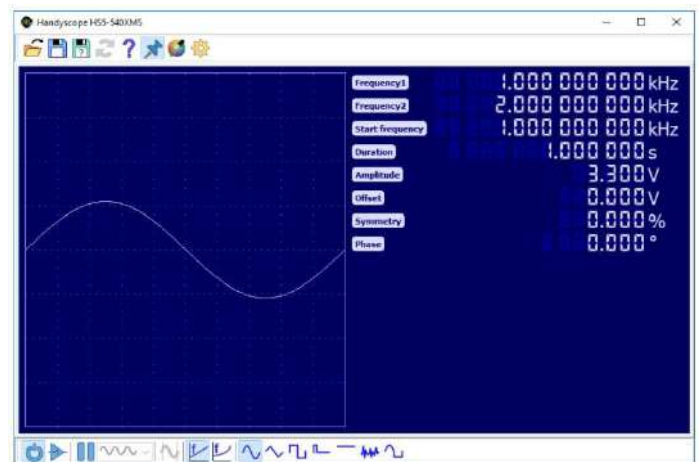
Versatile multi channel oscilloscope software

The Handyscope HS3 is delivered with the versatile multi channel oscilloscope software, which transforms the Handyscope HS3 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.

Comprehensive Arbitrary Waveform Generator

To generate your test signals, the multi channel oscilloscope software also includes a comprehensive Arbitrary Waveform Generator.

An arbitrary waveform generator is an instrument that can generate repetitive or single shot signals. The signals can have a predefined standard shape like a sine wave or a square wave as in a conventional function generator. However, the signals can also have an arbitrary shape, defined by the user. These signals can be created using the multi channel oscilloscope software or an external program or can be signals previously measured by the Handyscope and loaded in the generator.
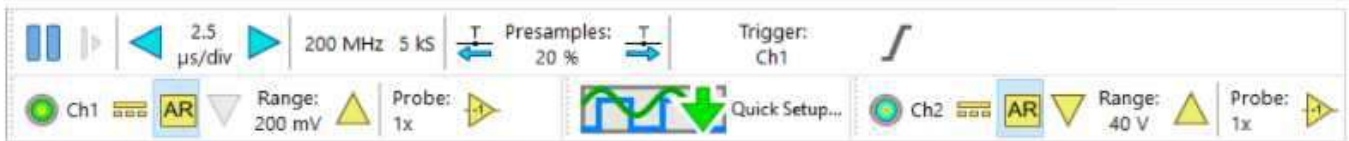

The multi channel oscilloscope software generator can be fully synchronized with the multi channel oscilloscope software oscilloscope, using the dedicated generator trigger signals, allowing the scope to trigger on the start of the

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.

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.
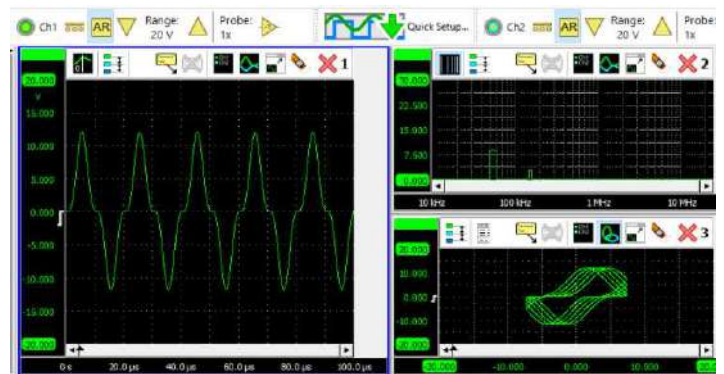
Multimeter

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	:	2 analog
CH1, CH2	:	BNC

Type	:	Single ended			
Resolution	:	8, 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	:	1 MO / 30 pF			

Maximum input voltage (in all range)	:	200V (DC + AC Peak <10kHz)
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)	:	1.5 Hz

Maximum sampling rate	:	HS3-100	HS3-50	HS3-25	HS3-10	HS3-5
8 bit	:	100 MSa/s	50 MSa/s	25 MSa/s	10 MSa/s	5 MSa/s
12 bit	:	50 MSa/s	50 MSa/s	25 MSa/s	10 MSa/s	5 MSa/s
14 bit	:	3.125 MSa/s	3.125 MSa/s	3.125 MSa/s	3.125 MSa/s	3.125 MSa/s
16 bit	:	195 kSa/s	195 kSa/s	195 kSa/s	195 kSa/s	195 kSa/s

Maximum streaming rate	:	10 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	:	Extension connector

Memory

8 bit	:	256 Kpts channel
12, 14, 16 bit	:	128 Kpts per channel

Trigger

System	:	Digital, 2 levels
Source	:	CH1, CH2, AND, OR, digital external, generator start, generator new period, generator stop
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 128 KSamples, 1 sample resolution
Post trigger	:	0 to 128 KSamples, 1 sample resolution
Digital external trigger		
Input	:	Extension connector
Range	:	0 to 3.3 V (5 V max)
Coupling	:	DC

Arbitrary Waveform Generator (independent from acquisition system)

Waveforms	:	Sine, triangle, square, DC, noise and arbitrary		
Number of output channels	:	1 analog, 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 Ω		
Bandwidth	:	DC to 2 MHZ		
Noise level	:	0.12V range 1.2V range 12V range		
900 µV RMS	:	1.3 mV RMS 1.5 mV RMS		

System characteristics

System	:	DDS
Memory	:	256 KiSamples
Maximum Sampling rate	:	50 MHz
Sampling source	:	internal
Accuracy	:	±0.01 %
Stability	:	±100 ppm over -40 °C to +85 °C

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 VDC
Maximum voltage (SN# <12941)	:	6 VDC
Maximum voltage (SN# >12941)	:	12 VDC

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	:	BNC
Generator	:	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/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, 32 and 64 bits Linux (via LibTiePie SDK)

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 HS6 is delivered with:

Instrument	:	Handyscope HS3
Probe	:	2x 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
1:1-1:10 HP-3060

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

Subject to Change