A new standard in portable measuring

High bandwidth
50 MHz

Long record length
1 MiSamples

High Input Range
800 V

High sampling speed
100 MSamples/s

Differential

1 Ch		800 V	CAT II	100MS/s	1 MSa	10 bit	0.3 %	50 MHz	480 Mb	RoHS

The **Handyprobe HP3** is a portable USB oscilloscope with a full differential input that will allow you to measure voltages up to 800 V peak value with a maximum sampling rate of 100 MSamples/s into a memory of 1 MiSamples. The **Handyprobe HP3** 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
High voltage differential input range to **800 V**
10 bit resolution, 0.3 % DC vertical accuracy, 0.2 % typical
Up to 100 MSa/s sampling, 50 MHz bandwidth
Up to 10 MSa/s, 10 bit continuous streaming
Up to 1 MSamples memory

Models

Model	Max. sampling speed
HP3-100	100 MSa/s
HP3-20	20 MSa/s
HP3-5	5 MSa/s

The Handyprobe HP3 is available in three models that distinguish in maximum sampling rate.
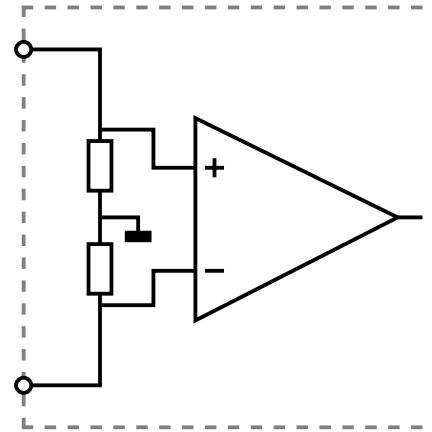
High input range differential input

The Handyprobe HP3 is equipped with a high voltage differential input with a maximum input range of 800 V_{DC} (566 V_{RMS}). The high voltage input range makes it possible to use the Handyprobe HP3 without additional attenuators. This gives the Handyprobe HP3 unequalled possibilities in measuring.

Because of the differential input, it is not possible to create a short circuit to ground through the usb oscilloscope. You can connect the Handyprobe HP3 to any two points in your circuit, without the risk of damaging the scope, the circuit or the computer. This means extra protection for the scope and the PC.

Advantages of a differential input:

- No possibility to create a short circuit to ground through the oscilloscope.
- The Common Mode Rejection Ratio of a differential input is high. If both points have a relative high voltage, but the voltage difference between the two points is small, the voltage difference can be measured in a low input range, resulting in a high resolution.
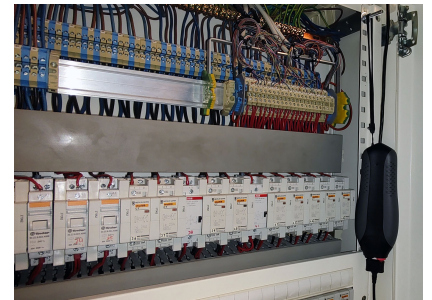
Portable

The Handyprobe HP3 is designed to fit nicely in your hand. Its housing is fitted with soft rubber areas that ensure a good grip on it.

A wrist strap can be attached, to carry the Handyprobe HP3 or to hang it near the test setup.

The Handyprobe HP3 is USB powered, so no bulky external power adapter is required.

Low noise measuring lead

The input of the Handyprobe HP3 high voltage oscilloscope is differential, which means that both sides of the input have a high impedance. There is no connection to ground as in conventional oscilloscopes which are used with coax cables and standard oscilloscope probes.
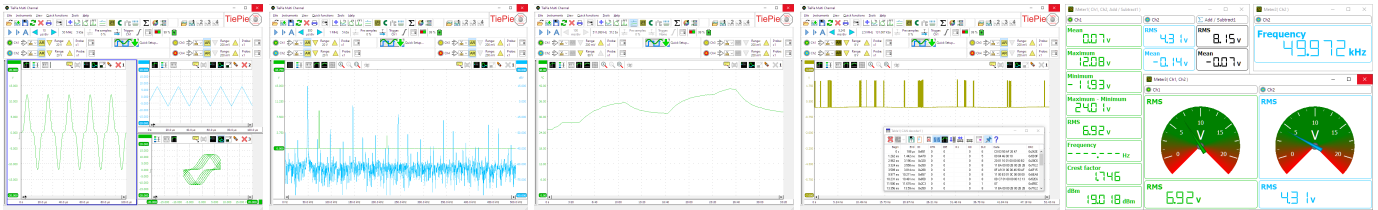
The special low noise Measure Lead TP-C812A is developed for the Handyprobe HP3 high voltage oscilloscope. It is very insensitive to external interfering signals. The two ends can be placed up to two meters apart, while picking up very little interference. With a conventional oscilloscope with standard oscilloscope probes this is not possible. The maximum distance between the positive side and ground of a standard oscilloscope probe is usually limited to approximately 20 cm. And this 20 cm is very susceptible to interference. The Measure Lead TP-C812A for the Handyprobe HP3 high voltage oscilloscope does not have this limitation. Measuring between two distant points is now no problem anymore. The Measure Lead TP-C812A uses a heat and oil resistant silicone isolation and shrouded banana plugs.

Additionally, the Handyprobe HP3 can be delivered with a set of large red and black alligator clips and a set of red and black test probes, which can be placed on the banana plugs of the Measure Lead TP-C812A.
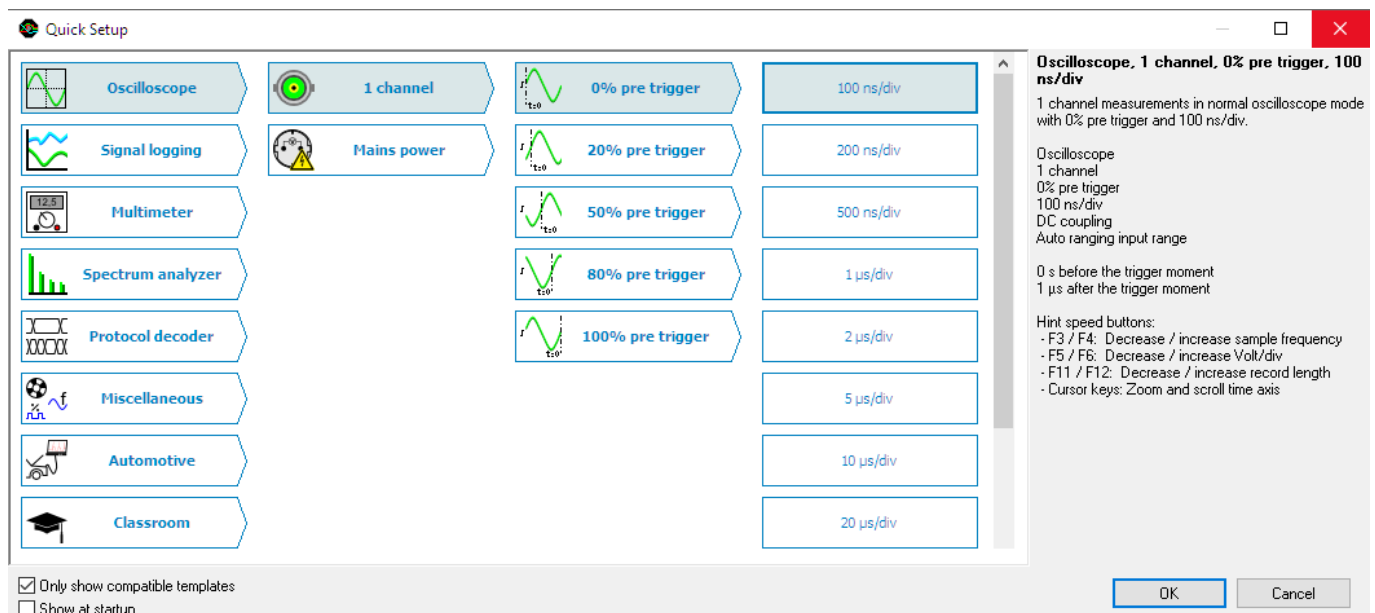
Sophisticated Multi Channel oscilloscope software

The Handyprobe HP3 is standard delivered with the Multi Channel oscilloscope software, **the world's most versatile measuring software package.** Together with the Handyprobe HP3, it can be used as Oscilloscope, Spectrum analyzer, Data logger, Multimeter, Protocol analyzer and Arbitary 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

Models

The Handyprobe HP3 high voltage oscilloscope is available in 3 models that distinguish in maximum sampling rate and maximum streaming rate:

Order code	Max. sampling speed	Max. streaming speed
HP3-100	100 MSa/s	10 MSa/s
HP3-20	20 MSa/s	2 MSa/s
HP3-5	5 MSa/s	500 kSa/s

Available options for the Handyprobe HP3 are:

- **XM**: With the extended memory option, 1 MSamples memory is available. Without this option, the models have 16 KSamples memory.
- **PS**: With the Professional Set option, the Handyprobe HP3 is delivered in a convenient carry case, together with several accessories. See package contents for more details.
- **W5**: With the extended warranty option, warranty is five years on parts and labor. Without this option, the models have two years warranty on parts and labor.

Package contents

The Handyprobe HP3 is available as Professional Set (option **PS**) and as standard set. The sets contain:

	Professional Set	Standard set
Carry case	Carry case BB271	Cardboard box
Instrument	Handyprobe HP3	Handyprobe HP3
Measure lead	Measure Lead TP-C812A	-
Alligator clips	Alligator Clip TP-C80I, red and black	-
Test probes	Test Probe TP-TP90, red and black	-
Accessories	Wrist strap	-
Software	for Windows 10/11 64 bit via website	for Windows 10/11 64 bit via website
Driver	for Windows 10/11 64 bit via website	for Windows 10/11 64 bit via website
Software Development Kit	for Windows 10/11 64 bit and Linux,via website	for Windows 10/11 64 bit and Linux via website
Manuals	instrument manual and software manual color printed and digital via website	instrument manual and software manual, via website

Specifications

Acquisition system				
Number of input channels	1 analog, isolated 4 mm banana sockets			
Type	Differential			
Resolution	10 bit			
DC Accuracy	0.3 % of full scale $\pm$ 1 LSB, 0.2 % typical			
Input ranges (full scale)	$\pm$200 mV	$\pm$2 V	$\pm$20 V	$\pm$200 V
	$\pm$400 mV	$\pm$4 V	$\pm$40 V	$\pm$400 V
	$\pm$800 mV	$\pm$8 V	$\pm$80 V	$\pm$800 V
Coupling	AC/DC			
Impedance	2.1 MΩ / 15 pF			
Noise	540 μV_{RMS} (200 mV range, 12 bit, 50 MSa/s)			
Maximum voltage	600 V_{RMS} CAT II; derated at 3 dB/decade above 20 kHz to 25 Vpk-pk at 50 MHz			
Maximum Common Mode voltage	200 mV to 8 V range	12 V		
	20 V to 80 V range	120 V		
	200 V to 800 V range	800V		
Common Mode rejection Ratio	60 dB			
Bandwidth (-3dB)	50 MHz			
AC coupling cut off frequency (-3dB)	$\pm$1.5 Hz			
Rise time	10 ns			
Overshoot	1 %			
Maximum sampling rates	HP3-100	HP3-20	HP3-5	
Realtime	100 MSa/s	20 MSa/s	5 MSa/s	
Maximum streaming rates	HP3-100	HP3-20	HP3-5	
Realtime	10 MSa/s	2 MSa/s	5 MSa/s	
Sampling source	Internal, Quartz			
Accuracy	$\pm$0.01 %			
Stability	$\pm$100 ppm over -40 ^{O}C to 85 ^{O}C			
Time base aging	$\pm$5 ppm per year			
Memory	standard model	XM option		
	16384 points	1048576 points		

Trigger	
System	Digital, 2 levels
Source	CH1
Trigger modes	Rising / falling edge
Level adjustment	0 to 100 % of full scale
Hysteresis adjustment	0 to 100 % of full scale
Resolution	0.01 % (10 bits)
Pre trigger	0 to 1048576 points (full record length), 1 sample resolution

I/O connectors	
CH1	isolated 4 mm banana sockets
USB	Fixed cable with USB type A plug, 1.8 m

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	Widtht	weight
	25 mm	177 mm	68 mm	290 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 ^{O}C to 55 ^{O}C	-20°C to 70 ^{O}C
Relative humidity (non condensing)	10 % to 90 %	5 % to 95 %

Power Requirements	
Power from USB port	400 mA max (2 W max)

Certifications and Compliances	
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

Measure lead	Measure Lead TP-C812A		

Connectors			
Instrument side	dual 4 mm shrouded banana plug		
Test point side	red and black 4 mm shrouded banana plugs		
Bandwidth	4 MHz		
Safety	CAT III, 1000 V, double isolated		
Lengths	Total	To split	Individual ends
	2000 mm	800 mm	1200 mm
Weight	100 g		
Color	black		
Color coding rings	5 x 3 rings, various colors		

Test Probes	Test Probe TP-TP90			

Connector	4 mm shrouded banana socket			
Rated voltage	1000 V CAT II			
Rated current	10 A			
Dimensions	Length	Width	Tip diameter	Tip length
	91 mm	16 mm	2 mm	17 mm
Weight	7 g			
Color	Black or Red			

Alligator Clips	Alligator Clip TP-C80I			

Connector	4 mm shrouded banana socket			
Rated voltage	1000 V			
Rated current	32 A			
Dimensions	Length	Width	Height	Clamp range
	82 mm	13 mm	34 mm	22 mm
Weight	13 g			
Color	Black or Red			

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

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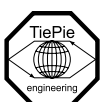
- No charge for return shipping
- Long-term 7-year support
- Upgrade to the latest software at no charge

Ordering information

Handyprobe HP3 Model	Order code
100 MSa/s, 2 year warranty	HP3-100
20 MSa/s, 2 year warranty	HP3-20
5 MSa/s, 2 year warranty	HP3-5

Available options for the Handyprobe HP3 are:

- **XM**: With the extended memory option, 1 Mpoints memory is available. Add **XM** to the order code.
- **PS**: With the Professional Set option, the Handyprobe HP3 is delivered in a convenient carry case, including Measure lead, alligator clips and test probes. Add **G** to the order code.
- **W5**: With the extended warranty option, warranty is five years on parts and labor. Add **-W5** to the order code.

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