-ARBITRARY WAVEFORM GENERATOR
-STORAGE OSCILLOSCOPE
-SPECTRUM ANALYZER
-MULTIMETER
-TRANSIENT RECORDER

Computer Controlled Measuring Instrument

HANDYSCOPE HS3

-USB 2.0 or 1.1
-5 MHz - 100 MHz
-8 to 16 bit

Universal Measuring System

HANDYSCOPE

The Handyscope-HS3 is a powerful computer controlled measuring instrument that consists of four measuring instruments: a Multimeter, Oscilloscope, Spectrum analyzer and Transient recorder. Also an AWG (Arbitrary Waveform Generator) is available. This new powerful and compact measuring instrument can solve almost every measurement problem.

With the integrated AWG you can generate any signal you want. The software is easy-to-use and has a lot of analyzing tools that will improve productivity and measuring quality. A large full screen signal display, storage and analyzing complex signals, advanced trigger facilities and great color print out is the new way for measuring and analyzing your signals today.

AWG *Arbitrary Waveform Generator*

The arbitrary waveform generator offers five default signal shapes: sine wave, triangle, square, DC and white noise with a 14 bit resolution. The selected signal shape is immediately shown in the display of the generator.

The amplitude of the signal can be freely set between 0 V and ±12 V peak. A DC offset between 0 and ±12 V can be applied to the signal. Also the symmetry of the signal can be changed, from 1% to 99%. The frequency of the signal can be set from almost 0 to 2 MHz.
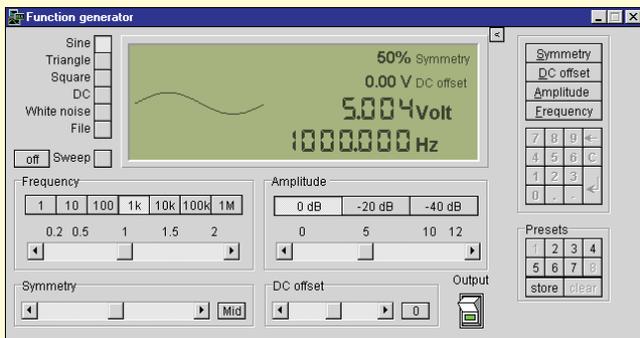
Digital Storage Oscilloscope

The oscilloscope is an instrument with which electrical voltages varying in time can be displayed. With the oscilloscope time dependent electrical signals can be examined easily.

The 100 MHz* sampling oscilloscope has separated voltage input channels, which can be configured individually. It is a digital sampling oscilloscope. That means that the oscilloscope takes samples at fixed times. From each sample the value is determined and the size is displayed at the screen. The screen is filled with all samples. Between two adjacent samples on the screen a line is drawn. The speed at which the samples are taken, is adjustable.

Cursors are available to perform voltage, time or frequency measurements on the displayed signal.

*Sample rate depends on the model. Sample rate ranges are: 5 MHz, 10 MHz, 25 MHz, 50 MHz, 100MHz.*
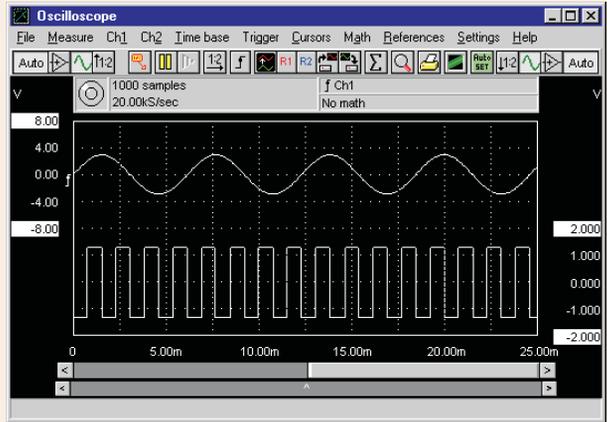
measurement	value	unit
True RMS	2.072	V
Peak-Peak	5.865	V
Mean	0.000	V
Maximum	2.933	V
Minimum	-2.933	V
dBm	46.326	dBm
Power	42.913	W
Crest	1.416	
Frequency	162.963	Hz
Duty cycle	56.53	%
Rise time left	1.810	msec
Rise time right	1.810	msec
Sample time left	12.280	msec
Sample time right	85.910	msec
Sample time diff.	73.630	msec
Cursor frequency	13.581	Hz
Voltage left	0.014	V
Voltage right	0.009	V
Voltage diff.	0.006	V
Slew rate left	59161E-03	V/µs
Slew rate right	59215E-03	V/µs

When a quick indication of the input signal is required, a simple click on the auto setup button will immediately give a good overview of the signal. The auto setup function ensures a proper setup of the time base, the trigger levels and the input sensitivities.

Two sophisticated cursor read outs have 21 possible read outs. Besides the usual read outs, like voltage and time, also quantities like rise time and frequency are displayed.

T&M Instruments For The PC

Spectrum Analyzer
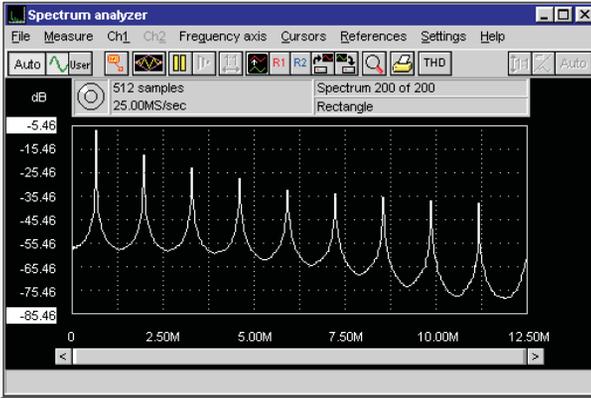
The common way to examine electrical signals is in the time domain, using an oscilloscope. The time domain is used to determine amplitude, time and phase information, which is necessary to describe the behaviour of an electrical system.

Not all electrical systems can be characterised in the time domain. Circuits like filters, amplifiers, oscillators, mixers, modulators and detectors can be characterised best by their frequency behaviour. That frequency behaviour is best obtained by observing the electrical signals in the frequency domain. To display the frequency domain, an instrument is needed that can distinguish different frequencies from each other and measure the signal size at the different frequencies. An instrument that can display the frequency domain is the spectrum analyzer. It graphically displays voltage as a function of frequency.

Voltmeter
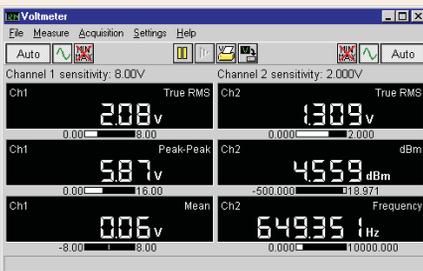
If from the input signals only the size is important and not the time information or frequency components, a voltmeter is a suitable instrument to measure with. The software is equipped with a two channel digital voltmeter. The voltmeter functions as follows:

1: A measurement is performed (minimal 200 samples). 2: The measured data is processed, e.g. for calculating the RMS value or the mean value. Eleven different operations are available. 3: The calculated values are displayed, e.g. add CH1 and CH2 and display on channel one. Sixteen different display methods are available.

For each channel the voltmeter has up to three displays to present the measured and calculated values. The value displayed in a display is fully configurable. Also for each display a bar graph is available, to give a quick overview of the signal size in relation to the input range.

Transient Recorder
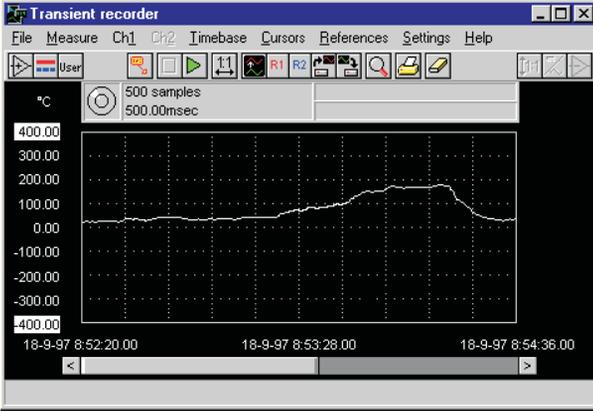
For measuring slowly changing signals (e.g. the temperature change in a room) the transient recorder is the most suitable instrument.

The transient recorder is a two channel, direct registering measuring instrument, displaying the changes of the input signal graphically on the screen or on paper.

The transient recorder measures at settable, fixed times and processes the measured value if necessary. The number of measurements to be taken is also settable.

The transient recorder measures the input signals at adjustable times. The time between two measurements is adjustable from 0.01 second to 500 seconds. The number of samples is also adjustable from 1 to 131060. The maximum measuring time is 500 sec x 131060 samples = 65530000 seconds (758 days).

Probe HP9060 1:1-1:10

The probe HP9060 is a 1:1-1:10 selectable passive-high impendance oscilloscope probe designed and calibrated for use on the Handyscope. The probe incorporates a three position slide switch in the head which selects the attenuation of X1, X10 or a ground reference position. The X10 attenuation is achieved by means of an attenuation network. The Handyscope is standard deliverd with two HP9060 probes.

Specification Handyscope-HS3

Handyscope-HS3 Software

Oscilloscope
Bandwidth:	25 MHz
Sample rate maximum:	See ordering
Sample rate minimum:	0.01 Hz
Time base:	to 655 ksec/div
Time base magnification:	1 x to 50 x
Y-axis setting:	drop and drag
Pre samples:	0 to 131060
Post samples:	0 to 131060
Trigger time out:	0 to infinite sec.
Trigger input:	CH1, CH2, EXT, keyboard

Measuring modes:
CH1, CH2, CH1+CH2, CH1-CH2, CH2-CH1 and X-Y mode.

Referency:	CH1, CH2

Spectrum analyzer
Max frequency rate:	Sample rate/2
Min frequency rate:	0.003 Hz
Frequency accuracy:	<0.02%
Amplitude axis:	linear / dB
Frequency axis:	linear, logarithmic octave bands,1/3 octave bands
FFT Windows:	rectangle, Hanning, Hamming, Blackman, Bartlett
FFT points:	16 to 32768
Distortion calculations:	1 to 100 harmonics in dB or %
Averaging:	1 to 256 spectra
Measuring method:	normal, max mode

True RMS voltmeter
Accuracy:	0.2% +/- 1 LSB
Display methods:	11 math functions available
Frequency range:	10 Hz to sample rate/2
Number of displays:	1 to 6 user selectable

Transient recorder
Measure points:	1 to 131060
Measure time (between to points):	0.01 sec to 500 sec

Cursor read out
Read outs: True RMS, Peak-Peak, Mean, Maximum, Minimum, dBm, Power, Crest factor, Frequency, Duty cycle, Rise time left and right, slew rate left and right, THD (in spectrum analyzer)
Fonts:	user selectable
Colours:	background user selectable

Comment
User text:	three text lines for every print out
Comment text:	three special text lines
Text balloons:	user selectable text, colours and arrows

Print out
Size:	full printer size (A4, A3)
Colours:	black / white and colour prints

Handyscope-HS3 Hardware

Aquisition system
Max sample rate:	See ordering
Memory:	256 kWord
Input sensitivity:	0.1 to 80 Volt full scale
Resolution:	12, 14 or 16 bits, 0.025%
Accuracy:	0.2 % ± 1 LSB
Input impedance:	1 Mohm / 30 pF
Input coupling:	AC / DC
Analog bandwidth:	50 MHz
Maximum input voltage:	±200 volt (DC+AC peak <10KHz)

Triggering
Trigger mode:	free run, delayed run, auto, single, edge triggering, window, peak, external
Trigger system:	digital, two trigger levels
Trigger source:	CH1, CH2, External and Keyboard
Trigger level:	0 to 100% full scale
Trigger resolution:	0.025% (12 bits)
Pre triggering:	0 to 131060 samples
Post triggering:	0 to 131060 samples
Trigger delay:	0 to 131060 samples

Arbitrary waveform generator
Sample rate:	0-50 MHz
Resolution:	14 bit
Output impedance:	50 Ohm
Frequency range:	0-2 MHz
Frequency step:	0.01Hz
Output amplitude:	0 - ±12 volt
Amplitude step:	0 - ±0.1 Volt 8192 steps
	±0.1 - ±1.0 Volt 8192 steps
	±1.0 - ±12 Volt 8192 steps
DC level:	0 - ±12 Volt in 8192 steps
Waveforms:	sine, triangle, square, noise, DC and user defined (256 Kword)
Symmetry:	1-99%, 1% steps

General
Power supply:	from USB port
Power consumption:	500 mAmp @ 5Volt
Connection:	USB 1.1 and USB 2.0 port
Cable length:	1.8 meter (70 inch)
Ambient temperature:	15 °C to 25 °C (59 °F to 77 °F)
Dimensions:	25x170x140mm (H x L x W)
Weight:	480 gram (17 ounce)

Ordering information
The Handyscope-HS3 is direct connected to an USB 2.0 port (and downward compatible with USB 1.1) of a PC. Windows based software can be installed and measuring can be started.

The Handyscope-HS3 is delivered with:
-A complete software package for Windows 98/2000/ME/XP
-Instruction manual
-Two switchable (1:1 and 1:10) oscilloscope probes

Ordering code:
5	MHz sample rate:	Hs3 - 5MHz
10	MHz sample rate:	HS3 -10MHz
25	MHz sample rate:	HS3- 25MHz
50	MHz sample rate:	HS3- 50MHz
100	MHz sample rate:	HS3-100MHz

FOR MORE INFORMATION, DEMO SOFTWARE, SOFTWARE, SOURCE CODE AND DLL'S SEE ON OUR INTERNET PAGE: HTTP://WWW.TIEPIE.NL

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