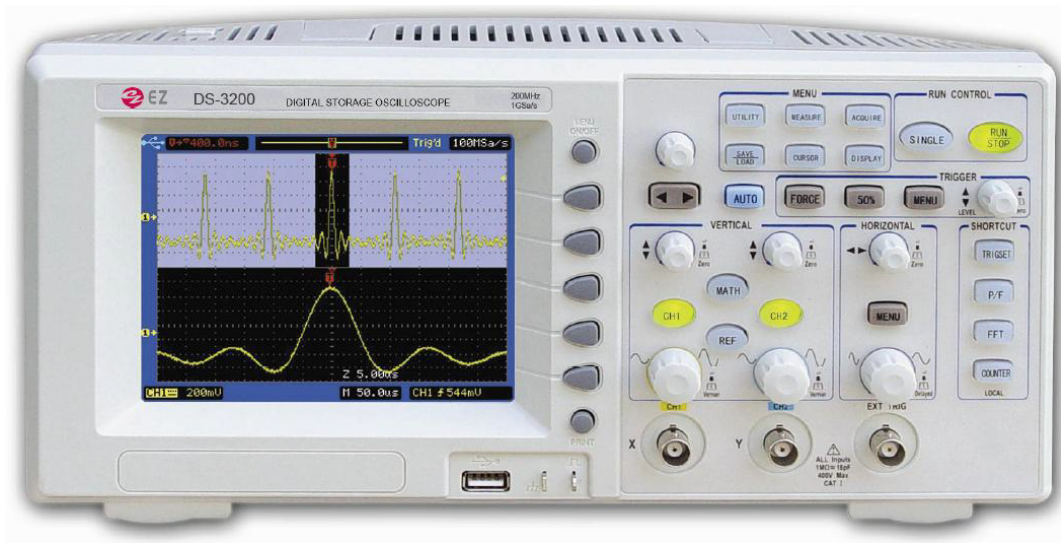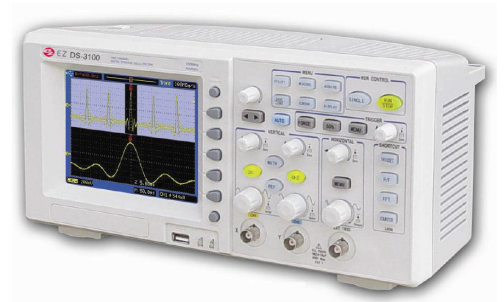# DIGITAL STORAGE OSCILOSCOPE

DS-3000 series : DS-3060/DS-3100/DS-3200

Innovative Slim Size & Design 320mm(W)×156.5mm(H)×123mm(D)

Model: DS-3200

Model: DS-3100

● General Features

- ◆ Bandwidth
  - DC-60MHz: DS-3060
  - DC-100MHz: DS-3100
  - DC-200MHz: DS-3200
- ◆ Max. 1GSa/s Real-time Sampling Rate
- ◆ Equivalent Sampling Rate: 50GSa/s
- ◆ With up to 2.4Mpts Memory Depth, more signal details can be observed
- ◆ High speed screen update by a microprocessor
- ◆ 5.6-inch TFT Color LCD with better clearance, multi-color schemes available
- ◆ Built in Digital Filter

● Convenient Features

- ◆ Built in Embedded Help Manual
- ◆ Alternating Trigger Function is available for stable display of asynchronous signals
- ◆ Auto Calibration
- ◆ Built in 5 digit hardware frequency counter
- ◆ Save internal memory of 10 setups and waveforms each
- ◆ Save to an external storage of Setup, Track, BMP bitmap, CSV file
- ◆ Automatic measurement up to 24 kinds of parameters
- ◆ Firmware upgrade can be carried out through an USB port
- ◆ PRINT Key pressed to directly store the screen image(BMP) or the waveform date(CSV) in to USB disk

Prominent Signal Measuring Capability

Observation of the signal more clearly
5-6 inch Color TFT LCD for watching signals from any viewing angle. Different from traditional oscilloscope's fixed menu display. DS-3000 series can display the waveform to full screen according to your need

Menu On/Off Key enables users to view 25% display more
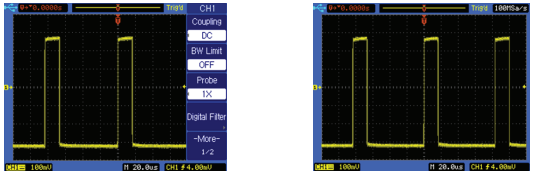
Picture 1. Normal display with Menu On   Picture 2. Full-Screen display with Menu Off

2.4Mpts Long Memory Depth
Even under slow time base setting, user can maintain a high sampling rate. It allows users to observe the signal in more detail. In a given sampling speed, the more sampling points mean the longer the time observed
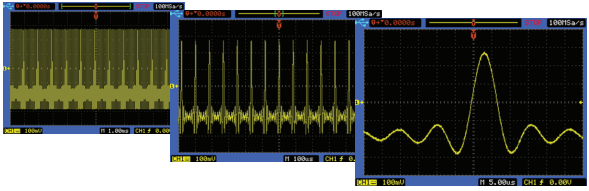

Picture 3. Deep Memory waveform display (Maintain the same sampling rate)

Delayed Sweep mode for both details and the whole waveform
In delayed sweep mode, users can view simultaneously the details on a particular part and the whole waveforms.

Through the split display, users can zoom in on a particular area on the signal, while still viewing the entire captured waveforms.
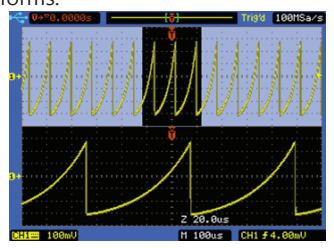

Picture 4. Delay mode to observe signal details

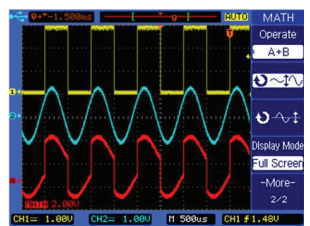## Powerful Functions

Auto Scale
Auto scale can evaluate all inputs signals and set the correct condition for the best signal display.
Single period or Multi period can be selected to display in the current display window.

Math and FFT (Fast Fourier Transforms)
DS-3000series provides some important math operations including addition, subtraction, multiplication and 1,024 point FFT.
For time-domain signal analysis, users can addition, subtraction multiplication processes.
For frequency-domain signal analysis, users have FFT with five windowing operation (Rectangular, Hanning, Blackman, Hamming, Flat-Top).
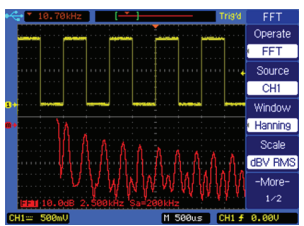

Picture 5. FFT signal (dBV)   Picture 6. Addition operation

Single Mode
The oscilloscope acquires a single trigger of data when trigger condition is met

24 Automatic Parametic Measurements
DS-3000series provides up to 24 automatic parametic measurements. Users can install three commonly used screen measurements or display 24 measurements of the current selected source on the screen.
Without complicated operation, users can get the measurement results easily and quickly.
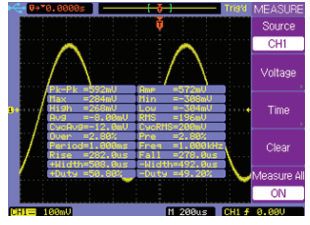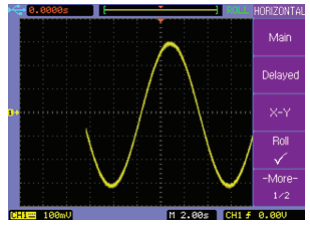

Picture 7. Auto Measurement display

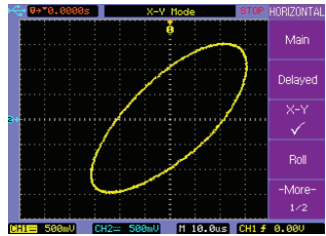### Convenient observation of all signals
Roll mode
By using the Roll mode, the change of ultra slow speed signal can be observed.

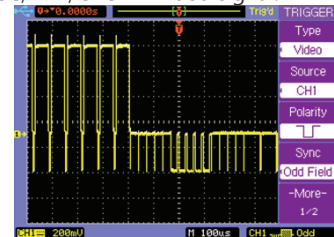Picture 8. Slow speed signal in Roll mode

X-Y mode
In X-Y mode, CH1 becomes X input and CH2 becomes Y input. Lissajou's figure can be displayed to calculate phase difference of same-frequency signals.

Picture 9. X-Y Mode

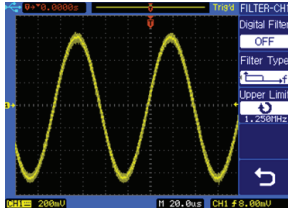### Video Trigger
DS-3000 series synchronously trigger on specified line of field of the standard NTSC, PAL, SECAM video signal.
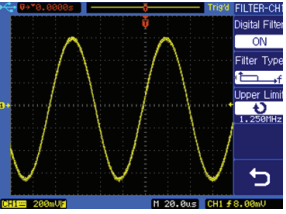

Picture 10. Video trigger mode

Digital Filter
DS-3000 series provide digital filters including
LPF (Low Pass Filter), HPF (High Pass Filter), BPF(Band Pass Filter)
BRF(Band Reject Filter)

Picture 11. Signal with noise   Picture 12. Signal processed with LPF

SPECIFICATIONS

Spec / Model	DS-3060	DS-3100	DS-3200
Data Acquisition			
Real-time sampling rate	Max. 1GSa/S		
Equivalent sampling rate	Max. 50Ga/S		
Memory Depth	2.4Mpts per Channel, 1.2Mpts per Dual Channel		
Vertical A/D resolution	8 Bits		
Sampling mode	Sample, Peak Detect, Averaging		
Vertical System			
Channel	Analog input channel: 2, Trigger input channel: 1		
Bandwidth	60MHz	100MHz	200MHz
Coupling	DC, AC and GND		
Rise Time	<5.83ns	<3.50nS	<1.75nS
Volt/div	2mV/div ~ 5V/div (1-2-5 step)		
Vertical Gain Accuracy	2mV/div ~ 5mV/div: ±4% of reading±0.1div×V/div+0.5mV 10mV/div ~ 5V/div: ±3% of reading±0.1div×V/div+1mV		
Offset Range	±8div		
Probe attenuation factor	×1, ×10, ×100, ×1,000		
Input impedance	1MΩII18pF		
Delay Differential	±150pF		
Max input voltage	400V (DC+AC Peak @1MΩ)		
Probe compensation output	3Vp-p, 1KHz		
Horizontal System			
Time/Div	10ns~50s/div	5ns~50s/div	2ns~50s/div
Mode	Main, Delayed, X-Y and Roll		
Accuracy	±0.01%		
X-Y Mode — Input	CH1: X-axis input, CH2: Y-axis input		
X-Y Mode — Bandwidth	60MHz	100MHz	200MHz
X-Y Mode — Phase error	±3°		
Trigger			
Trigger source	CH1, CH2, EXT, EXT/5, LINE, Alternating		
Trigger mode	AUTO, NORMAL, SINGLE		
Trigger coupling	AC, DC, LF-reject, HF-reject		
Trigger type	Edge, Pulse width, Video		
Trigger level range	±8div, EXT: ±1.6V, EXT/5: ±8V		
Trigger sensitivity	0.1div ~ 1.0div		
EXT input impedance	1MΩII18pF		
EXT Max input voltage	400V (DC+AC peak, @1MΩ)		
Measurement			
Voltage	Max, Min, VPP, High, Low, Amplitude, Average, RMS, Overshoot, Preshoot, Cycle RMS, Cycle average		
Time	Frequency, Period, Rising Time, Falling Time, +Width, −Width, +Duty, −Duty, Delay, Phase, X@Max, X@Min		
Math	CH1+CH2, CH1−CH2, CH1×CH2, FFT (1,024points)		
Cursor	Auto, Manual, Track		
Frequency counter	5 digit frequency counter up to full bandwidth		
Storage / Interface			
Internal storage	10 setup files & 10 trace files		
File format	Setup, Waveform, Trace, BMP and, CSV file		
Interface	USB Host & Device, RS-232C and Pass /Fail Out		
Display			
LCD	5.6-inch TFT Color LCD		
Resolution	320(horizintal) × 234(vertical) dot matrix		
Waveform display — Scale	Menu ON: 8div(vertical)×10div(horizontal) or 200×250 dots, Menu OFF: 8div(vertical)×12div(horizontal) or 200×3000 dots		
Waveform display — Type	Vector, Dot		
Waveform display — Interpolation	(Sinx)/x, Linear		
Waveform display — Persistence	Off, Infinite		
Waveform display — Format	YT / XT		
Other specification			
Temperature & Humidity	0℃ ~ 40℃, ≤90%RH		
Line voltage	99V ~ 242V AC, 47Hz ~ 440Hz		
Power consumption	Approx. 50W		
Dimension	320mm(W) × 156.5mm(H) ×123mm(D)		
Weight	Approx. 2.5Kg		