



The GRS-6000A Series is a Real-Time/Digital Storage Oscilloscope, which provides both analog and digital storage features in one product. When original signals are correctly represented and fast updated, the GRS-6000A Series also makes the waveform storage possible at the same time. With Equivalent Time Sampling at 500MSa/s, the GRS-6000A Series is capable of reconstructing repetitive waveforms up to 50MHz/30MHz in an accurate and detailed fashion. The waveform storage could be done at just a press of the RUN-STOP button, or through Single Trigger mode to capture the single-shot event. 10 Reference Waveforms could be saved and recalled for waveform comparison. Numerous functions as Average, Pre-Trigger, Roll mode, Peak Detect, Envelop, Persistence, and X-Y mode are available to fit in various measurement applications. RS-232C Interface and the free Remote Control Software enable the functions of monitoring, remote controlling, as well as waveform storage in PC.

**GRS-6052A(50MHz)**  
**GRS-6032A(30MHz)**

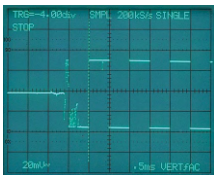


## ANALOG + DIGITAL STORAGE

GRS-6000A Series real time and digital storage oscilloscope provides both analog and digital storage features in one product. It is extremely useful for The applications, which need real time measurements under analog mode and waveform storage functions under digital storage mode. 500MSa/s ET Sampling With Equivalent Time Sampling ( ET Sampling ) technique, GRS-6052A/6032A, running at 500MSa/s sampling speed max., Are able to reconstruct repetitive waveforms up to 50MHz/30MHz in an accurate and detailed fashion.

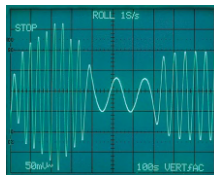
## DIGITAL STORAGE

The waveform storage could be done at just a press of the "RUN-STOP" button , or through Single Trigger mode to capture the single-shot event. 10 Reference Waveforms could be saved and recalled for waveform comparison. The "Average" function, "Pre-Trigger" function, Roll mode, and X-Y mode are available to fit in various measurement applications.



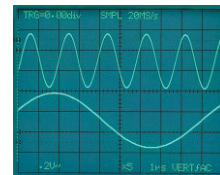
**Pre-Trigger**

GRS-6000A Series provide Pre-Trigger function, which allows user to observe Pre-Trigger waveform up to 10 divisions ahead of the trigger point.



**ROLL Mode**

The low-speed transient event of the input signal could be viewed easily under ROLL Mode. The waveform will roll on from right to the left to show the updated input signal all the time.



**ALT-MAG**

With ALT-MAG function, the user could expand the waveforms by 5, 10, or 20 times for a more detailed waveform observation. Both original waveforms and expanded waveforms could be shown on the screen at the same time.

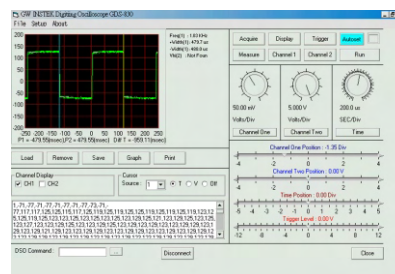
## RS-232 AND REMOTE CONTROL SOFTWARE

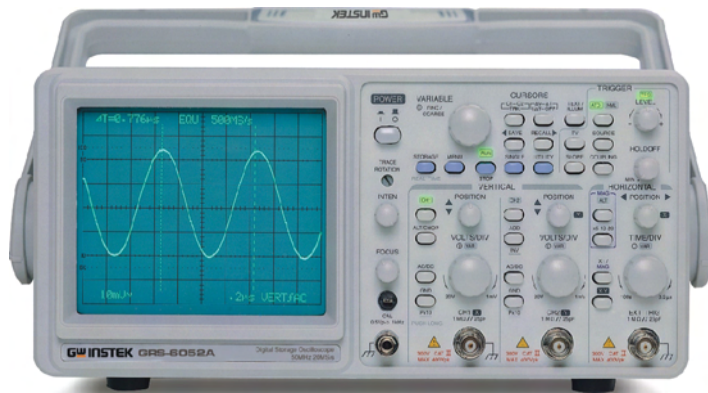
Through RS-232C Interface and the Remote Control Software, the waveform on the oscilloscope screen could be displayed and updated on the PC screen.

The graphic user interface provides a friendly environment for an user to do his remote control jobs on the PC easily.

The waveform data could be converted into BMP, PCX, TIFF, PNG, or JPEG file for documentation.

## Remote Control Software





GRS-6052A/6032A

**FEATURES**

- \* GRS-6052A : DC~50MHz Bandwidth, 100MSa/s, 2kW/CH x 2
- GRS-6032A : DC~30MHz Bandwidth, 100MSa/s, 2kW/CH x 2
- \* Equivalent Time Sampling of 500MSa/s max.
- \* Acquire Mode : Peak Detect, Envelop, Persistence
- \* Pre-Trigger Function 0 ~ 10 div
- \* ROLL Mode to 100s/div
- \* Waveform SAVE/RECALL 10 sets (REF0~REF9)
- \* Averaging Function (2 ~ 256)
- \* Smoothing Function ON/OFF
- \* Max. Sweep Rate 10ns/div
- \* ALT-MAG Function (x5, x10, x20)
- \* Cursor Readout Function:  $\Delta V, \Delta T, 1/\Delta T$
- \* Panel Setting SAVE/RECALL 10 sets (M0~M9)
- \* VERT Mode Triggering
- \* RS-232C Interface

SPECIFICATIONS		GRS-6052A	GRS-6032A
		50MHz, 100MSa/s, 500MSa/s (ETS)	30MHz, 100MSa/s, 500MSa/s (ETS)
<b>CRT</b>			
Type and Acceleration ILLUM Z-axis Input	6-inch CRT , 10kV Front panel control Sensitivity : at least 5V Polarity : positive going input decrease intensity Max. input voltage:30V(DC+ACpk) Input Impedance :approx. 33k $\Omega$	6-inch CRT , 2kV Front panel control Sensitivity : at least 5V Polarity : positive going input decrease intensity Max. input voltage:30V(DC+ACpk) Input Impedance :approx. 47k $\Omega$	
<b>VERTICAL SYSTEM</b>			
Deflection Coefficient and Accuracy	1mV ~ 2mV/div $\pm 5\%$ , 5mV ~ 20V/div $\pm 3\%$ , 14 steps in 1-2-5 sequence	1mV ~ 2mV/div $\pm 5\%$ , 5mV ~ 20V/div $\pm 3\%$ , 14 steps in 1-2-5 sequence	
Variable Continuously Bandwidth (-3dB)	2.5 : 1 ~ min. 50V/div 1mV ~ 2mV/div: DC~7MHz 5mV ~ 20V/div: DC~50MHz CH1, CH2, DUAL (ALT or CHOP)	2.5 : 1 ~ min. 50V/div 1mV ~ 20mV/div: DC~7MHz 5mV ~ 20V/div: DC~30MHz CH1, CH2, DUAL (ALT or CHOP)	
Vertical Mode	Approx. 250kHz	Approx. 250kHz	
Chopper Frequency	CH1+CH2, CH1-CH2	CH1+CH2, CH1-CH2	
Sum or Difference	CH2	CH2	
Invert	1M $\Omega$ $\pm 2\%$ //approx. 25pF AC, DC, GND	1M $\Omega$ $\pm 2\%$ //approx. 25pF AC, DC, GND	
Input Impedance	Max. 400V(DC+ACpeak)	Max. 400V(DC+ACpeak)	
Input Coupling			
Input Voltage			
<b>HORIZONTAL SYSTEM</b>			
Sweep Time	0.2 $\mu$ s/div ~ 0.5s/div, 20 steps	0.2 $\mu$ s/div ~ 0.5s/div, 20 steps	
Variable Continuously Accuracy	2.5 : 1 up to 1.25s/div (uncal.) $\pm 3\%$ , $\pm 5\%$ at x5/ x10MAG. $\pm 8\%$ at x 20MAG	2.5 : 1 up to 1.25s/DIV (uncal.) $\pm 3\%$ , $\pm 5\%$ at x5/ x10MAG. $\pm 8\%$ at x 20MAG	
Sweep Magnification	x5, x10, x20	x5, x10, x20	
Max. Sweep Time	20ns/div (10ns/div uncal)	50ns/div (10ns~40ns/div uncal)	
ALT-MAG Function	Yes	Yes	
HOLD-OFF Time	Variable	Variable	
<b>TRIGGER</b>			
Trigger Mode	AUTO, NORM, TV	AUTO, NORM, TV	
Trigger Source	VERT, CH1, CH2, LINE, EXT	VERT, CH1, CH2, LINE, EXT	
Trigger Coupling	AC, HFR, LFR	AC, HFR, LFR	
Trigger Slope	"+" or "-" polarity	"+" or "-" polarity	
ALT Trigger	Yes	Yes	
Indicator Trigger LED	Yes	Yes	
TV Sync. Separator	TV-V(-), TV-H(-)	TV-V(-), TV-H(-)	
Trigger Sensitivity	GRS-6052A 20Hz ~ 5MHz GRS-6032A 20Hz ~ 2MHz	5MHz ~ 40MHz 2MHz ~ 20MHz	40MHz ~ 50MHz 20MHz ~ 30MHz
	CH1, CH2 0.5 div	1.5 div	2.0 div
	VERT-MODE 2.0 div	3.0 div	3.5 div
	EXT 200mV	800mV	1V
	TV sync. pulse more than 1 DIV or 200mV (EXT)		
External Trigger Input	Input impedance :Approx. 1M $\Omega$ //25pF (AC coupling) Max. input voltage :400V (DC + AC peak)		
<b>X-Y OPERATION</b>			
Input	X-axis : CH1 ; Y-axis : CH2	X-axis : CH1 ; Y-axis : CH2	
Sensitivity	1mV/div ~ 20V/div	1mV/div ~ 20V/div	
Bandwidth	X-axis : DC ~ 500kHz (-3dB)	X-axis : DC ~ 500kHz (-3dB)	
X-Y Phase Shift	<3° from DC ~ 50kHz	<3° from DC ~ 50kHz	
<b>DIGITAL STORAGE</b>			
Acquisition Digitizer	8 bit ADC x 2	8 bit ADC x 2	
Max. Sampling Rate	500MSa/s for equivalent time sampling 100MSa/s for normal sampling	500MSa/s for equivalent time sampling 100MSa/s for normal sampling	

## Rear Panel



### SPECIFICATIONS

<b>Storage Bandwidth</b>	Single shot: DC ~ 25MHz Repetitive: DC ~50MHz ± 5div	Single shot: DC ~ 25MHz Repetitive: DC ~30MHz ± 5div
<b>Dynamic Range</b>		
<b>Memory Length</b>	2k words/CH x 2, 1k words/CH (equivalent)	2k words/CH x 2, 1k words/CH (equivalent)
<b>Acquisition Memory</b>	1k words/CH x 10 with back-up memory (REF0~REF9)	1k words/CH x 10 with back-up memory (REF0~REF9)
<b>Save REF Memory</b>		
<b>Display Memory</b>	1k words/CH x 4 waveform (max.)	1k words/CH x 4 waveform (max.)
<b>Sweep Time</b>	Equivalent: 0.2 μs/div ~ 0.5 μs/div Normal Sample: 1 μs/div ~ 0.1s/div Roll: 0.2s/div ~ 100s/div x 5, x 10, x 20	Equivalent: 0.2 μs/div ~ 0.5 μs/div Normal Sample: 1 μs/div ~ 0.1s/div Roll: 0.2s/div ~ 100s/div x 5, x 10, x 20
<b>Sweep Magnification</b>	10ns/div	10ns/div
<b>Max.Sweep Time</b>	DOTS, LINEAR	DOTS, LINEAR
<b>MAG Interpolation</b>	Yes	Yes
<b>ALT-MAG Function</b>	Sample, Peak detect(>25ns), Envelop. Persist, Average(2~256)	Sample, Peak detect(>25ns), Envelop. Persist, Average(2~256)
<b>Acquire Mode</b>	Auto, Norm, Single, Single-roll, Roll, X-Y, Run/Stop	Auto, Norm, Single, Single-roll, Roll, X-Y, Run/Stop
<b>Operation Mode</b>	Dot joint ON/OFF selectable	Dot joint ON/OFF selectable
<b>Smoothing Function</b>	Pre-trigger 0 ~10div in 0.02div steps	Pre-trigger 0 ~10DIV in 0.02div steps
<b>Pre-Trigger</b>	X-axis: CH1 Y-axis: CH2	X-axis: CH1 Y-axis: CH2
<b>X-Y Operation</b>	DC~50MHz(-3dB)	DC~30MHz(-3dB)
<b>Storage Bandwidth</b>	H: 100points/div; V: 25points/div;	H: 100points/DIV; V: 25points/div;
<b>Display Resolution</b>	X-Y: 25 x 25 points/div	X-Y: 25 x 25 points/div
<b>Waveform SAVE/RECALL</b>	10 sets(REF0~REF9)	10 sets(REF0~REF9)
<b>Panel Setting SAVE/RECALL</b>	10 sets(M0~M9)	10 sets(M0~M9)
<b>READOUT &amp; CURSOR</b>		
<b>Cursor Measurement</b>	ΔV, ΔT, 1/ ΔT	ΔV, ΔT, 1/ ΔT
<b>Readout Intensity</b>	Adjustable	Adjustable
<b>OUTPUT SIGNAL</b>		
<b>CH1 Signal Output</b>	Voltage : approx. 20mV/div (with 50Ω terminated) ; Bandwidth : 50Hz ~ 5MHz	
<b>Calibrator Output</b>	Voltage : 0.5V±3% ; Frequency : approx. 1kHz, square wave	
<b>INTERFACE</b>		
RS-232C		
<b>POWER SOURCE</b>		
AC 100V/120V/230V±10%, 50/60Hz		
<b>DIMENSIONS &amp; WEIGHT</b>		
275(W) x 130(H) x 370(D) mm; Approx. 8.5kg		

### ORDERING INFORMATION

**GRS-6052A** 50MHz Digital Storage + Analog Oscilloscope  
**GRS-6032A** 30MHz Digital Storage + Analog Oscilloscope

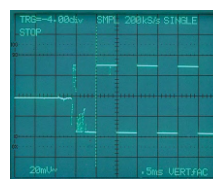
#### ACCESSORIES :

User manual x 1, Power cord x 1, GTP-060A-4 Probes (10:1/1:1) x 2

#### Optional Accessories

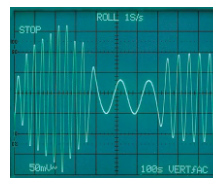
**GTC-001** Instrument Cart, 450(W) x 430(D)mm (120V Input Socket)  
**GTC-002** Instrument Cart, 330(W) x 430(D)mm (120V Input Socket)  
**GTL-232** RS232C Cable, 9-pin Female to 9-pin, Null Modem for Computer

### DIGITAL MODE FUNCTIONS



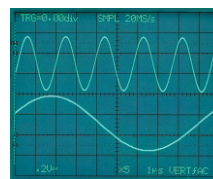
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With ALT-MAG function, the user could expand the waveforms by 5, 10, or 20 times for a more detailed waveform observation. Both original waveforms and expanded waveforms could be shown on the screen at the same time.