GDB-03 Demo Module

USER MANUAL

GW INSTEK PART NO. 82DB-03000EC1

ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

The information in this manual was correct at the time of printing. However, Good Will continues to improve products and reserves the rights to change specification, equipment, and maintenance procedures at any time without notice.

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Table of Contents

GETTING STARTED

Using the demo board specially designed for GDS-1000B, GDS-2000E, GDS-2000A,MSO-2000 and GDS-3000, you can verify and observe various advanced functionalities for demonstration or your own education.

For viewing demo waveforms on the GDS-3000, please refer to page 17 through page 55.

For viewing demo waveforms on the GDS-2000A, please refer to page 56 through page 98.

For viewing demo waveforms on the GDS-2000E, please refer to page 99 through page 137.

For viewing demo waveforms on the MSO-2000, please refer to page 138 through page 145.

For viewing demo waveforms on the GDS-1000B, please refer to page 146 through page 173.

GDS-3000 Series Overview

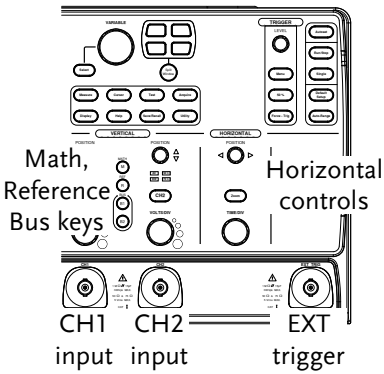
Series lineup

The GDS-3000 series consists of 6 models, divided into 2-channel and 4-channel versions.

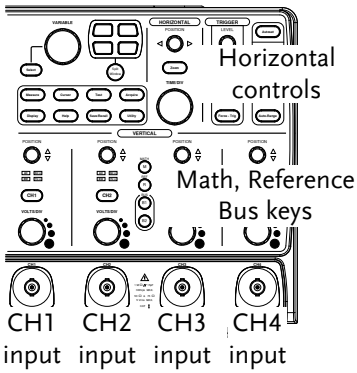
Model name	Frequency bandwidth	Input channels	Real-time Sampling Rate
GDS-3152	150MHz	2	2.5GSa/s
GDS-3252	250MHz	2	2.5GSa/s
GDS-3352	350MHz	2	5GSa/s
GDS-3502	500MHz	2	4GSa/s
GDS-3154	150MHz	4	5GSa/s
GDS-3254	250MHz	4	5GSa/s
GDS-3354	350MHz	4	5GSa/s
GDS-3504	500MHz	4	4GSa/s

The 2 channel and 4 channel models differ in the position of the horizontal controls, the math, reference and bus keys as well as the position of the EXT trigger.

2-Channel model



4-Channel model



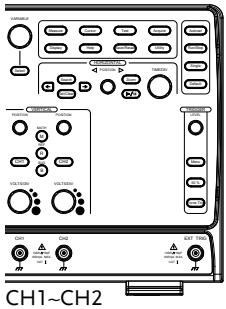
GDS-2000A Series Overview

Series lineup

The GDS-2000A series consists of 8 models, divided into 2-channel and 4-channel versions.

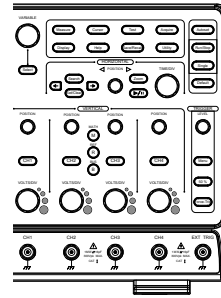
Model name	Frequency bandwidth	Input channels	Real-time Sampling Rate
GDS-2072A	70MHz	2	2GSa/s
GDS-2102A	100MHz	2	2GSa/s
GDS-2202A	200MHz	2	2GSa/s
GDS-2302A	300MHz	2	2GSa/s
GDS-2074A	70MHz	4	2GSa/s
GDS-2104A	100MHz	4	2GSa/s
GDS-2204A	200MHz	4	2GSa/s
GDS-2304A	300MHz	4	2GSa/s

2-Channel model



CH1~CH2 input

4-Channel model



CH1~CH4 input

GDS-2000E Series Overview

Series lineup

The GDS-2000E series consists of 6 models, divided into 2-channel and 4-channel versions.

Model name	Frequency bandwidth	Input channels	Max. Real-time Sampling Rate
GDS-2072E	70MHz	2	1GSa/s
GDS-2102E	100MHz	2	1GSa/s
GDS-2202E	200MHz	2	1GSa/s
GDS-2074E	70MHz	4	1GSa/s
GDS-2104E	100MHz	4	1GSa/s
GDS-2204E	200MHz	4	1GSa/s

MSO-2000 Series Overview

Series lineup

The MSO-2000 series consists of 12 models, divided into 2-channel and 4-channel versions. MSO-2000E series has built-in 16 channel logic analyzer; MSO-2000EA series has built-in 16 channel logic analyzer and dual channel 25MHz arbitrary function generator.

Model name	Frequency bandwidth	Input channels	Max. Real-time Sampling Rate
MSO-2072E	70MHz	2	1GSa/s
MSO-2102E	100MHz	2	1GSa/s
MSO-2202E	200MHz	2	1GSa/s
MSO-2074E	70MHz	4	1GSa/s
MSO-2104E	100MHz	4	1GSa/s
MSO-2204E	200MHz	4	1GSa/s
MSO-2072EA	70MHz	2	1GSa/s
MSO-2102EA	100MHz	2	1GSa/s
MSO-2202EA	200MHz	2	1GSa/s
MSO-2074EA	70MHz	4	1GSa/s
MSO-2104EA	100MHz	4	1GSa/s
MSO-2204EA	200MHz	4	1GSa/s

GDS-1000B Series Overview

Series lineup

The GDS-1000B series consists of 4 models, divided into 2-channel and 4-channel versions.

Model name	Frequency bandwidth	Input channels	Max. Real-time Sampling Rate
GDS-1072B	70MHz	2	1GSa/s
GDS-1102B	100MHz	2	1GSa/s
GDS-1074B	70MHz	4	1GSa/s
GDS-1104B	100MHz	4	1GSa/s

Required tools

- GDS-3000 x 1 or GDS-2000A x 1 or GDS-2000E x 1 or MSO-2000 x 1 or GDS-1000B x 1
- Demo board x 1
- USB type A- type B cable x 1. Used for demo board's power
- Standard oscilloscope probe x 4
- DS2-08LA or DS2-16LA (For GDS-2000A)

Demonstration type

GDS-3000

GDS-2000A

- Autoset mode (page 63)
- XY mode (page 65)
- Gating Measurement (page 67)
- Pulse Runt (page 68)
- Rise Fall (page 70)
- Search (page 71)
- Segments (page 73)
- Parallel (page 74)
- Pulse Width (page 76)
- Delay (page 78)
- LM(Long Memory)(page 80)
- Logic (page 82)
- UART (page 83)
- I^2C (page 85)
- SPI (page 86)
- CAN(page 88)
- LIN(page 89)
- FM (page 90)
- Video (page 93)
- Generator (page 95)

GDS-2000E

MSO-2000

The types of analog signals for displaying on the MSO-2000 and the GDS-2000E are the same, so we don't repeat the steps for displaying these signal types here. We only introduce new digital bus decoding function which consist Logic trigger, UART, I²C, SPI, CAN and LIN. Please refer to the following link pages for details about displaying waveform you desire.

Note

Before displaying the digital channels, please insert the DO-D7 into the LA plug on the GDB-03 as shown in the picture below.

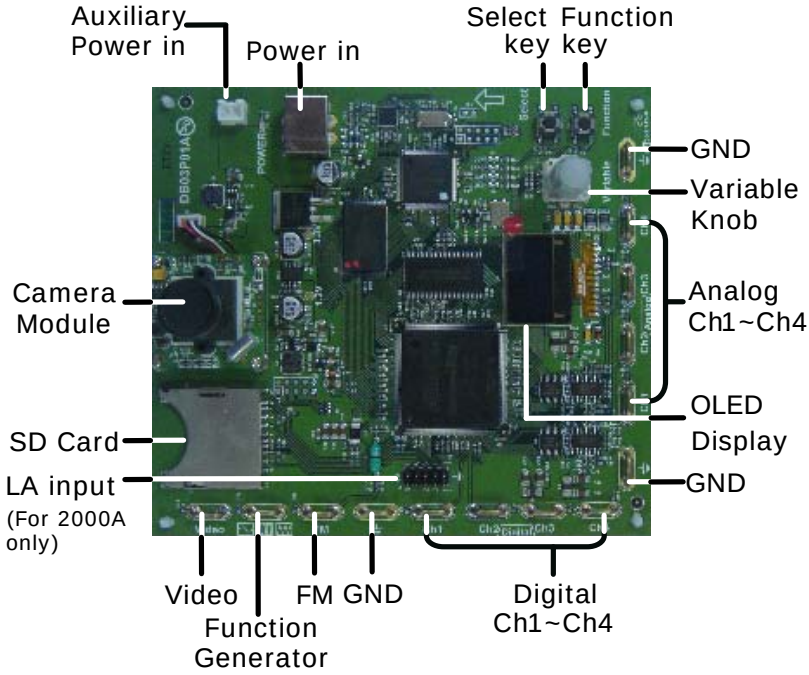
- Logic (page 138)
- UART (page 139)
- I²C (page 141)
- SPI (page 142)
- CAN (page 143)
- LIN (Page 144)

GDS-1000B

DEMO BOARD OVERVIEW

The demo board is a signal generator board capable of producing waveforms which represent various real life scenarios you might encounter. You can use the board as a training kit to learn how to properly view signals, or use it as a generic signal generator.

Appearance



Specifications

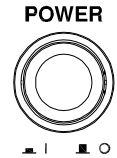
Signal output	• 5 types for digital analyzer, 9 types for analog analyzer (For GDS-3000) • 9 types for digital analyzer, 8 types for analog analyzer (For GDS-2000A) • 8 types for digital analyzer, 8 types for analog analyzer (For GDS-2000E) • 3 types for digital analyzer, 6 types for analog analyzer (For GDS-1000B) • Sin / Square / Triangle Signal • Video signal	
Power supply	5V DC, USB or auxiliary power input	
Accessory	USB cable type A – type B x 1	
Dimensions	13(W)x14.5(H)	
Display system	Display Mode	Passive Matrix
	Display Resolution	128x64
	Display Color	White
	Module Size	26.4x28.5x1.26 mm
	Panel Size	26.4x19.7x1.26 mm
Camera module	PCB size	32x32 mm
	CCD sensor	1/4'' VGA Progressive Color CMOS Sensor
	Video analog Output	720x480I(NTSC) / 720x576I(PAL)

GDS-3000

Demonstration setup

Step

1. Turn on the GDS-3000.



2. Install the Demo module software. Please refer to the chapter "SOFTWARE INSTALLATION" on page 22 for details.

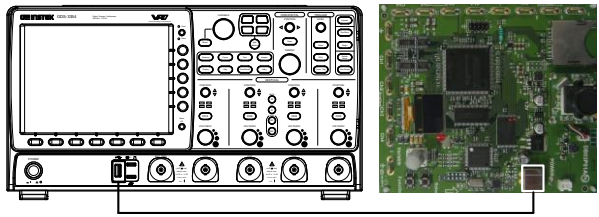
Note

A. Please make sure that the firmware version is V1.14 or above for models with a bandwidth of less than or equal to 350MHz.

B. Please make sure that the firmware version is V1.0 or above for the model with 500MHz.

C. Please refer to the "Appendix" chapter for information about updating the firmware.

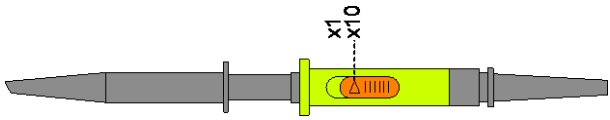
3. Connect the USB cable as shown in the following diagram to power up the demo board. Connect the Type A plug to the GDS-3000 and the Type B plug to the demo board.



Note

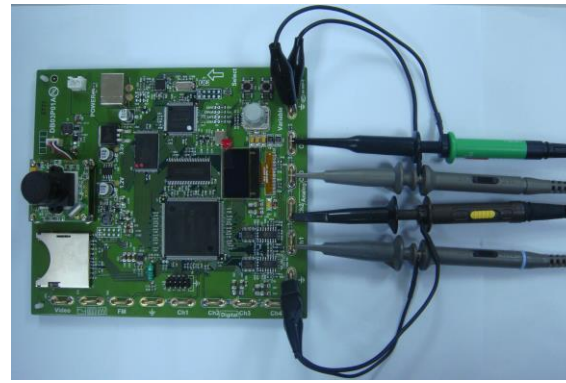
Make sure the power LED on the demo board turns on.

4. Select x10 as the attenuation on the probe to limit the input signal amplitude if the probe you are using is selectable from x1 and x10.

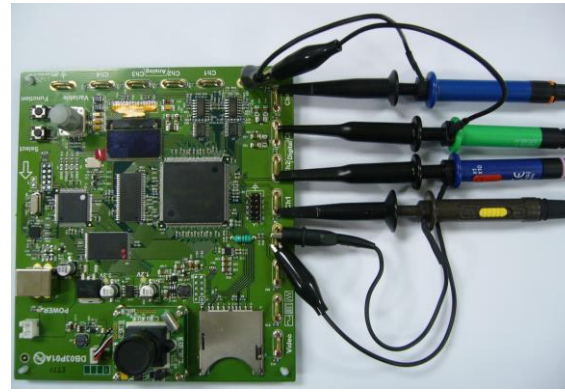


5. Depending on the type of waveform you want to display, connect the probes to the terminals marked, Analog CH1~CH4, Digital CH1~CH4, Video, FM as shown in the diagrams below. Connect the grounding clips to ground terminal (⏚).

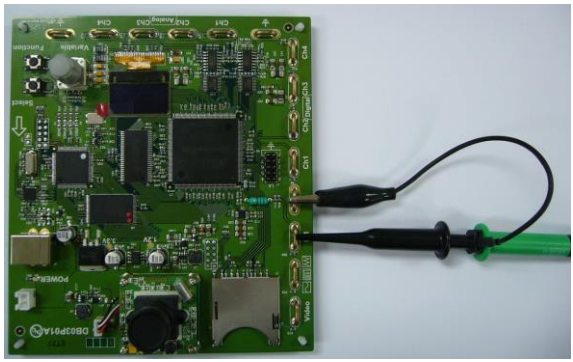
For displaying analog waveform



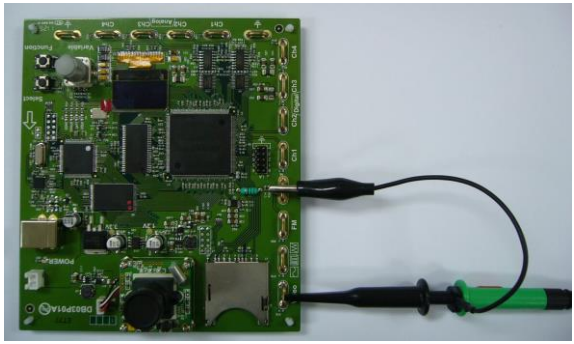
For displaying digital waveform



For displaying FM waveform



For displaying video waveform



6. Connect the other end of the probe(s) to the corresponding CH1 to CH4 terminals on the GDS-3000.

7. Adjust the *Variable* knob on the demo board to select which oscilloscope to demonstrate when the USB cable is connected to the demo board and the oscilloscope. The GDS-3000 is selected when it is highlighted on the OLED display.

Software installation

Step

1. Insert the USB memory stick with GDB03DemoMode.gz into the USB port on the front panel of the GDS-3000.

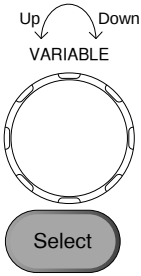
Note

GDB03DemoMode.gz comes from the GDB03DemoMode.zip file. When you unzip the zip file, two files are generated. One is GDB03DemoMode.gz for the software installation and the other is this user manual in PDF format.

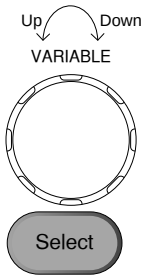
2. Press the *Utility* key.

3. Select *File Utilities* from the bottom menu.

4. Use the Variable knob to select the USB memory stick and then press the Select button.



5. Use the Variable knob to select GDB03DemoMode.gz file and then press the Select button to select it.



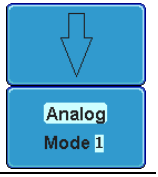
6. Press the Select button again to start installation.

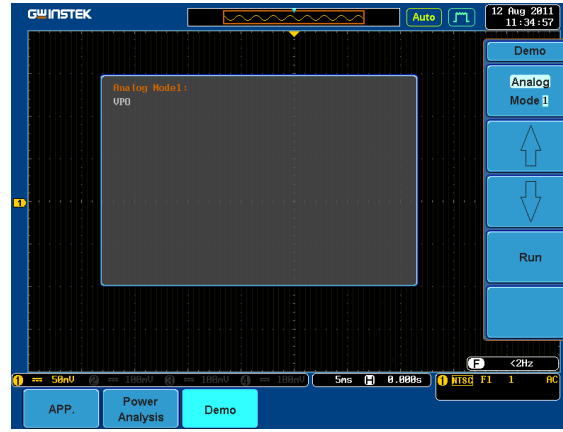
7. The installation is complete when a message showing “Please turn off the oscilloscope and turn on again” is displayed.

Display demo board signal

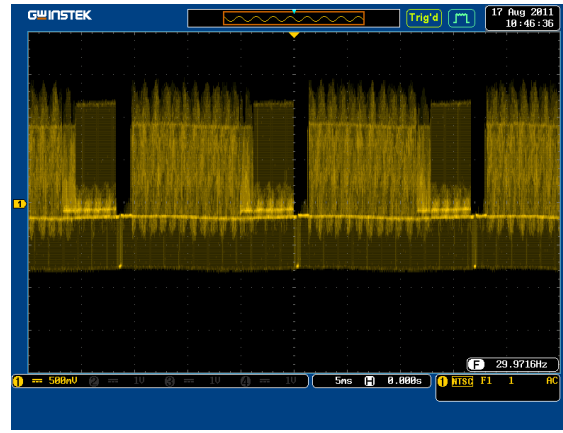
The demo board can be used to display 9 types of analog signals, 5 types of digital signals, FM and video signals. Please follow the procedure listed below to display each signal in sequence.

Display VPO (Analog Mode 1)

Background	The oscilloscope can be used to clearly observe and analyze intermittent events by adjusting the intensity and persistence of waveforms.
Step	1. Connect the probes to the terminals marked Analog CH1~ CH4, and connect the grounding clips to ground terminal (⏚).
	2. Connect the probes to corresponding CH1~CH4 terminals on the GDS-3000.
	3. Press the *Test* key on the front panel of the GDS-3000. 
	4. Press the *Demo* button. 
	5. Press the *Down* button to select Analog Mode 1. A screen confirming that Analog Mode 1 is selected as shown on the next page appears. 
Note	If the Analog Mode is not selected, press the F1 button on the side menu. Use the *Variable* knob to select Analog Mode. Press the *Select* button to confirm Analog Mode 1 is selected. (Refer to Page 40 step 5)



6. Press the *Run* button to display the waveform.



Display Split windows 1 (Analog Mode 2)

Background

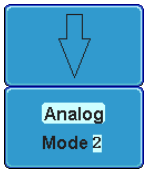
Display 4 unsynchronized waveforms at different frequencies in different separate split windows with different trigger settings

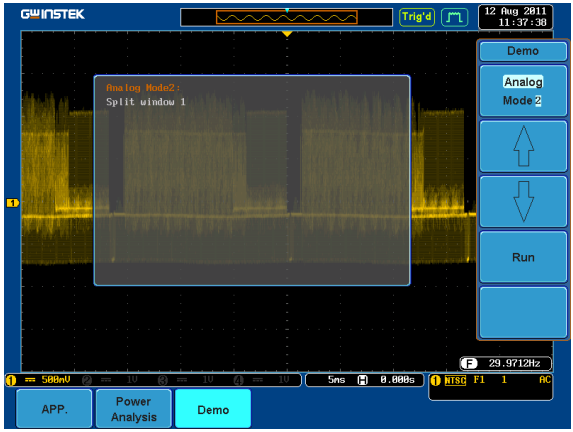
Step

1. Press the *Test* key on the front panel of the GDS-3000.

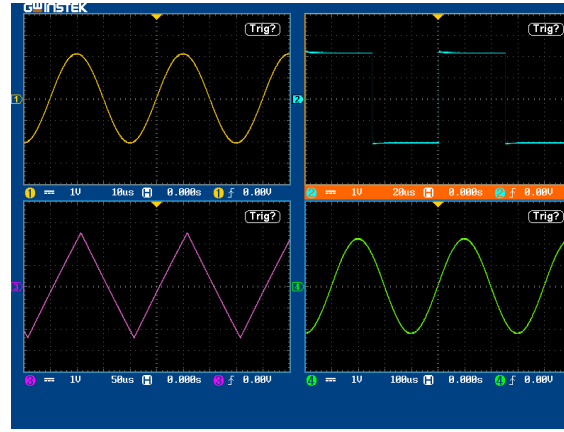
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 2. A screen confirming Analog Mode 2 is selected as shown below appears.





4. Press the *Run* button to display the waveforms in split windows as shown on the next page.



Display Split windows 2 (Analog Mode 3)

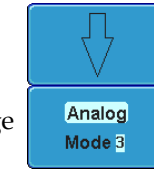
Background	Display a signal (a more complex signal) that can have different settings and be displayed in four split windows.

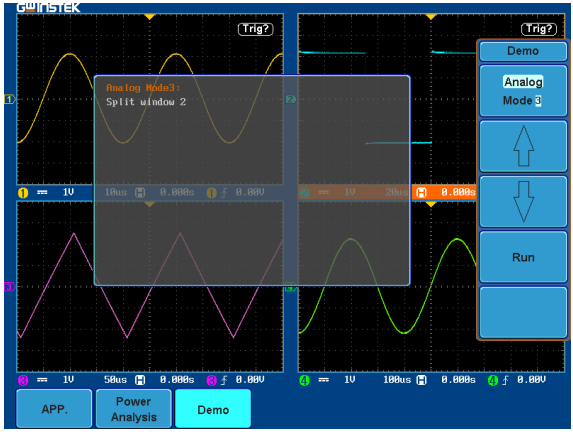
Step

1. Press the *Test* key on the front panel of the GDS-3000.

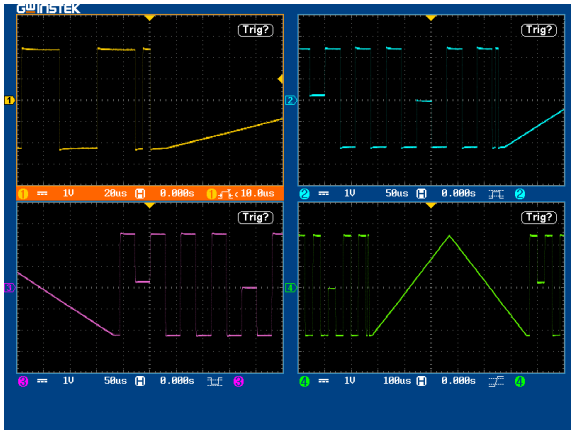
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 3. A screen confirming Analog Mode 3 is selected as shown on the next page appears.





4. Press the Run button to display a waveform in split window as shown below.



Display Auto-Range Function (Analog Mode 4)

Background

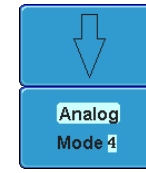
Demonstrate that the oscilloscope can automatically be adjusted to the best range setting according to changes in the input signal.

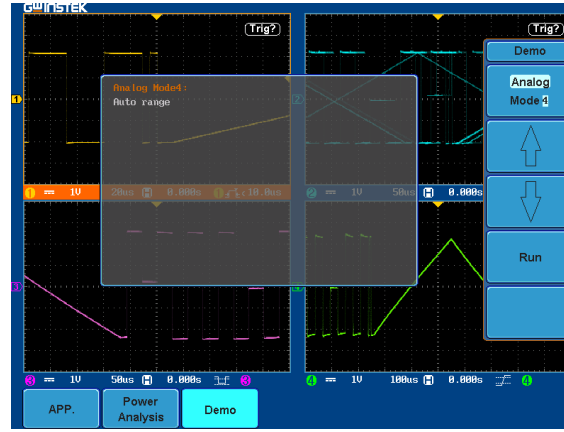
Step

1. Press the *Test* key on the front panel of the GDS-3000.

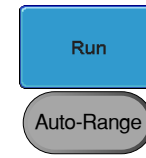
2. Press the *Demo* button.

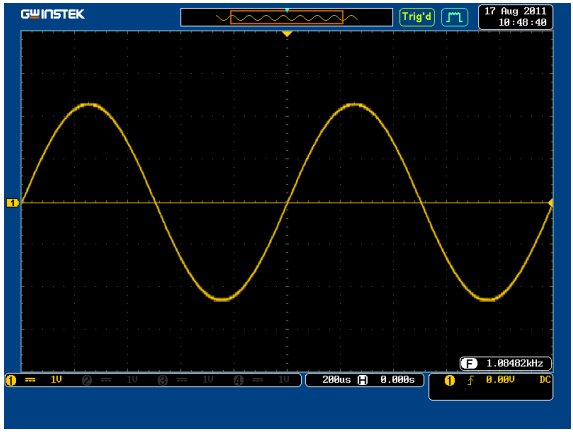
3. Press the *Down* button to select Analog Mode 4. A screen confirming Analog Mode 4 is selected as shown below appears.





4. Press the *Run* button and *Auto-Range* key to display the waveform.





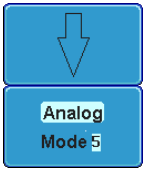
Display Autoset mode (Analog Mode 5)

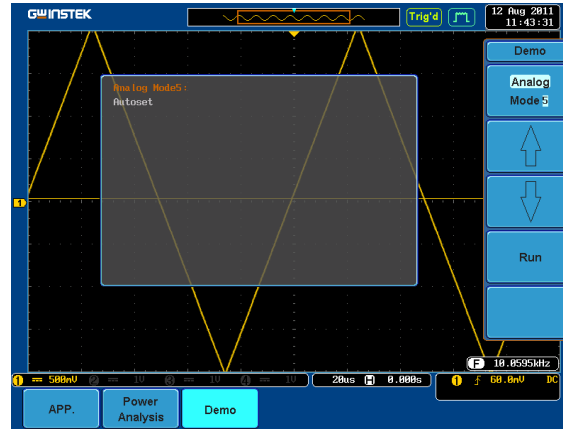
Step

1. Press the *Test* key on the front panel of the GDS-3000.

2. Press the *Demo* button.

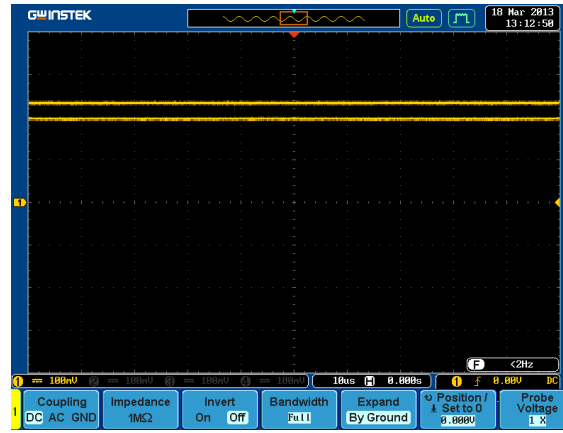
3. Press the *Down* button to select Analog Mode 5. A screen confirming Analog Mode 5 is selected as shown on the next page appears.



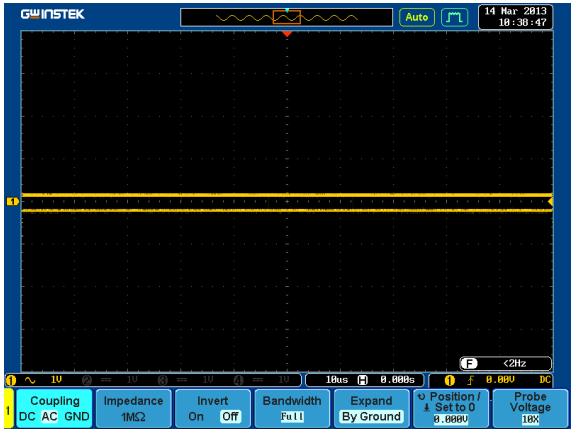


4. Press the *Run* button.

5. Press the *CH1* key to activate CH1.

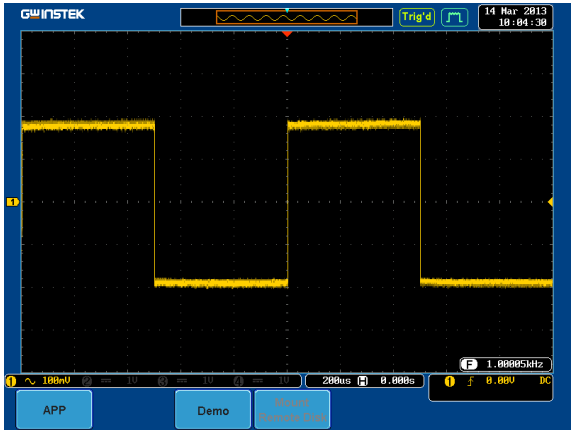


6. Set the *Coupling* to AC from the bottom menu.



7. Press the *Autoset* key on the panel.

8. A waveform as shown below appears.



Display XY mode (Analog Mode 6)

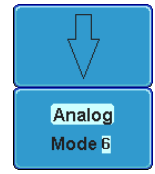
Background Display 2 sets of X-Y waveform at the same time.

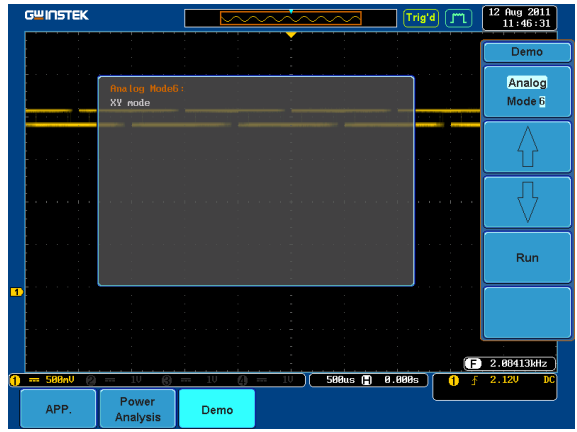
Step

1. Press the *Test* key on the front panel of the GDS-3000.

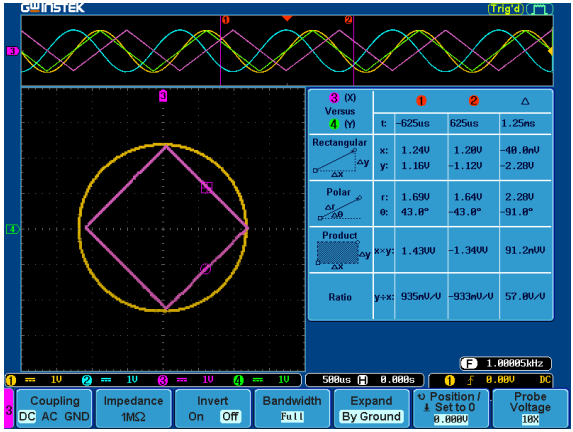
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 6. A screen confirming Analog Mode 6 is selected as shown below appears.





4. Press the *Run* button to display the waveform.


GW INSTEK
Trig'd
3 (X) Versus 4 (Y)
1
2
Δ
t: -625us 625us 1.25ms
Rectangular
x: 1.24V 1.28V -40.0mV
y: 1.16V -1.12V -2.28V
Polar
r: 1.69V 1.64V 2.28V
θ: 43.8° -43.8° -91.8°
Product
x×y: 1.43VV -1.34VV 91.2mVV
Ratio
y÷x: 935mV/V -933mV/V 57.8V/V
F 1.00005kHz
1V 1V 1V 1V
500us 0.000s
0.00V DC
Coupling
DC AC GND
Impedance
1MΩ
Invert
On Off
Bandwidth
Full
Expand
By Ground
Position / Set to 0
0.000V
Probe Voltage
10X

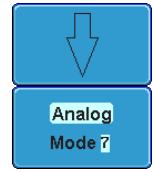
Display Gating Measurement (Analog Mode 7)

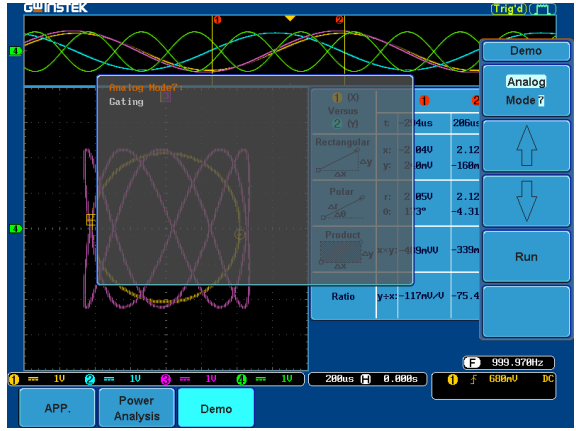
Step

1. Press the *Test* key on the front panel of the GDS-3000.

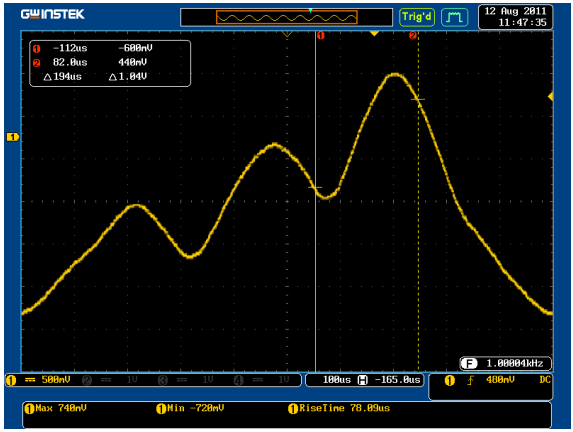
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 7. A screen confirming Analog Mode 7 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



Note

You can set the position of the cursors to set the range of the Gating Measurement.

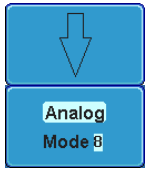
Display Pulse Runt (Analog Mode 8)

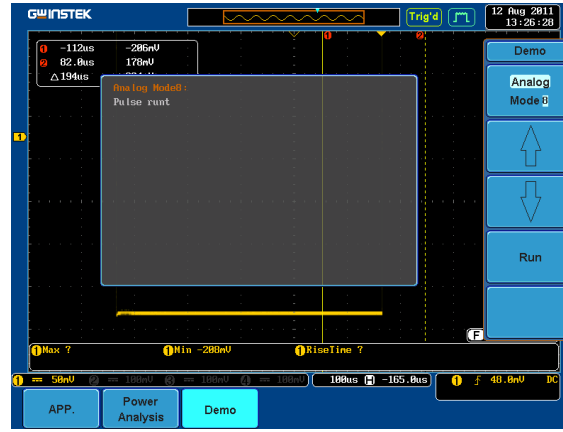
Step

1. Press the *Test* key on the front panel of the GDS-3000.

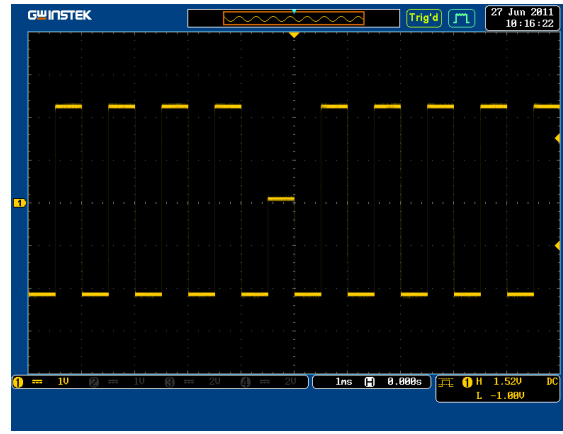
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 8. A screen confirming Analog Mode 8 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



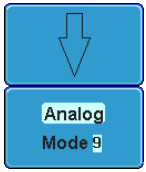
Display Rise Fall (Analog Mode 9)

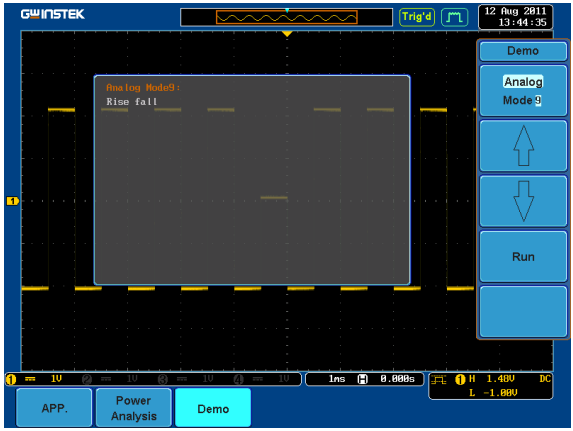
Step

1. Press the *Test* key on the front panel of the GDS-3000.

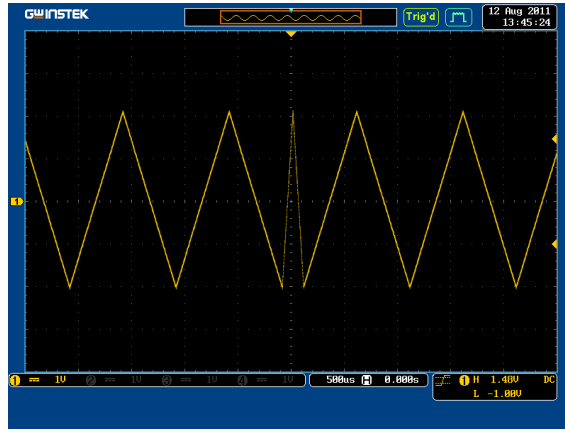
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 9. A screen confirming Analog Mode 9 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



Display Pulse Width (Digital Mode 1)

Step

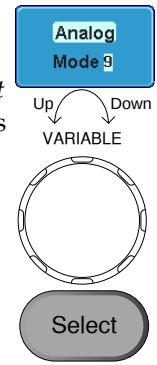
1. Connect the probes to the terminals marked Digital CH1~ CH4, and grounding clips to ground terminal (⏚).

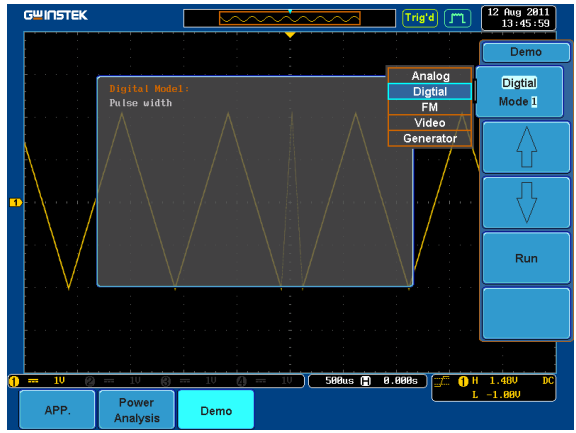
2. Connect the probes to corresponding CH1~CH4 terminals on the GDS-3000.

3. Press the *Test* key on the front panel of the GDS-3000.

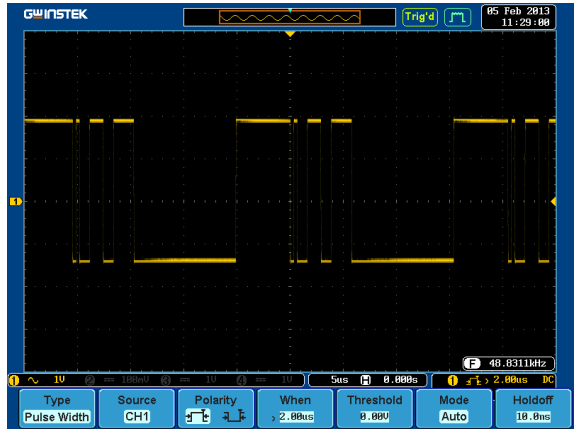
4. Press the *Demo* button.

5. Press the *Analog Mode* button (F1 button). Use the *Variable* knob to select Digital mode. Press the *Select* button to confirm Digital Mode 1 is selected.





6. Press the Run button to display the waveform.



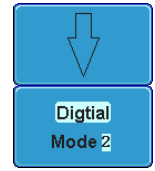
Display UART (Digital Mode 2)

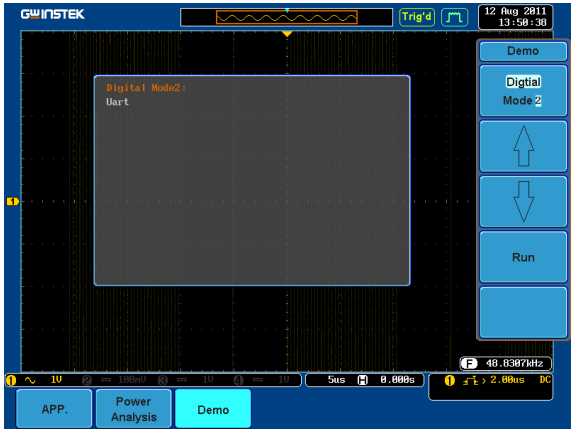
Step

1. Press the *Test* key on the front panel of the GDS-3000.

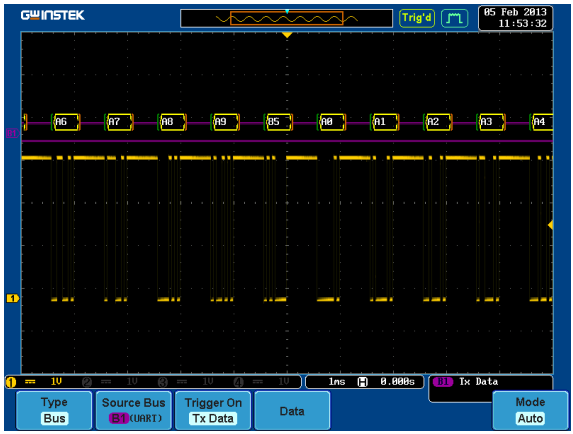
2. Press the *Demo* button.

3. Press the *Down* button to select Digital Mode 2. A screen confirming Digital Mode 2 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



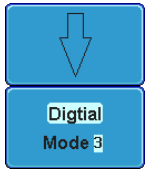
Display I²C (Digital Mode 3)

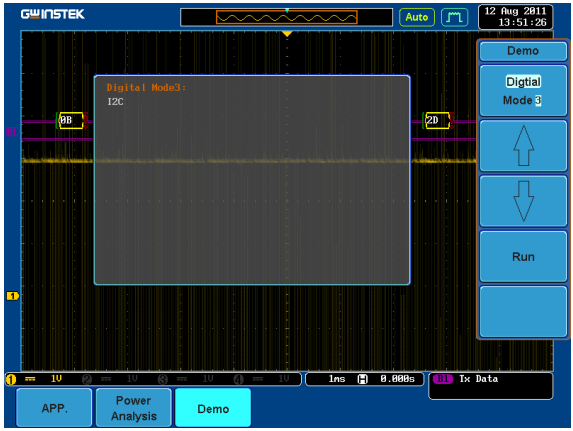
Step

1. Press the *Test* key on the front panel of the GDS-3000.

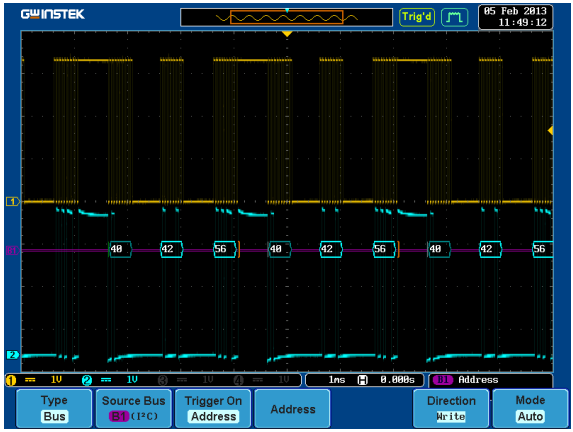
2. Press the *Demo* button.

3. Press the *Down* button to select Digital Mode 3. A screen confirming Digital Mode 3 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



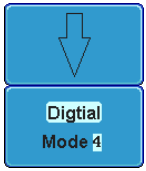
Display SPI (Digital Mode 4)

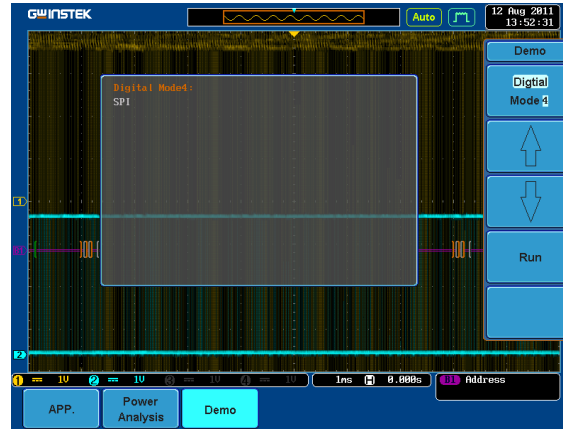
Step

1. Press the Test key on the front panel of the GDS-3000.

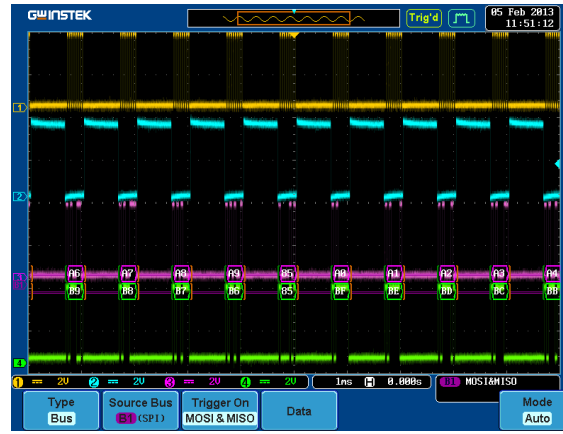
2. Press the *Demo* button.

3. Press the Down button to select Digital Mode 4. A screen confirming Digital Mode 4 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



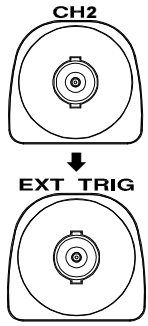
Display Delay (Digital Mode 5)

Background

The Delay trigger works in tandem with the edge trigger, by waiting for a specified time or number of events before the edge trigger starts. This method allows pinpointing a location in a long series of trigger events.

Step

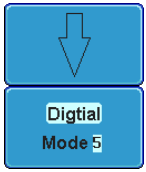
1. Disconnect the probe from the CH2 terminal on the GDS-3000 and move to the EXT TRIG terminal

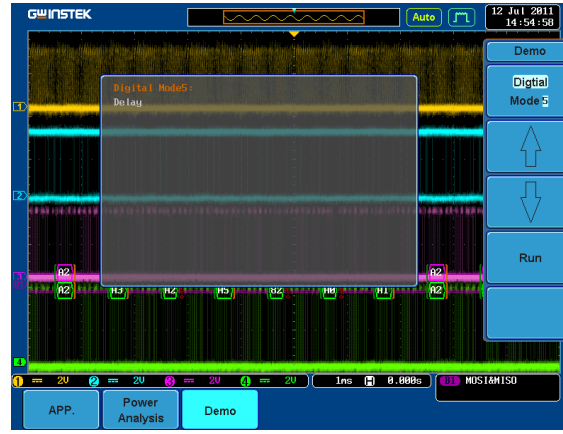


2. Press the *Test* key on the front panel of the GDS-3000.

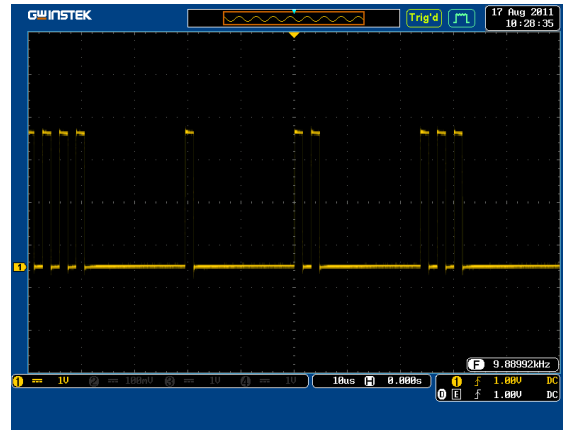
3. Press the *Demo* button.

4. Press the *Down* button to select Digital Mode 5. A screen confirming Digital Mode 5 is selected as shown on the next page appears.





5. Press the *Run* button to display the waveform.



Display FM (FM mode)

Step

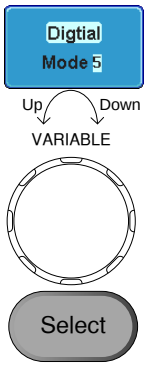
1. Connect a probe to the FM terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

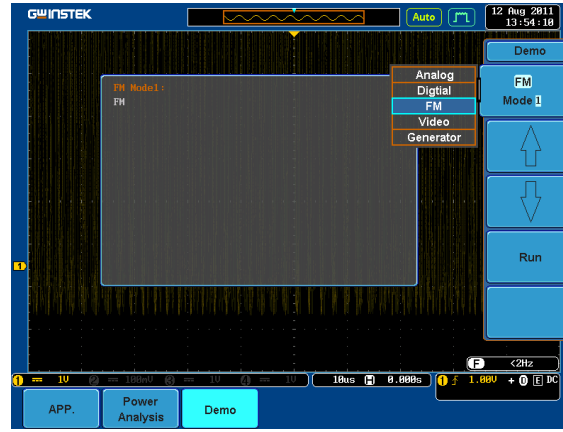
2. Connect the other end of probe to CH1 terminal on the GDS-3000.

3. Press the *Test* key on the front panel of the GDS-3000.

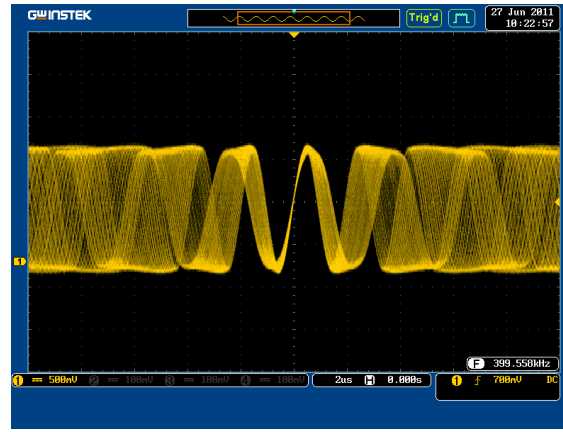
4. Press the *Demo* button.

5. Press the *Digital* mode button (F1 button). Use the *Variable* knob to select FM mode. Press the *Select* button to confirm FM Mode 1 is selected.





6. Press the *Run* button to display the waveform.



Display Video (Video mode)

Step

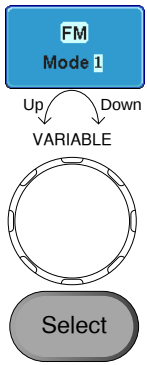
1. Connect a probe to the Video terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

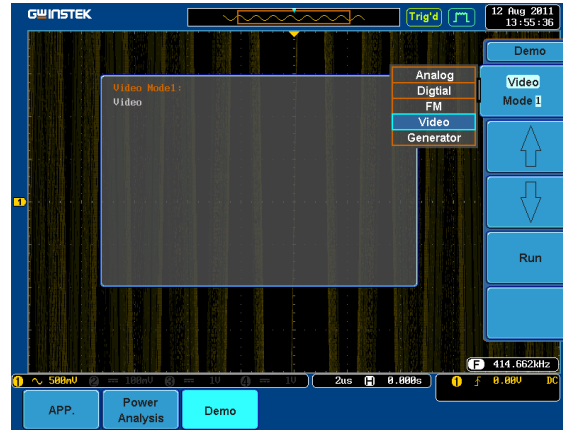
2. Connect the other end of probe to the CH1 terminal on the GDS-3000.

3. Press the *Test* key on the front panel of the GDS-3000.

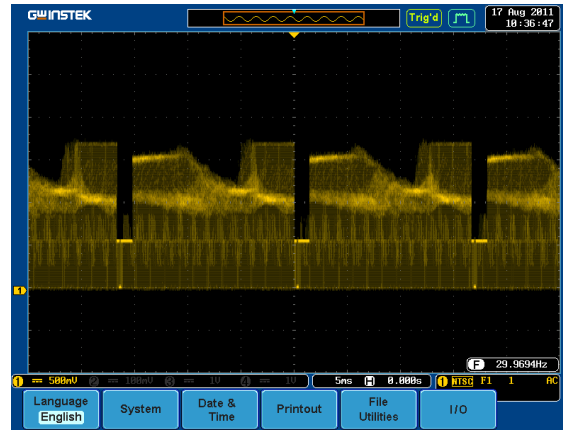
4. Press the *Demo* button.

5. Press *FM* button (F1 button). Use the *Variable* knob to select Video mode. Press the *Select* button to confirm Video Mode 1 is selected.





6. Press the *Run* button to display the waveform.



Display Sine, Square and Triangle waveform (Generator mode)

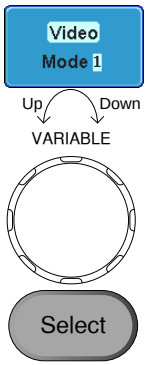
1. Connect the probe to the terminal marked  on the demo board. Connect the grounding clip to the ground terminal (⏚).

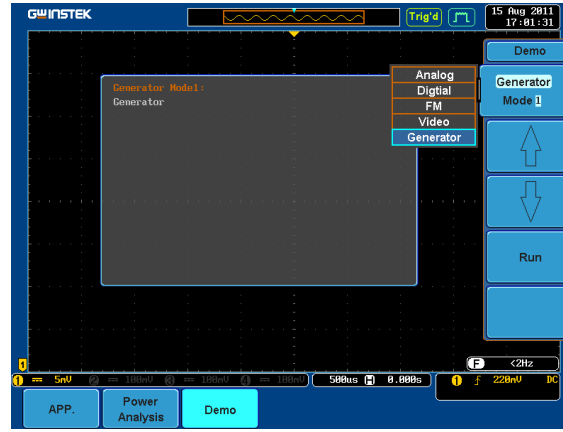
2. Connect the other end of probe to the CH1 terminal on the GDS-3000.

3. Press the *Test* key on the front panel of the GDS-3000.

4. Press the *Demo* button.

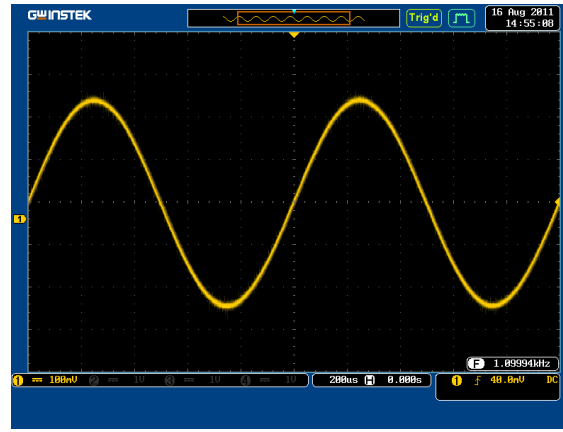
5. Press the *Video Mode* button (F1 button). Use the *Variable* knob to select Generator mode. Press the *Select* button to confirm Generator Mode 1 is selected.





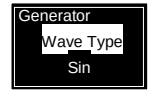
6. Press the *Run* button.

7. Press the AutoSet button to display the Sine waveform.

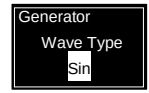


8. Press the *Select* button on the demo board.

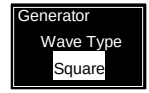
9. Adjust the *Variable* knob on the demo board to select the Wave Type. *Wave Type* is selected when it is highlighted on the OLED display.



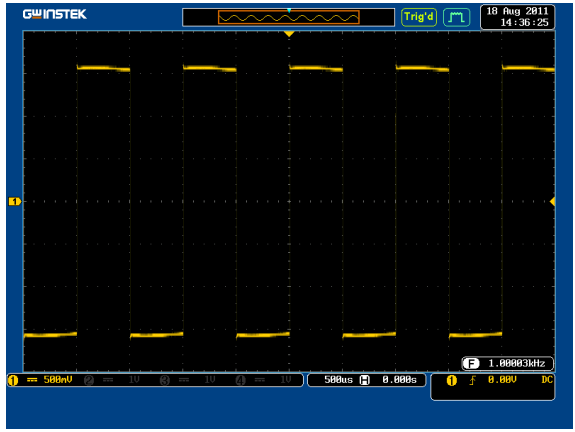
10. Push the Select button to change the highlight to the bottom line on the OLED display.



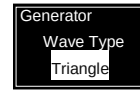
11. Adjust the *Variable* knob on the demo board to select *Square*. *Square* is selected when it is highlighted on the OLED display.



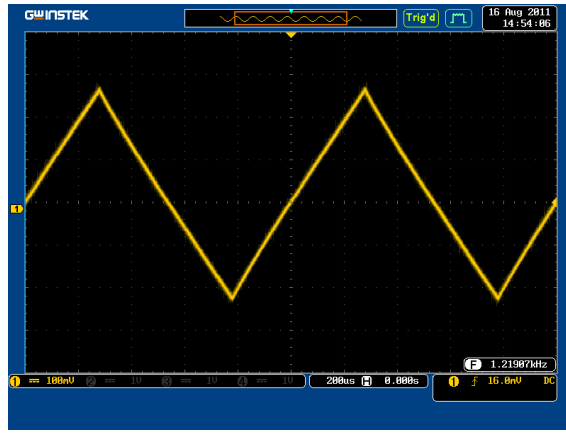
12. Press the *AutoSet* button to display the Square waveform.



13. Adjust the *Variable* knob on the demo board to select *Triangle*. *Triangle* is selected when it is highlighted on the OLED display.



14. Press the *AutoSet* button to display the Triangle waveform.

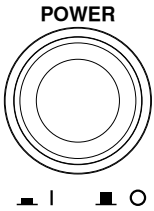


GDS-2000A

Demonstration setup

Step

1. Turn on the GDS-2000A.



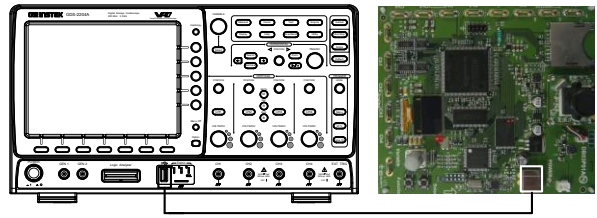
2. Install the Demo module software. Please refer to the chapter "SOFTWARE INSTALLATION" on page 61 for details.

Note

A. Please make sure that the firmware version is V1.09 or above.

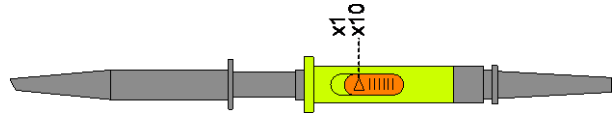
B. Please refer to the "Appendix" chapter for information about updating the firmware.

3. Connect the USB cable as shown in the following diagram to power up the demo board. Connect the Type A plug to the GDS-2000A and the Type B plug to the demo board.



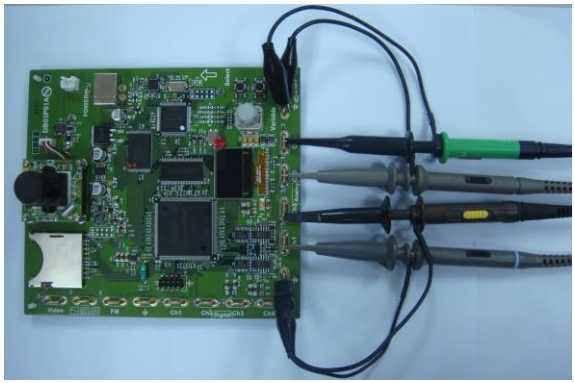
Note — Make sure the power LED on the demo board turns on.

4. Select x10 as the attenuation on the probe to limit the input signal amplitude if the probe you are using is selectable from x1 and x10.

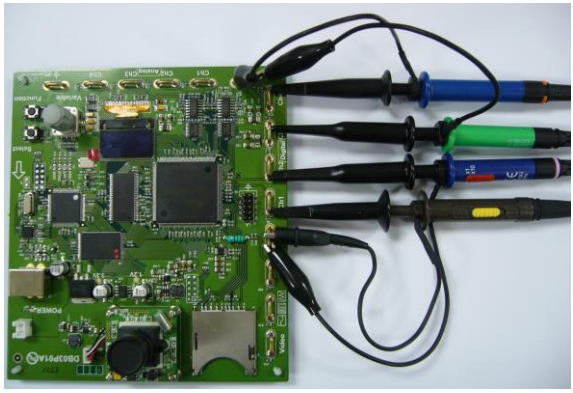


5. Depending on the type of waveform you want to display, connect the probes to the terminals marked, Analog CH1~CH4, Digital CH1~CH4, Video, FM as shown in the diagrams below. Connect the grounding clips to ground terminal (⏚).

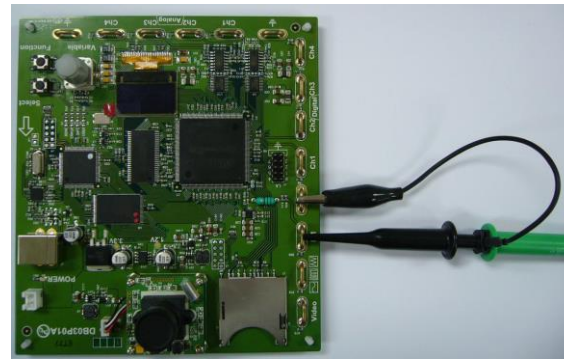
For displaying analog waveform



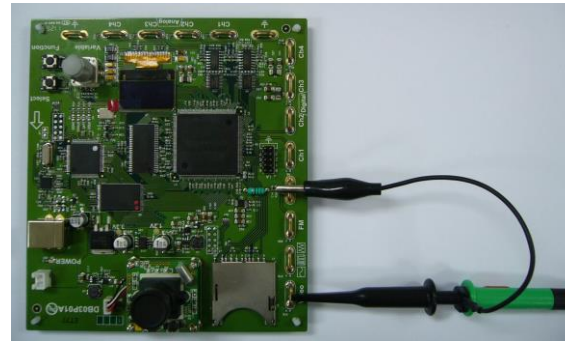
For displaying digital waveform



For displaying FM waveform

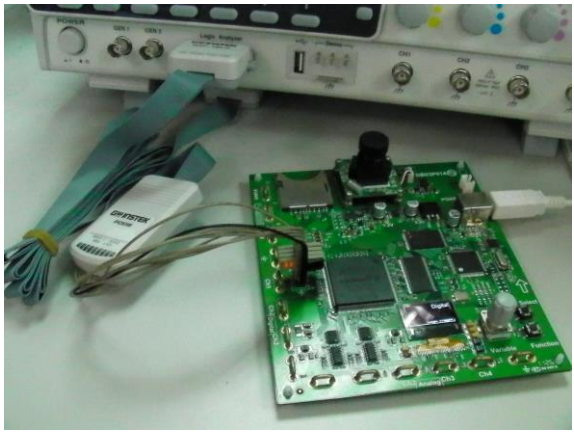


For displaying video waveform



6. Connect the other end of the probe(s) to the corresponding CH1 to CH4 terminals on the GDS-2000A.

7. Connect the GDS-2000A and the demo board with the Logic Analyzer Probe as shown in the photo below for displaying the LA source.



8. Adjust the *Variable* knob on the demo board to select which oscilloscope to demonstrate when the USB cable is connected to the demo board and the oscilloscope. The GDS-2000A is selected when it is highlighted on the OLED display.

Software installation

Step

1. Insert the USB memory stick with GDB03DemoMode.gz into the USB port on the front panel of the GDS-2000A.

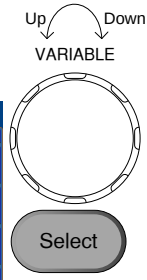
Note

- GDS2kAGDB03DemoMode.gz comes from the GDS2kAGDB03DemoMode.zip file. When you unzip the zip file, two files are generated. One is GDS2kAGDB03DemoMode.gz for the software installation and the other is this user manual in PDF format.
- Make sure the firmware version is V1.09 or higher.

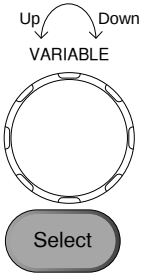
2. Press the *Utility* key.

3. Select *File Utilities* from the bottom menu.

4. Use the Variable knob to select the USB memory stick and then press the Select button.



5. Use the Variable knob to select GDB03DemoMode.gz file and then press the Select button to select it.



6. Press the Select button again to start installation.

7. The installation is complete when a message showing “Please turn off the oscilloscope and turn on again” is displayed.

Display demo board signal

The demo board can be used to display 8 types of analog signals, 9 types of digital signals, FM and video signals. Please follow the procedure listed below to display each signal in sequence.

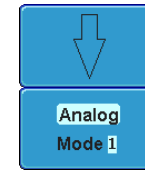
Display Autoset mode (Analog Mode 1)

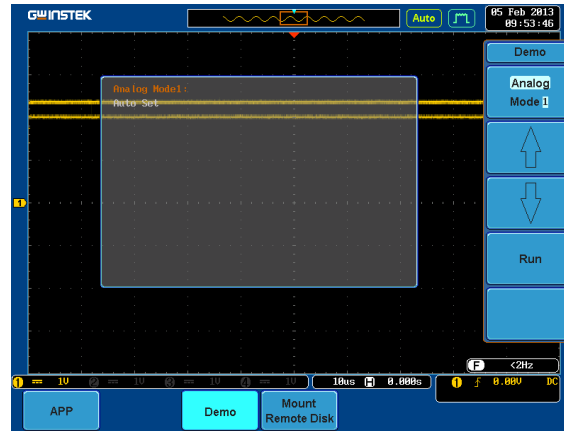
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

2. Press the *Demo* button.

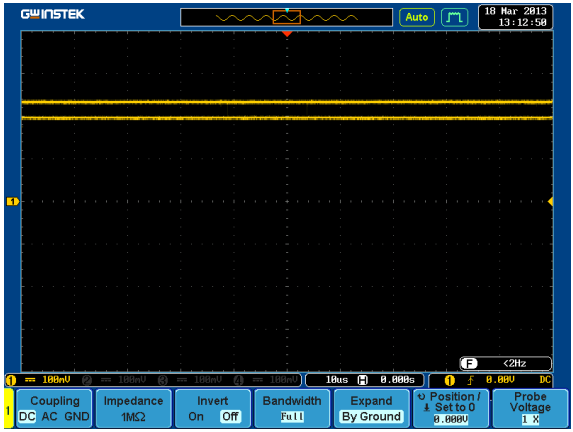
3. Press the *Down* button to select Analog Mode 1. A screen confirming Analog Mode 1 is selected as shown below appears.





4. Press the *Run* button.

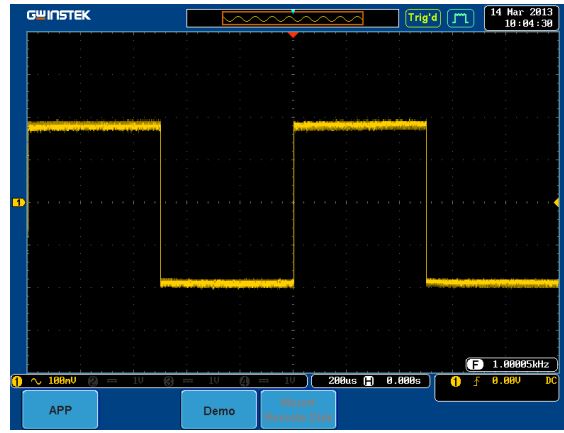
5. Press the *CH1* key to activate CH1.



6. Set the *Coupling* to AC from the bottom menu.

7. Press the *Autoset* key on the panel.

8. A waveform as shown below appears.



Display XY mode(Analog Mode 2)

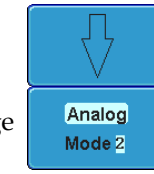
Background	Display 2 sets of X-Y waveform at the same time.

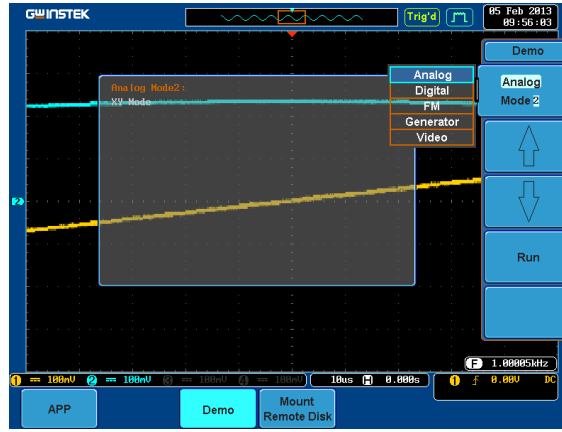
Step

1. Press the *Test* key on the front panel of GDS-2000A.

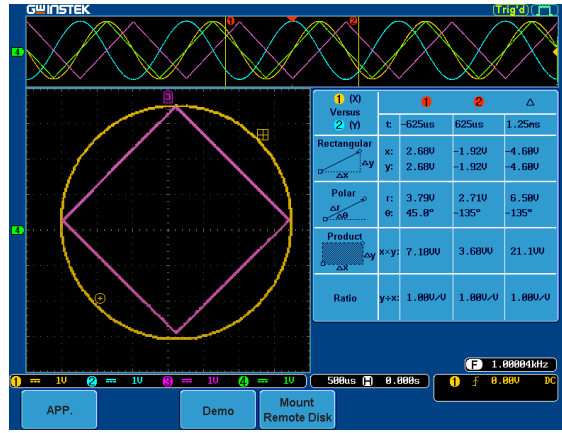
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 2. A screen confirming Analog Mode 2 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



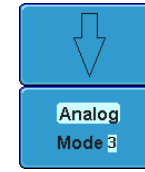
Display Gating Measurement (Analog Mode 3)

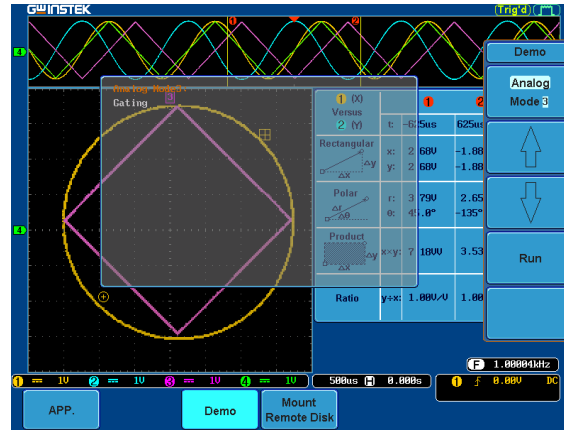
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

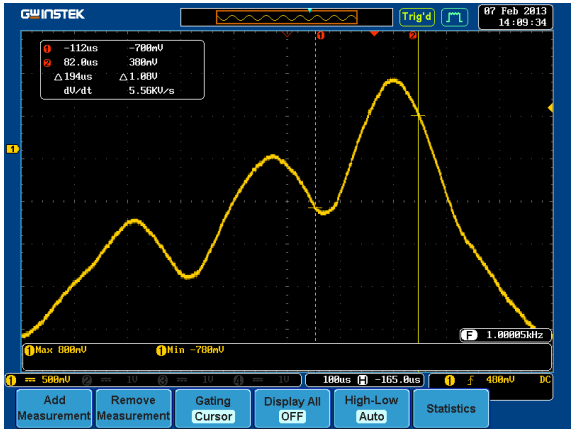
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 3. A screen confirming Analog Mode 3 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



Note

You can set the position of the cursors to set the range of the Gating Measurement.

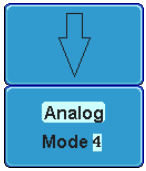
Display Pulse Runt (Analog Mode 4)

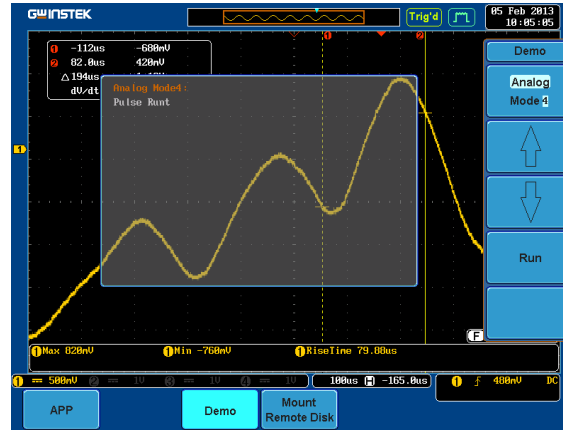
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

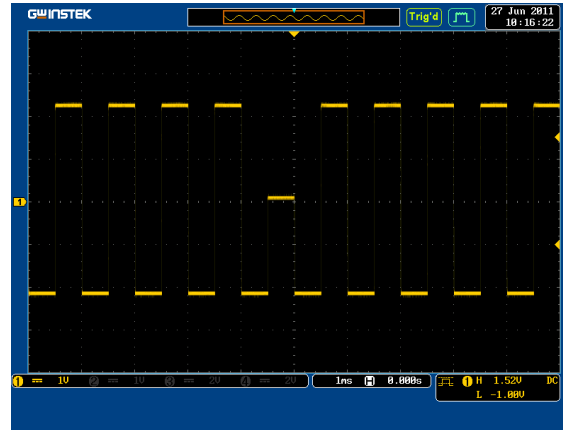
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 4. A screen confirming Analog Mode 4 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



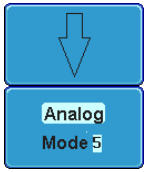
Display Rise Fall (Analog Mode 5)

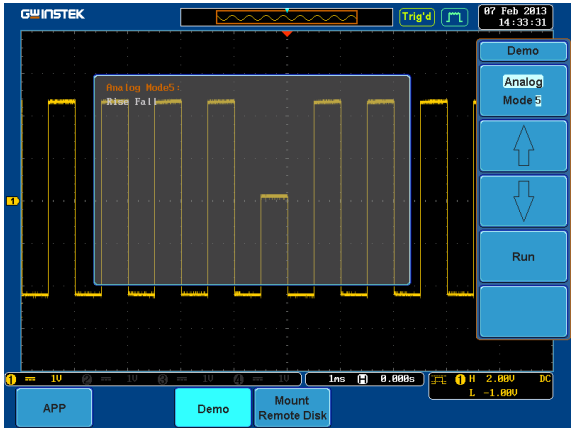
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

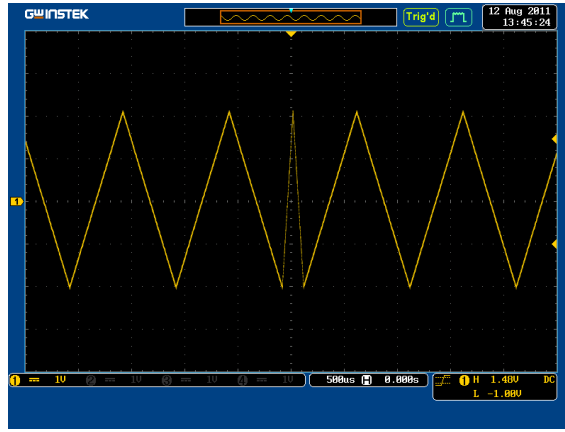
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 5. A screen confirming Analog Mode 5 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



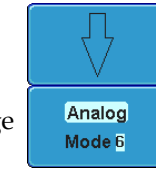
Display Search (Analog Mode 6)

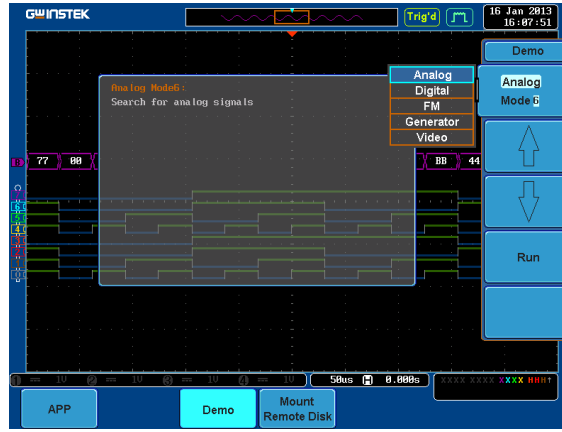
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

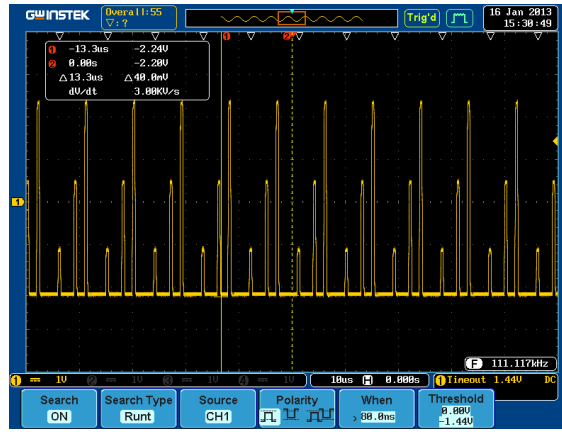
2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 6. A screen confirming Analog Mode 6 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



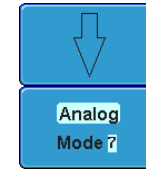
Display Segments (Analog Mode 7)

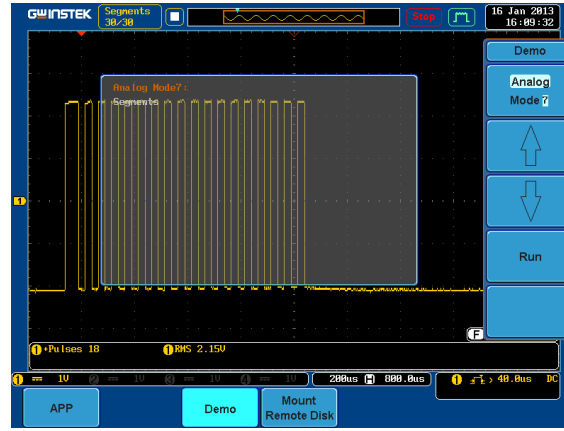
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

2. Press the *Demo* button.

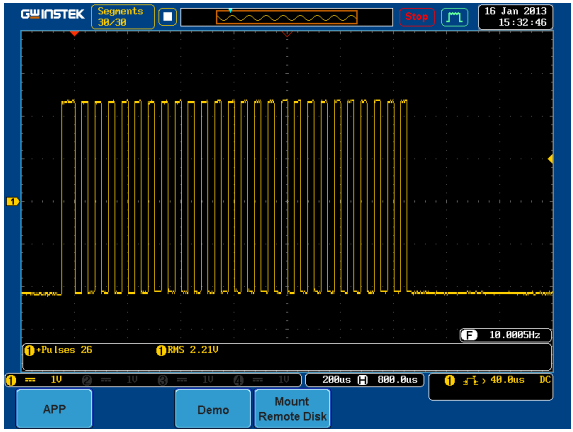
3. Press the *Down* button to select Analog Mode 7. A screen confirming Analog Mode 7 is selected as shown below appears.





4. Press the *Run* button to display the waveform.

5. The function key on the demo board should be press down before the segments waveform can be outputted.



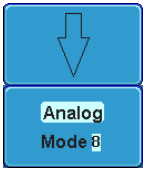
Display Parallel (Analog Mode 8)

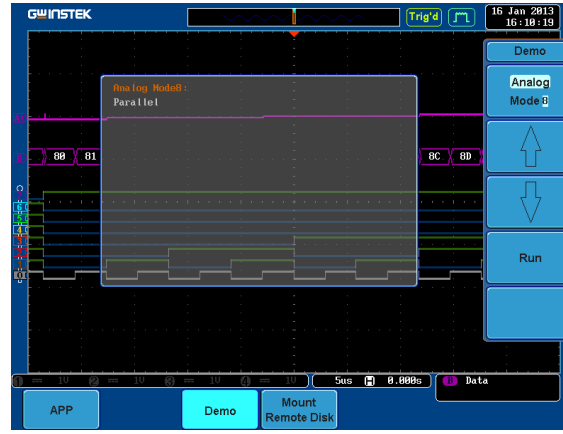
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

2. Press the *Demo* button.

3. Press the *Down* button to select Analog Mode 8. A screen confirming Analog Mode 8 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.

Display Pulse Width (Digital Mode 1)

Step

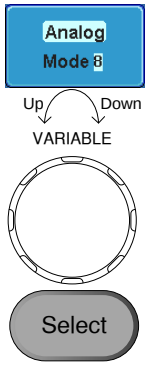
1. Connect the probes to the terminals marked Digital CH1~ CH4, and grounding clips to ground terminal (⏚).

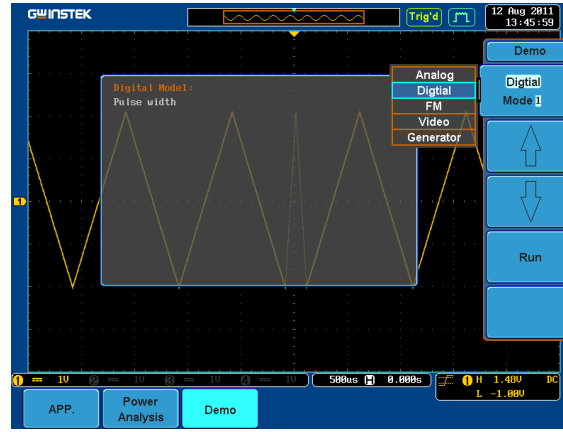
2. Connect the probes to corresponding CH1~CH4 terminals on the GDS-2000A.

3. Press the *Test* key on the front panel of GDS-2000A.

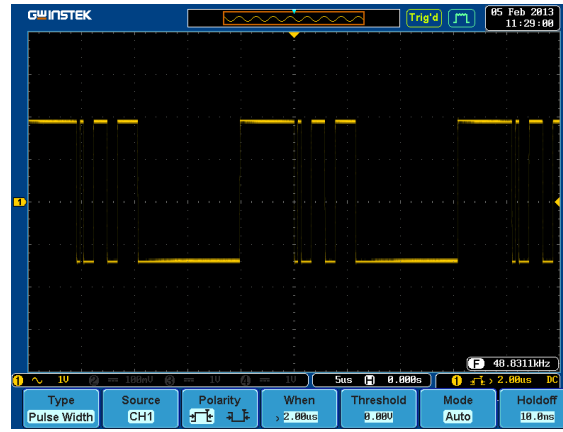
4. Press the *Demo* button.

5. Press the *Analog Mode* button (F1 button). Use the *Variable* knob to select Digital mode. Press the *Select* button to confirm Digital Mode 1 is selected.





6. Press the Run button to display the waveform.



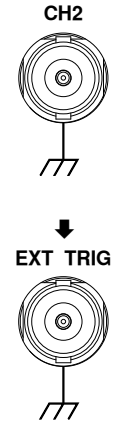
Display Delay (Digital Mode 2)

Background

The Delay trigger works in tandem with the edge trigger, by waiting for a specified time or number of events before the edge trigger starts. This method allows pinpointing a location in a long series of trigger events.

Step

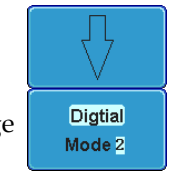
1. Disconnect the probe from the CH2 terminal on the GDS-2000A and move to the EXT TRIG terminal

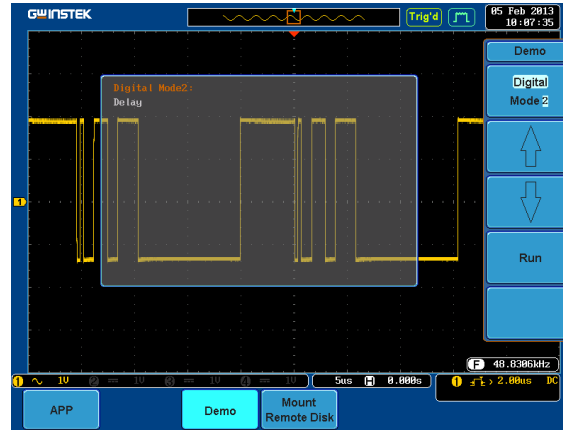


2. Press the *Test* key on the front panel of the GDS-2000A.

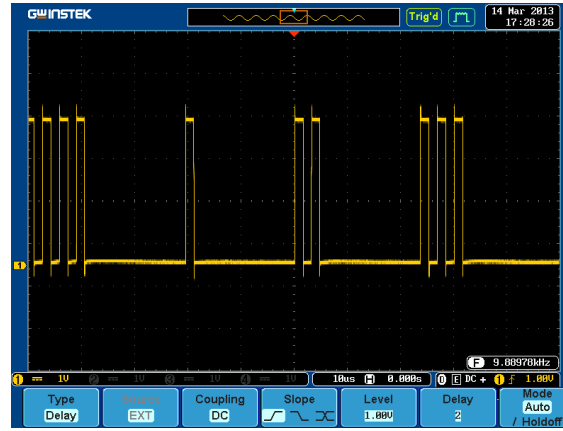
3. Press the *Demo* button.

4. Press the *Down* button to select Digital Mode 2. A screen confirming Digital Mode 2 is selected as shown on the next page appears.





5. Press the *Run* button to display the waveform.



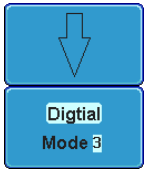
Display LM (Logic Memory) (Digital Mode 3)

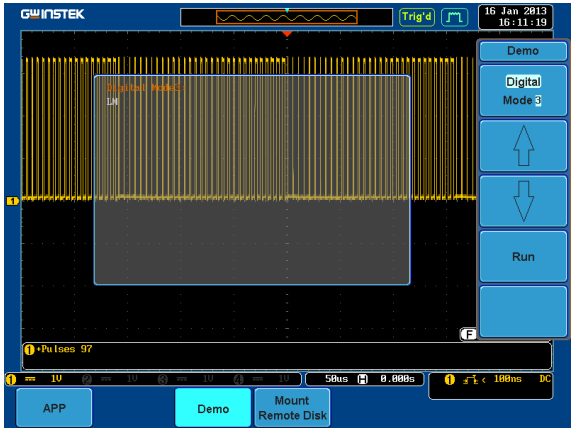
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

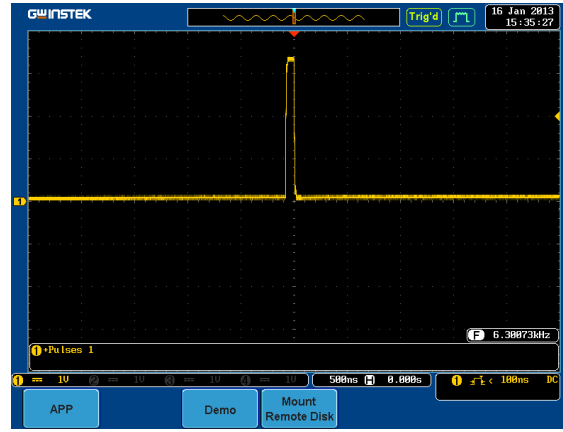
2. Press the *Demo* button.

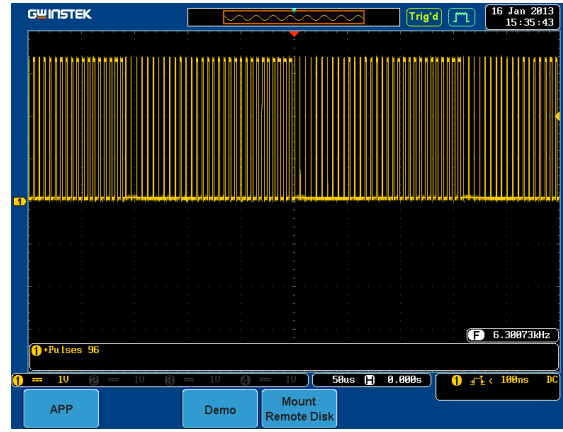
3. Press the *Down* button to select Digital Mode 3. A screen confirming Digital Mode 3 is selected as shown below appears.





4. Press the *Run* button to display the waveform.





Note

If we compare the waveforms shown above, we can see that we can observe more of the waveform under long memory.

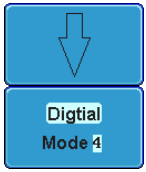
Display Logic (Digital Mode 4)

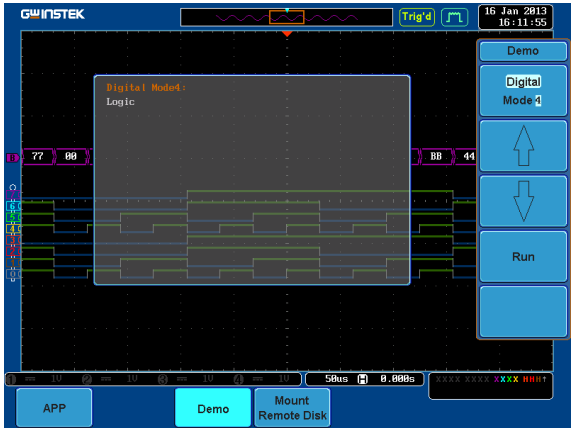
Step

1. Press the Test key on the front panel of the GDS-2000A.

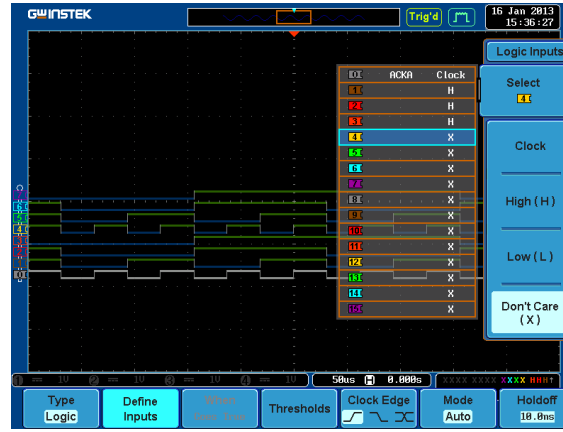
2. Press the *Demo* button.

3. Press the Down button to select Digital Mode 4. A screen confirming Digital Mode 4 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



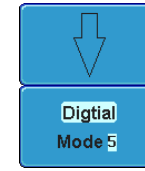
Display UART (Digital Mode 5)

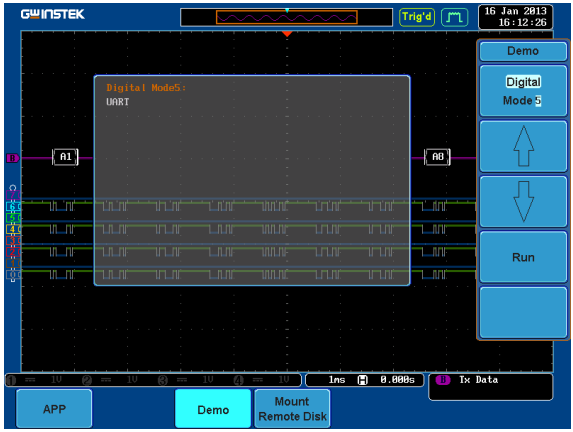
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

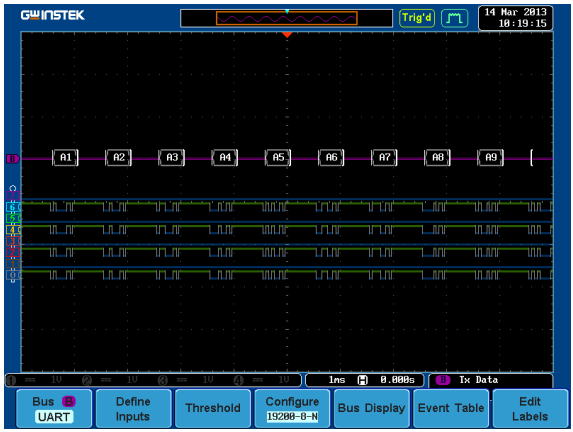
2. Press the *Demo* button.

3. Press the *Down* button to select Digital Mode 5. A screen confirming Digital Mode 5 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



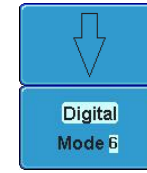
Display I²C (Digital Mode 6)

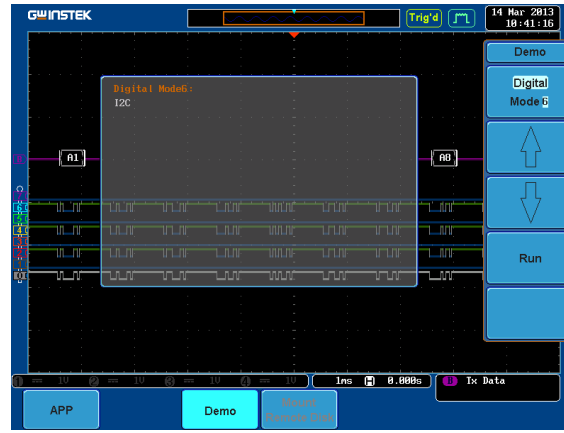
Step

1. Press the *Test* key on the front panel of the GDS-2000A.

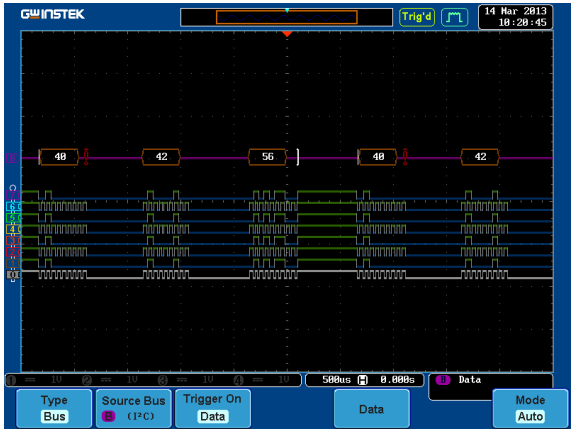
2. Press the *Demo* button.

3. Press the *Down* button to select Digital Mode 6. A screen confirming Digital Mode 6 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



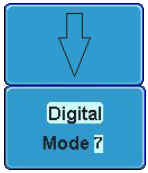
Display SPI (Digital Mode 7)

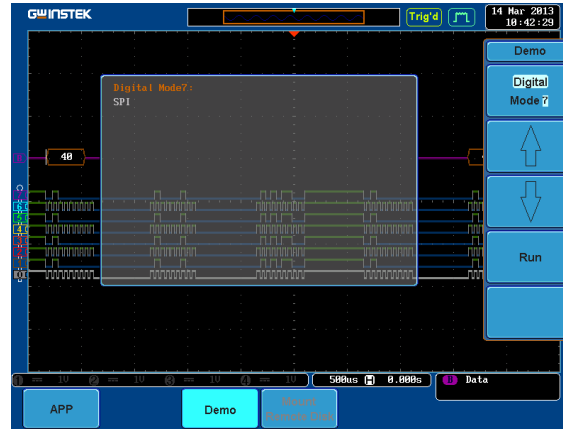
Step

1. Press the Test key on the front panel of the GDS-2000A.

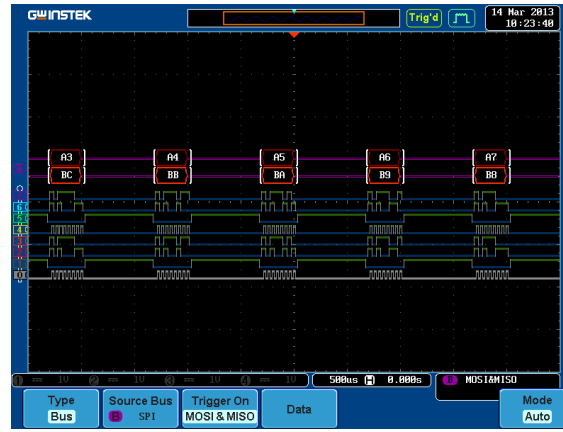
2. Press the *Demo* button.

3. Press the Down button to select Digital Mode 7. A screen confirming Digital Mode 7 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



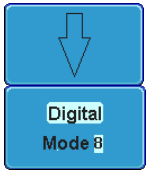
Display CAN (Digital Mode 8)

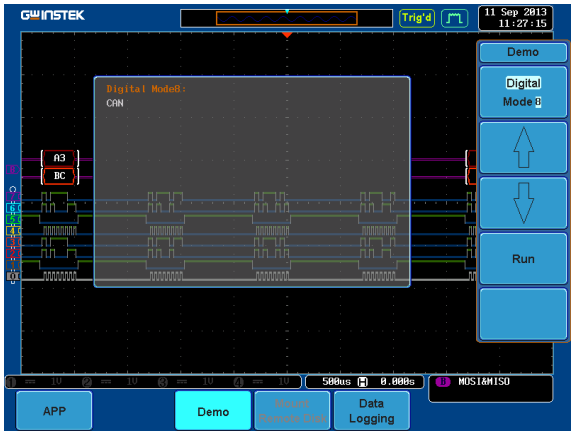
Step

1. Press the Test key on the front panel of the GDS-2000A.

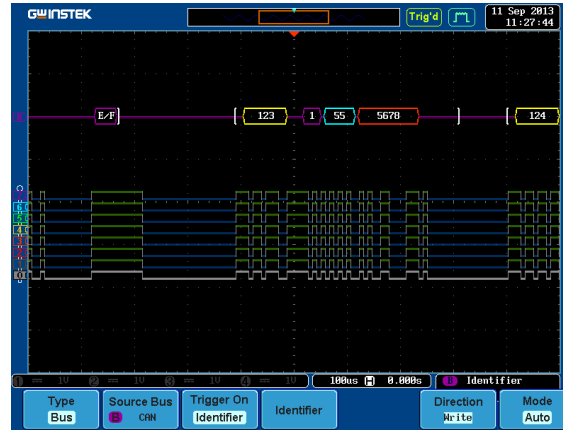
2. Press the *Demo* button.

3. Press the Down button to select Digital Mode 8. A screen confirming Digital Mode 8 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



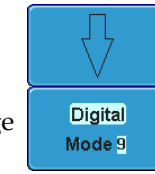
Display LIN (Digital Mode 9)

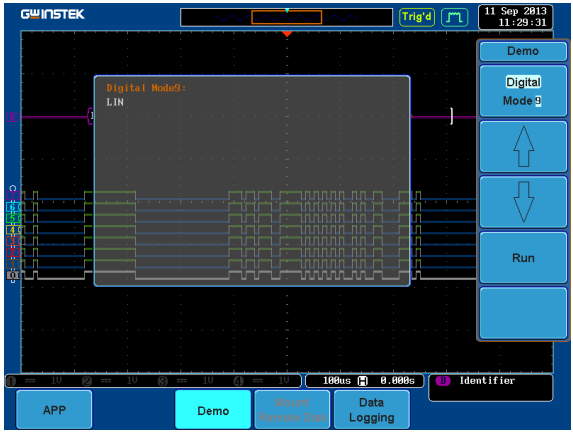
Step

1. Press the Test key on the front panel of the GDS-2000A.

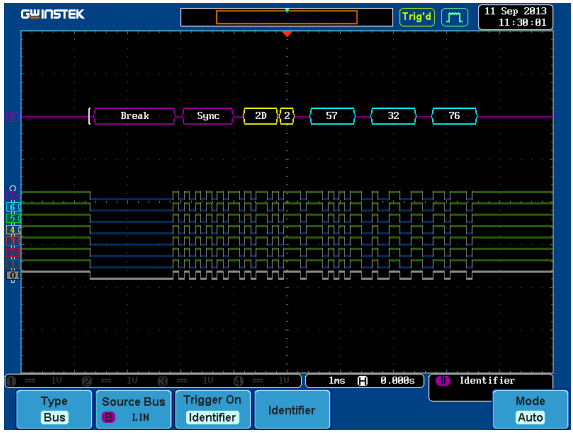
2. Press the *Demo* button.

3. Press the Down button to select Digital Mode 9. A screen confirming Digital Mode 9 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



Display FM (FM mode)

Step

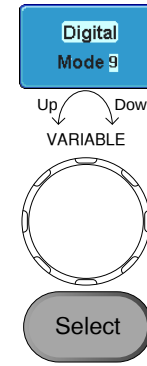
1. Connect a probe to the FM terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

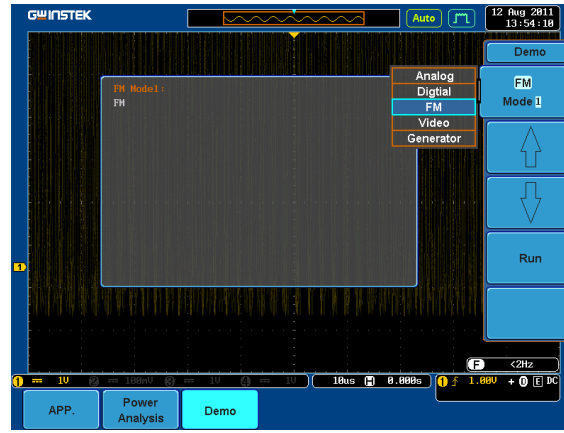
2. Connect the other end of probe to CH1 terminal on the GDS-2000A.

3. Press the *Test* key on the front panel of the GDS-2000A.

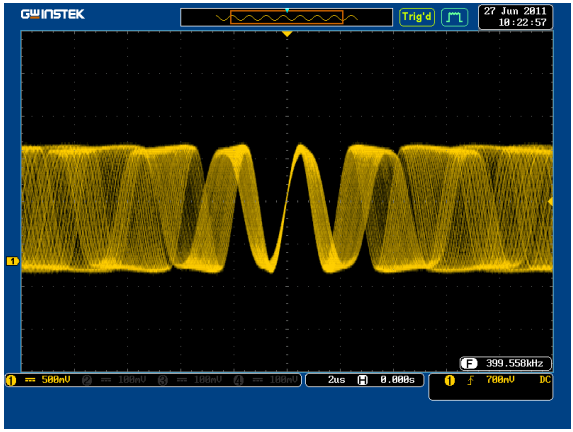
4. Press the *Demo* button.

5. Press the *Digital* mode button (F1 button). Use the *Variable* knob to select FM mode. Press the *Select* button to confirm FM Mode 1 is selected.





6. Press the *Run* button to display the waveform.


GW INSTEK
Trig'd
27 Jun 2011
10:22:57
399.558kHz
500mV
2us
0.000s
700mV
DC

Display Video (Video mode)

Step

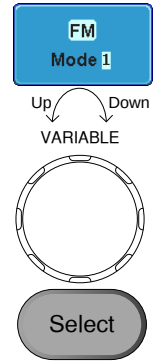
1. Connect a probe to the Video terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

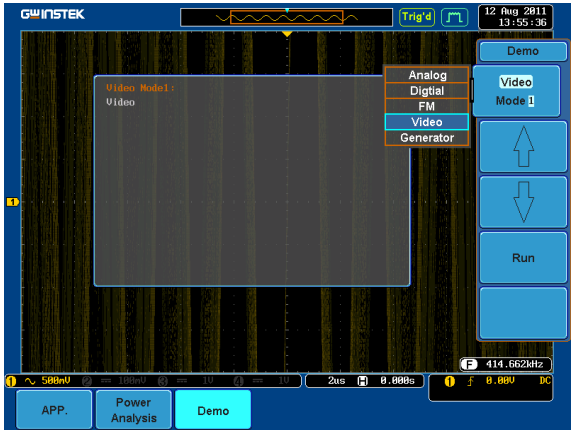
2. Connect the other end of probe to the CH1 terminal on the GDS-2000A.

3. Press the *Test* key on the front panel of the GDS-2000A.

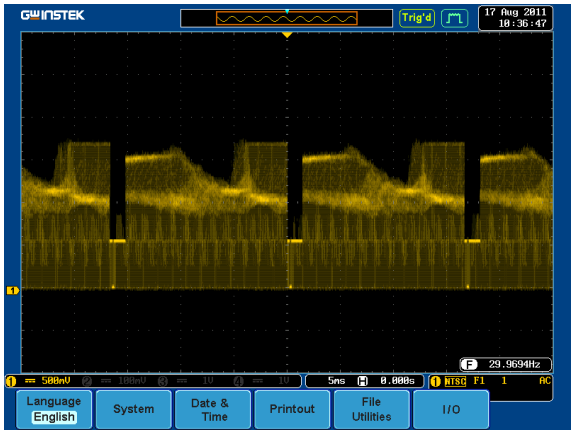
4. Press the *Demo* button.

5. Press *FM* button (F1 button). Use the *Variable* knob to select Video mode. Press the *Select* button to confirm Video Mode 1 is selected.





6. Press the *Run* button to display the waveform.



Display Sine, Square and Triangle waveform (Generator mode)

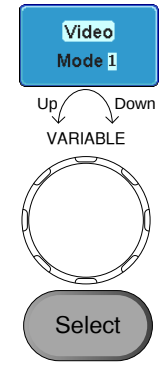
1. Connect the probe to the terminal marked  on the demo board. Connect the grounding clip to the ground terminal (⏚).

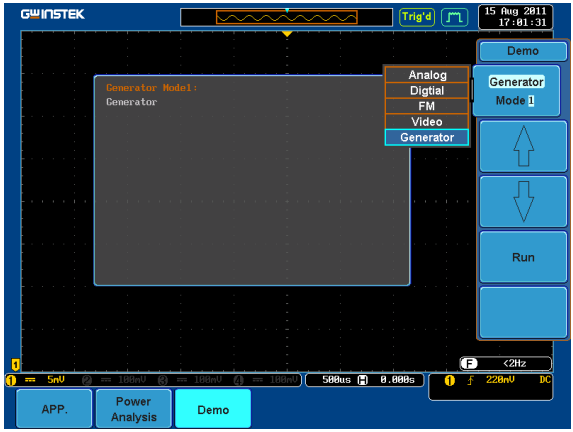
2. Connect the other end of probe to the CH1 terminal on the GDS-2000A.

3. Press the *Test* key on the front panel of the GDS-2000A.

4. Press the *Demo* button.

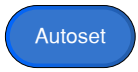
5. Press the *Video Mode* button (F1 button). Use the *Variable* knob to select Generator mode. Press the *Select* button to confirm Generator Mode 1 is selected.

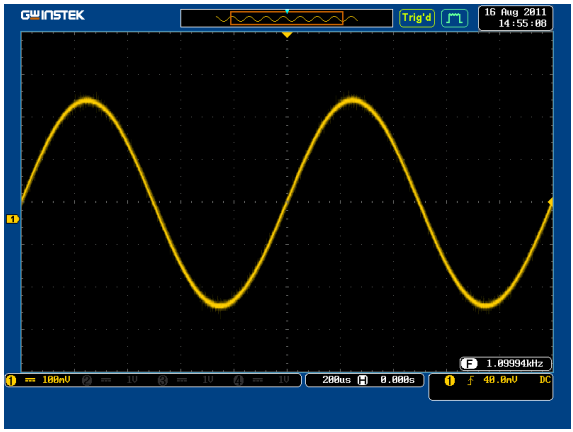




6. Press the *Run* button.

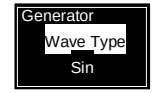
7. Press the AutoSet button to display the Sine waveform.



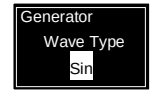


8. Press the *Select* button on the demo board.

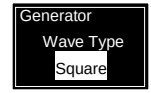
9. Adjust the *Variable* knob on the demo board to select the Wave Type. *Wave Type* is selected when it is highlighted on the OLED display.



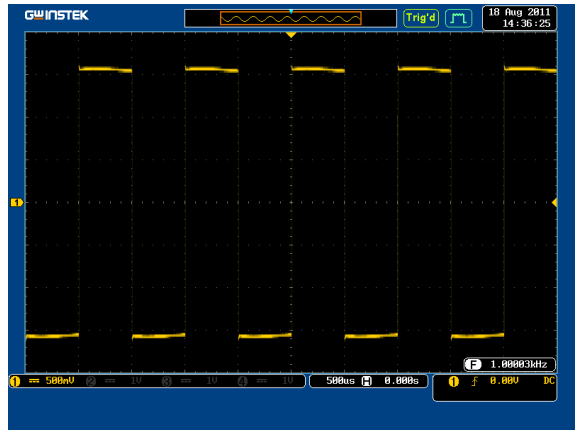
10. Push the *Select* button to change the highlight to the bottom line on the OLED display.



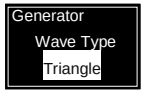
11. Adjust the *Variable* knob on the demo board to select *Square*. *Square* is selected when it is highlighted on the OLED display.



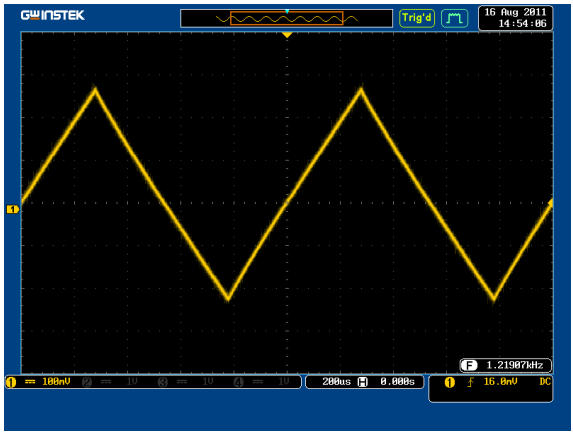
12. Press the *AutoSet* button to display the Square waveform.



13. Adjust the *Variable* knob on the demo board to select *Triangle*. *Triangle* is selected when it is highlighted on the OLED display.



14. Press the *AutoSet* button to display the Triangle waveform.

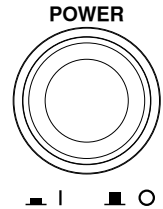


GDS-2000E

Demonstration setup

Step

1. Turn on the GDS-2000E.



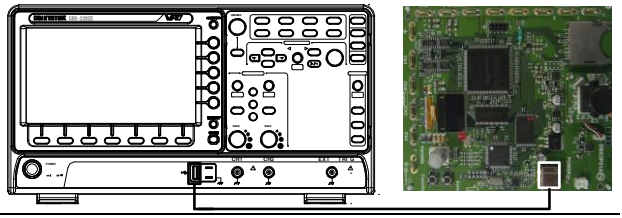
2. Install the Demo module software. Please refer to the chapter "SOFTWARE INSTALLATION" on page 104 for details.

Note

A. Please make sure that the firmware version is V1.09 or above.

B. Please refer to the "Appendix" chapter for information about updating the firmware.

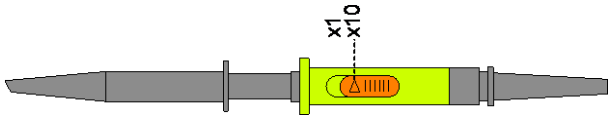
3. Connect the USB cable as shown in the following diagram to power up the demo board. Connect the Type A plug to the GDS-2000E and the Type B plug to the demo board.



Note

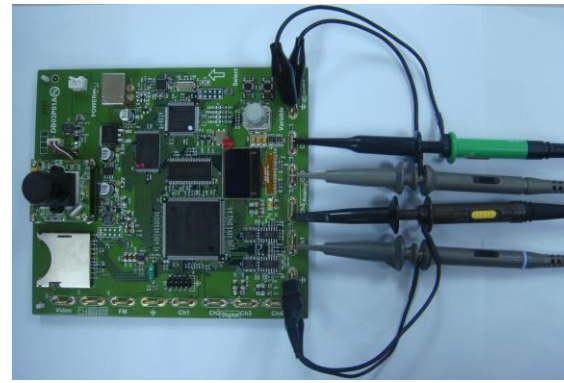
Make sure the power LED on the demo board turns on.

4. Select x10 as the attenuation on the probe to limit the input signal amplitude if the probe you are using is selectable from x1 and x10.

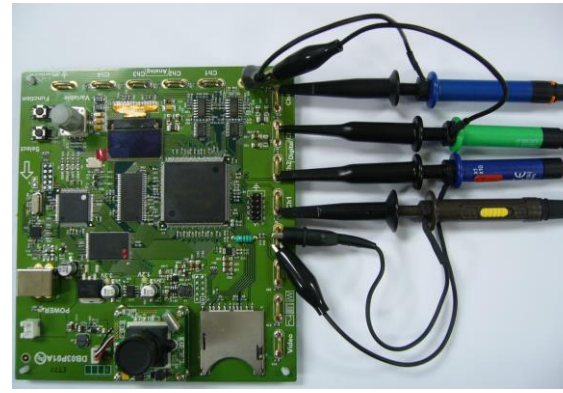


5. Depending on the type of waveform you want to display, connect the probes to the terminals marked, Analog CH1~CH4, Digital CH1~CH4, Video, FM as shown in the diagrams below. Connect the grounding clips to ground terminal (⏚).

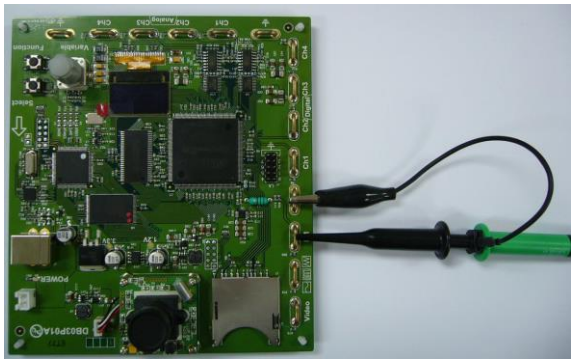
For displaying analog waveform



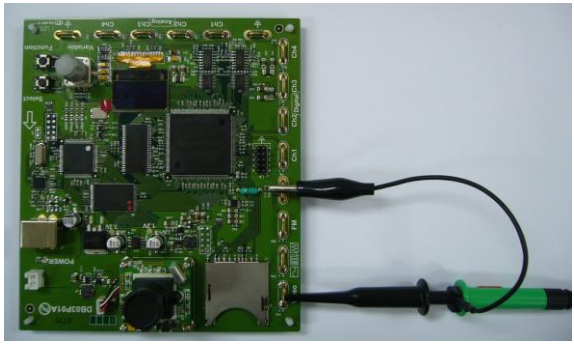
For displaying digital waveform



For displaying FM waveform



For displaying video waveform



6. Connect the other end of the probe(s) to the corresponding CH1 to CH4 terminals on the GDS-2000E.

7. Adjust the *Variable* knob on the demo board to select which oscilloscope to demonstrate when the USB cable is connected to the demo board and the oscilloscope. The New GDS-Series is selected when it is highlighted on the OLED display.

Software installation

Step

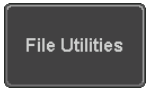
1. Insert the USB memory stick with GDB03.fun into the USB port on the front panel of the GDS-2000E.

Note

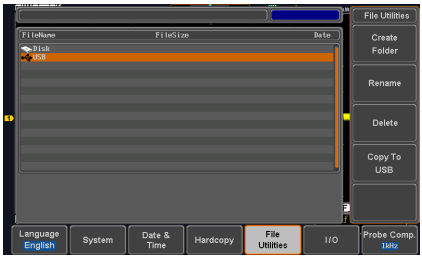
- GDB03.fun comes from the GDB03.zip file. When you unzip the zip file, two files are generated. One is GDB03.fun for the software installation and the other is this user manual in PDF format.
- Make sure the firmware version is V1.00 or higher.

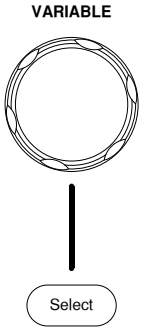
2. Press the *Utility* key.

3. Select *File Utilities* from the bottom menu.

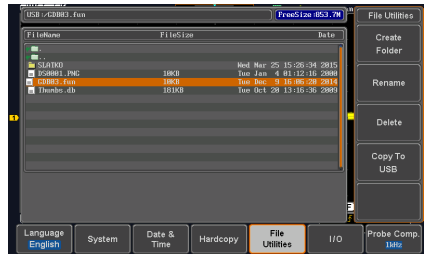


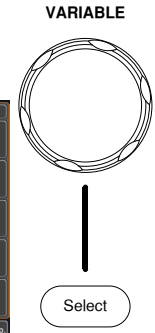
4. Use the Variable knob to select the USB memory stick and then press the Select button.





5. Use the Variable knob to select GDB03.fun file and then press the Select button to select it.





6. Press the Select button again to start installation.

7. The installation is complete when a message showing “Please turn off the oscilloscope and turn on again” is displayed.

Display demo board signal

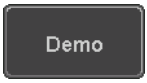
The demo board can be used to display 8 types of analog signals, 8 types of digital signals, 5 types of CH decode signals, FM and video signals. Please follow the procedure listed below to display each signal in sequence.

Display Autoset mode (Analog Mode 1)

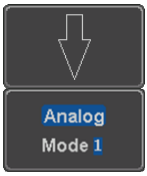
Step

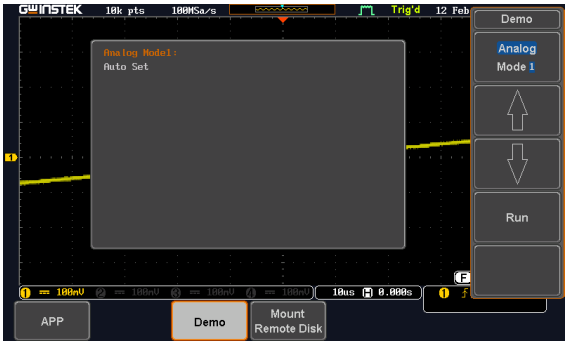
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

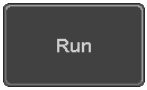


3. Press the *Down* button to select Analog Mode 1. A screen confirming Analog Mode 1 is selected as shown below appears.

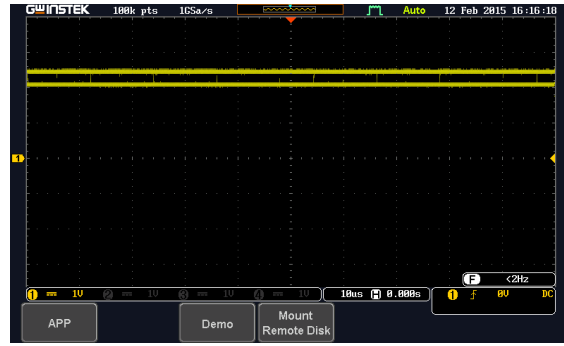




4. Press the *Run* button.



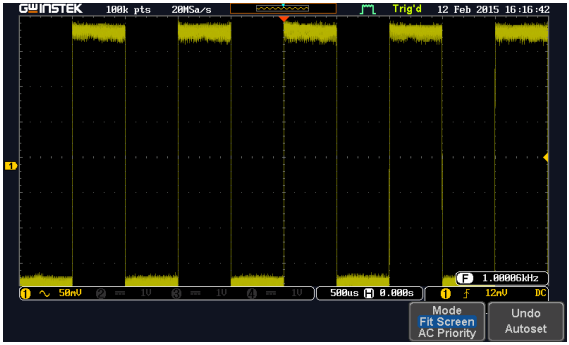
5. Press the *CH1* key to activate CH1. 



6. Set the *Coupling* to AC from the bottom menu. 

7. Press the *Autoset* key on the panel. 

8. A waveform shown as the next page appears.



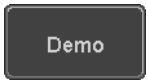
Display XY mode(Analog Mode 2)

Background	Display 2 sets of X-Y waveform at the same time.

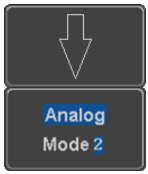
Step

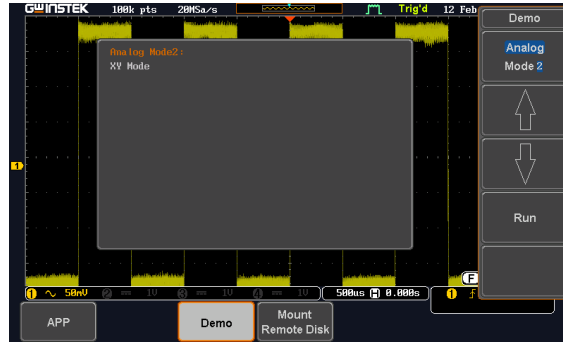
1. Press the *APP* key on the front panel of GDS-2000E.

2. Press the *Demo* button.

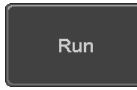


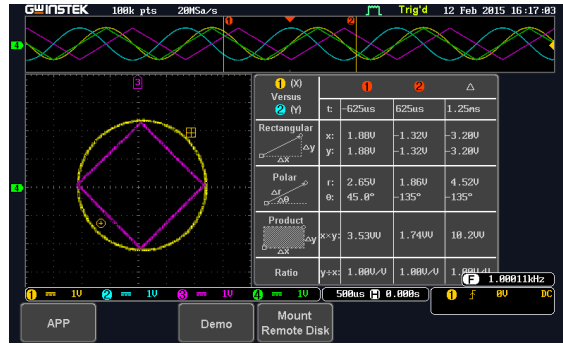
3. Press the *Down* button to select Analog Mode 2. A screen confirming Analog Mode 2 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



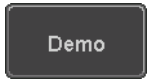


Display Gating Measurement (Analog Mode 3)

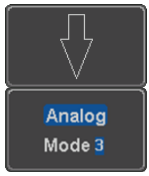
Step

1. Press the *APP* key on the front panel of the GDS-2000E.

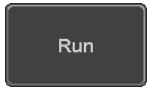
2. Press the *Demo* button.

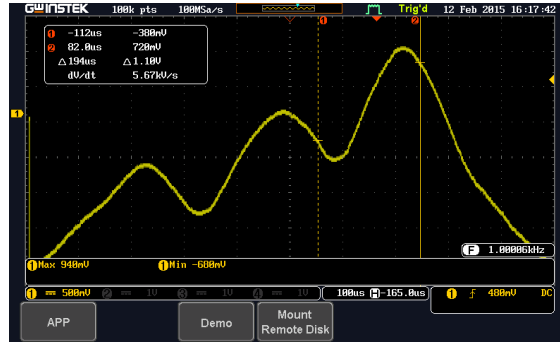


3. Press the *Down* button to select Analog Mode 3. A screen confirming Analog Mode 3 is selected as shown below appears.



4. Press the *Run* button to display the waveform.





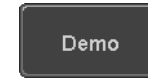
Note You can set the position of the cursors to set the range of the Gating Measurement.

Display Pulse Runt (Analog Mode 4)

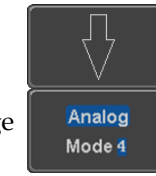
Step

1. Press the *APP* key on the front panel of the GDS-2000E.

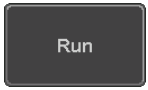
2. Press the *Demo* button.

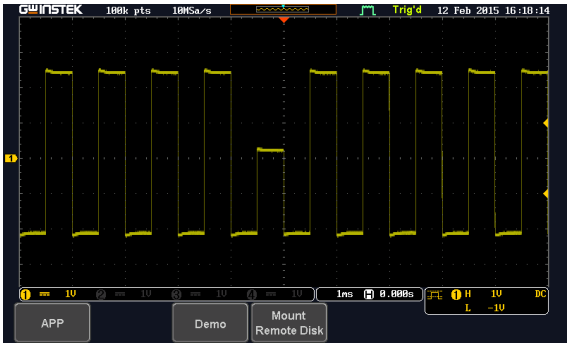


3. Press the *Down* button to select Analog Mode 4. A screen confirming Analog Mode 4 is selected as shown on the next page appears.



4. Press the *Run* button to display the waveform.



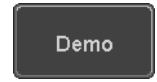


Display Rise Fall (Analog Mode 5)

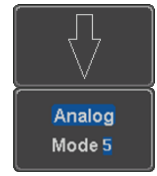
Step

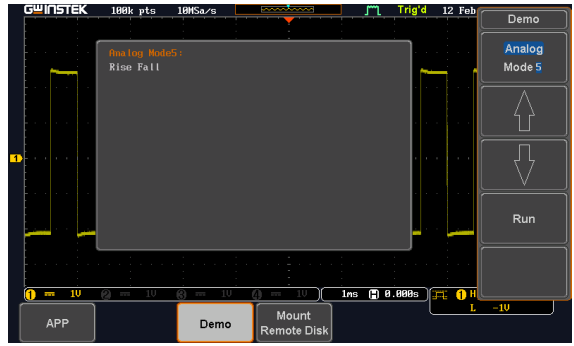
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

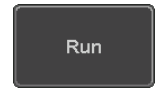


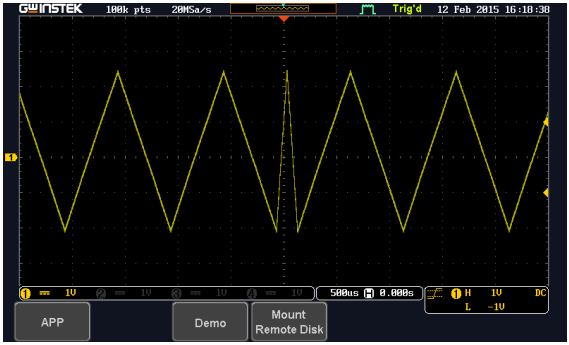
3. Press the *Down* button to select Analog Mode 5. A screen confirming Analog Mode 5 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



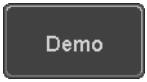


Display Search (Analog Mode 6)

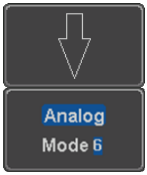
Step

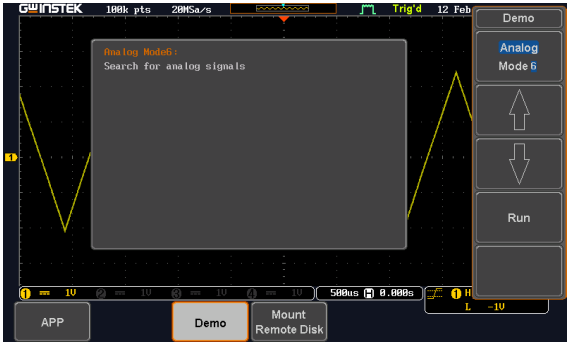
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

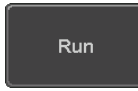


3. Press the *Down* button to select Analog Mode 6. A screen confirming Analog Mode 6 is selected as shown below appears.





4. Press the *Run* button to display the waveform.

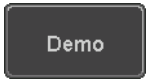


Display Segments (Analog Mode 7)

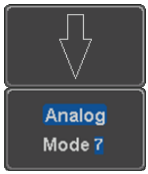
Step

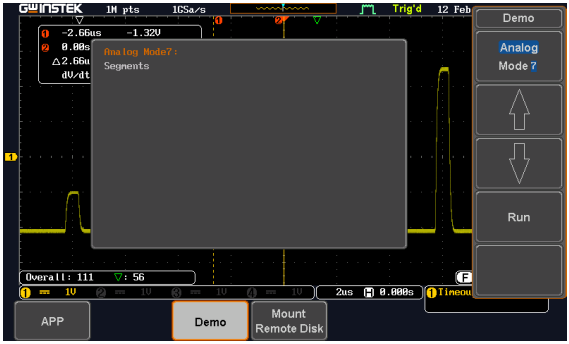
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

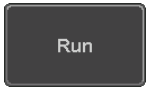


3. Press the *Down* button to select Analog Mode 7. A screen confirming Analog Mode 7 is selected as shown below appears.

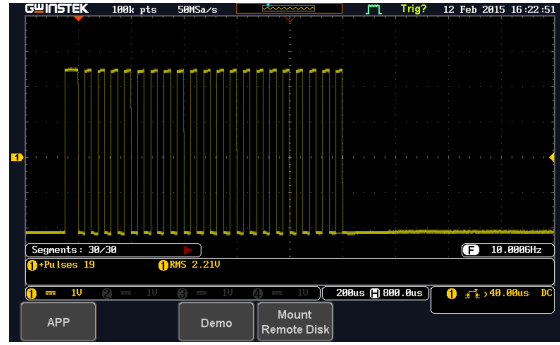




4. Press the *Run* button to display the waveform.



5. The function key on the demo board should be press down before the segments waveform can be outputted.

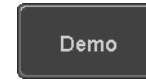


Display Update (Analog Mode 9)

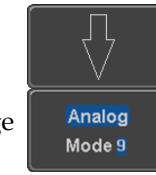
Step

1. Press the *APP* key on the front panel of the GDS-2000E.

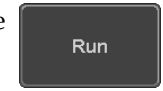
2. Press the *Demo* button.

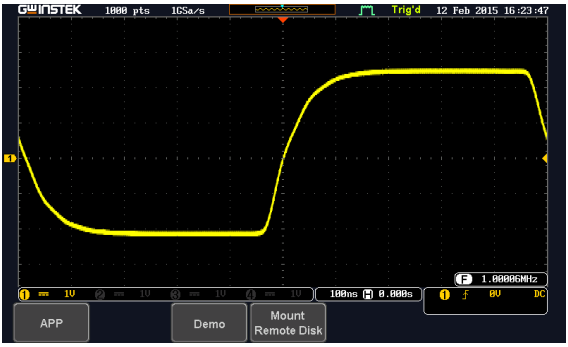


3. Press the *Down* button to select Analog Mode 9. A screen confirming Analog Mode 9 is selected as shown on the next page appears.



4. Press the *Run* button to display the waveform.





Display Pulse Width (Digital Mode 1)

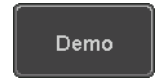
Step

1. Connect the probes to the terminals marked Digital CH1~ CH4, and grounding clips to ground terminal (⏚).

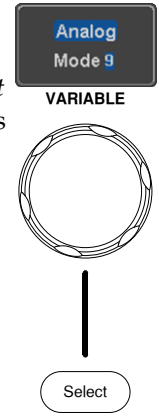
2. Connect the probes to corresponding CH1~CH4 terminals on the GDS-2000A.

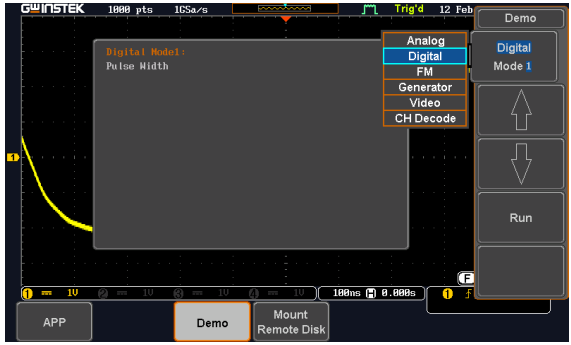
3. Press the *APP* key on the front panel of GDS-2000E.

4. Press the *Demo* button.

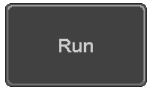


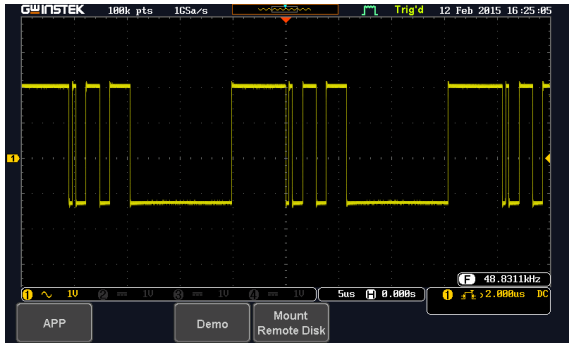
5. Press the *Analog Mode* button (F1 button). Use the *Variable* knob to select Digital mode. Press the *Select* button to confirm Digital Mode 1 is selected.





6. Press the Run button to display the waveform.





Display Delay (Digital Mode 2)

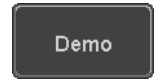
Background

The Delay trigger works in tandem with the edge trigger, by waiting for a specified time or number of events before the edge trigger starts. This method allows pinpointing a location in a long series of trigger events.

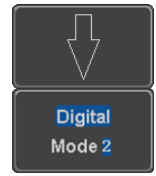
Step

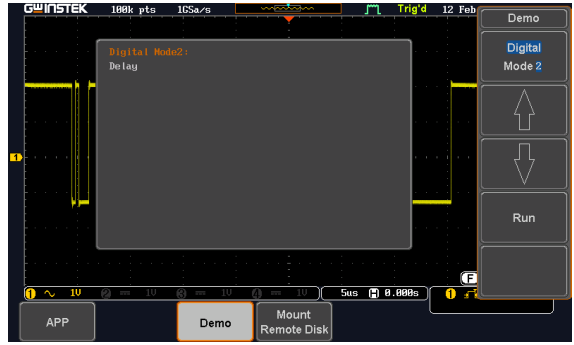
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

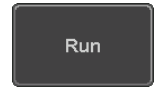


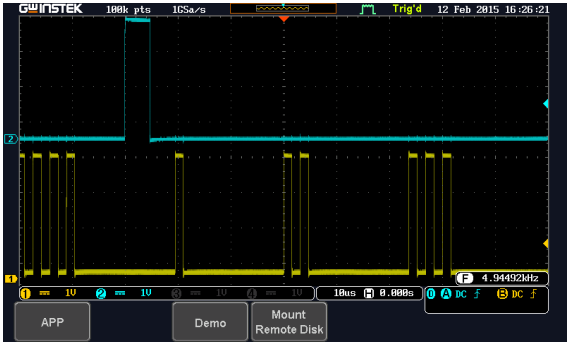
3. Press the *Down* button to select Digital Mode 2. A screen confirming Digital Mode 2 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



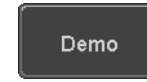

GW INSTEK
100k pts
1GSa/s
Trig'd
12 Feb 2015 16:26:21
4.944921kHz
1V
1V
10us
0.000s
DC
DC
APP
Demo
Mount
Remote Disk

Display LM (Logic Memory) (Digital Mode 3)

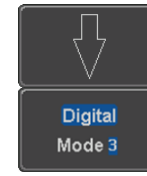
Step

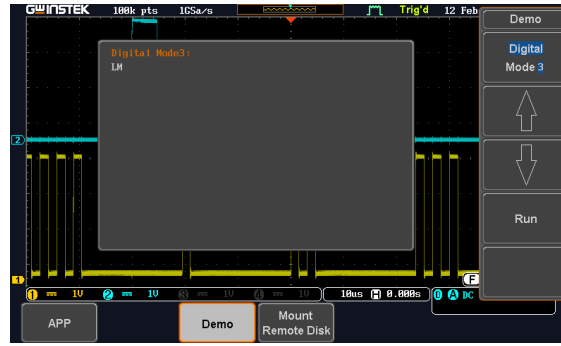
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

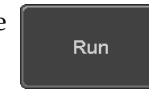


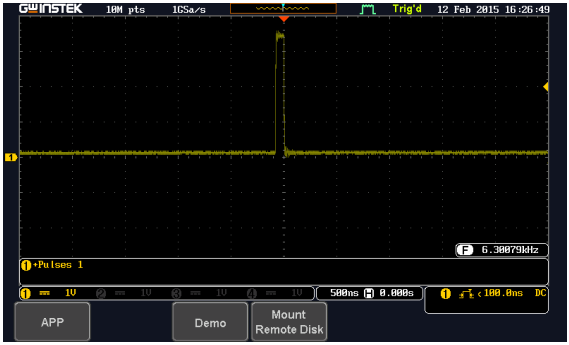
3. Press the *Down* button to select Digital Mode 3. A screen confirming Digital Mode 3 is selected as shown below appears.





4. Press the *Run* button to display the waveform.





Note

If we compare the waveforms shown above, we can see that we can observe more of the waveform under long memory.

Display FM (FM mode)

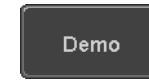
Step

1. Connect a probe to the FM terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

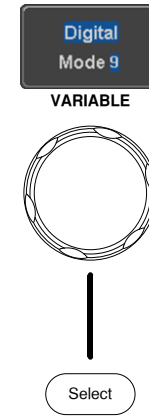
2. Connect the other end of probe to CH1 terminal on the GDS-2000E.

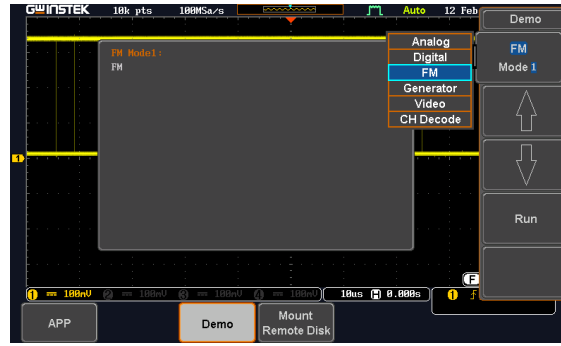
3. Press the *APP* key on the front panel of the GDS-2000E.

4. Press the *Demo* button.

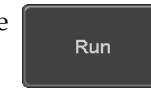


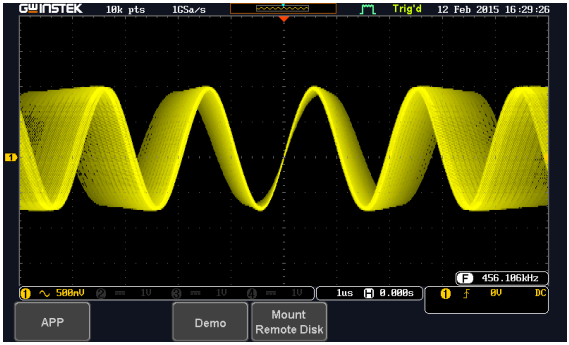
5. Press the *Digital* mode button (F1 button). Use the *Variable* knob to select FM mode. Press the *Select* button to confirm FM Mode 1 is selected.





6. Press the *Run* button to display the waveform.





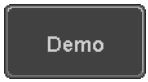
Display Sine, Square and Triangle waveform (Generator mode)

1. Connect the probe to the terminal marked  on the demo board. Connect the grounding clip to the ground terminal (⏚).

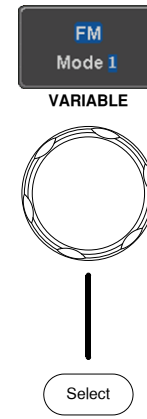
2. Connect the other end of probe to the CH1 terminal on the GDS-2000E.

3. Press the *APP* key on the front panel of the GDS-2000E.

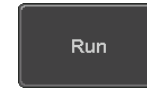
4. Press the *Demo* button.



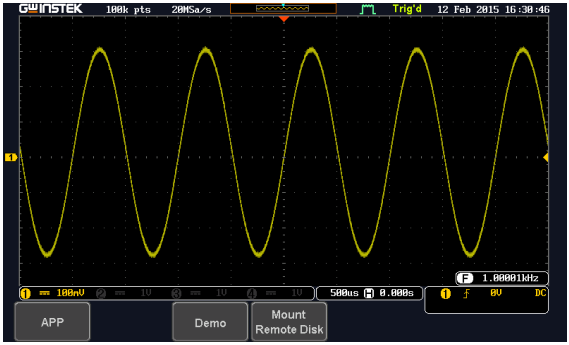
5. Press the *FM Mode* button (F1 button). Use the *Variable* knob to select Generator mode. Press the *Select* button to confirm Generator Mode 1 is selected.



6. Press the *Run* button.

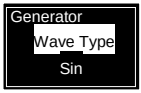


7. Press the AutoSet button to display the Sine waveform.

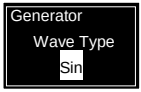


8. Press the *Select* button on the demo board.

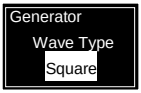
9. Adjust the *Variable* knob on the demo board to select the Wave Type. *Wave Type* is selected when it is highlighted on the OLED display.



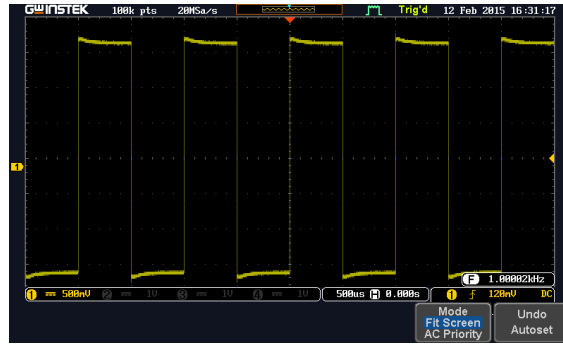
10. Push the *Select* button to change the highlight to the bottom line on the OLED display.



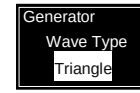
11. Adjust the *Variable* knob on the demo board to select *Square*. *Square* is selected when it is highlighted on the OLED display.



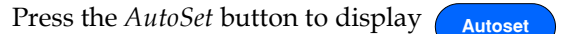
12. Press the *AutoSet* button to display the Square waveform.

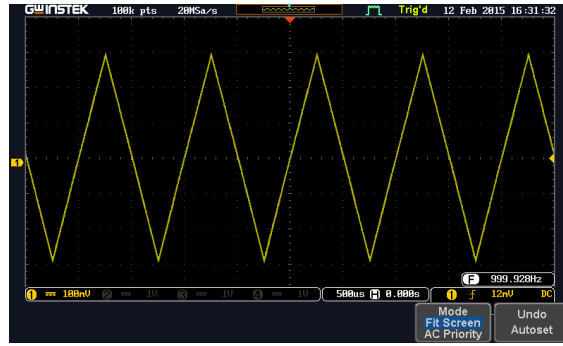


13. Adjust the *Variable* knob on the demo board to select *Triangle*. *Triangle* is selected when it is highlighted on the OLED display.



14. Press the *AutoSet* button to display the Triangle waveform.





Display Video (Video mode)

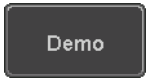
Step

1. Connect a probe to the Video terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

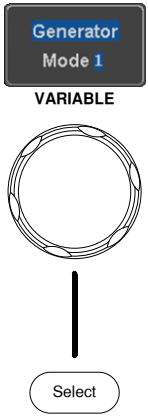
2. Connect the other end of probe to the CH1 terminal on the GDS-2000E.

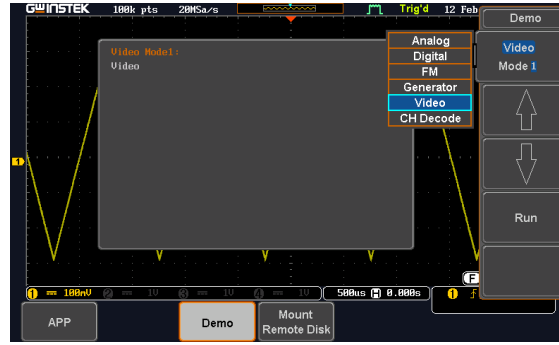
3. Press the *APP* key on the front panel of the GDS-2000E.

4. Press the *Demo* button.

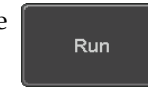


5. Press *Generator mode* button (F1 button). Use the *Variable* knob to select Video mode. Press the *Select* button to confirm Video Mode 1 is selected.





6. Press the *Run* button to display the waveform.

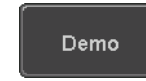


Display UART (CH Decode Mode 1)

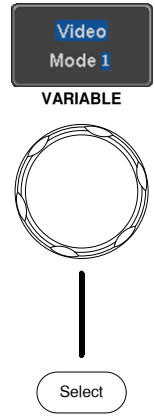
Step

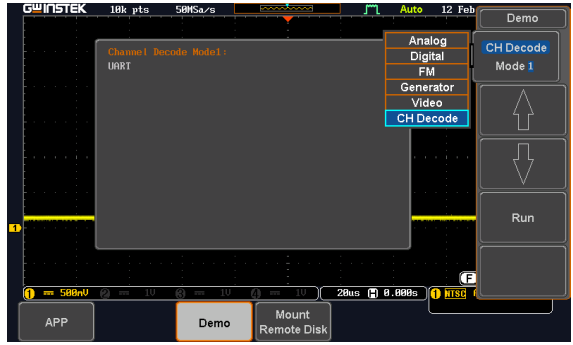
1. Press the *APP* key on the front panel of GDS-2000E.

2. Press the *Demo* button.

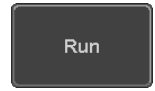


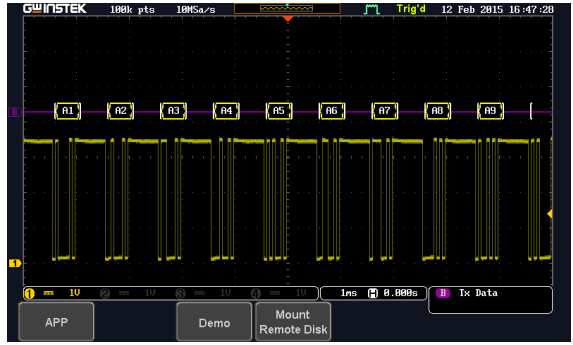
3. Press the *Video Mode* button (F1 button). Use the *Variable* knob to select CH Decode. Press the *Select* button to confirm CH Decode Mode 1 is selected.





4. Press the Run button to display the waveform.



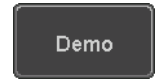


Display I²C (CH Decode Mode 2)

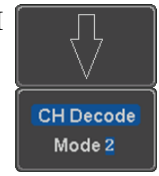
Step

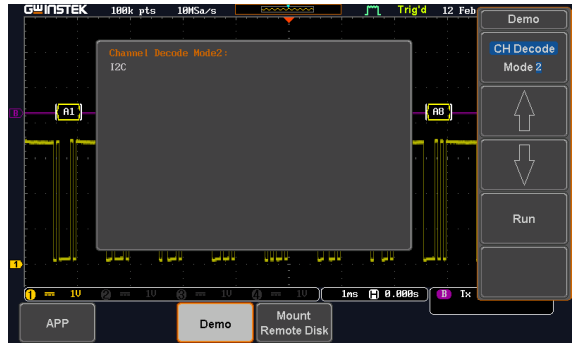
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

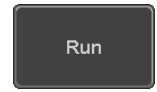


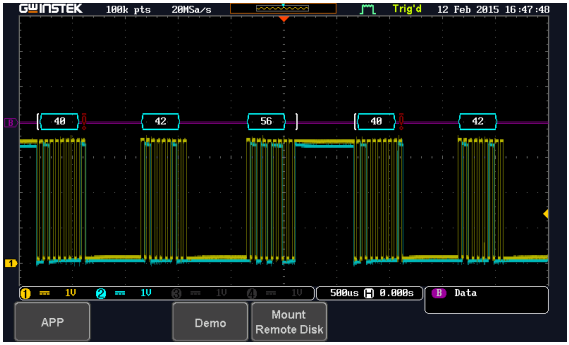
3. Press the *Down* button to select CH Decode Mode 2. A screen confirming CH Decode Mode 2 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



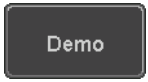


Display SPI (CH Decode Mode 3)

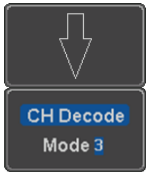
Step

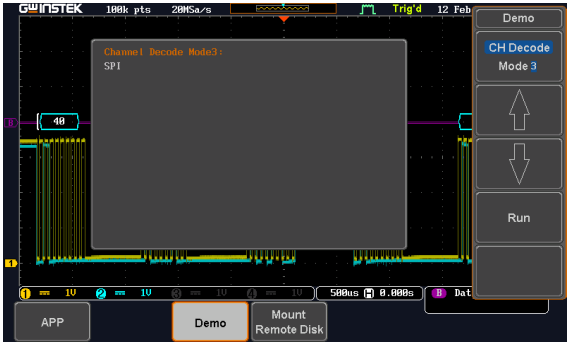
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

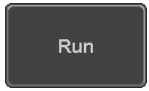


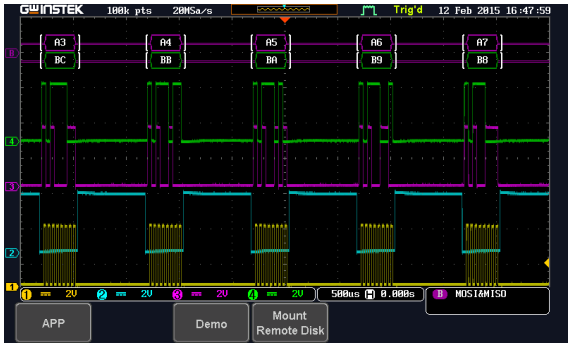
3. Press the *Down* button to select CH Decode Mode 3. A screen confirming CH Decode Mode 3 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



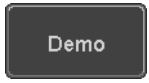


Display CAN (CH Decode Mode 4)

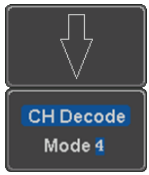
Step

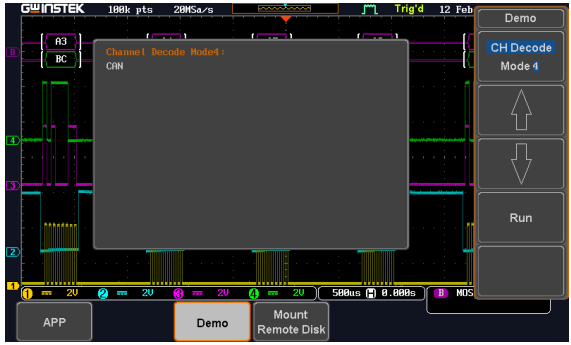
1. Press the *APP* key on the front panel of the GDS-2000E.

2. Press the *Demo* button.

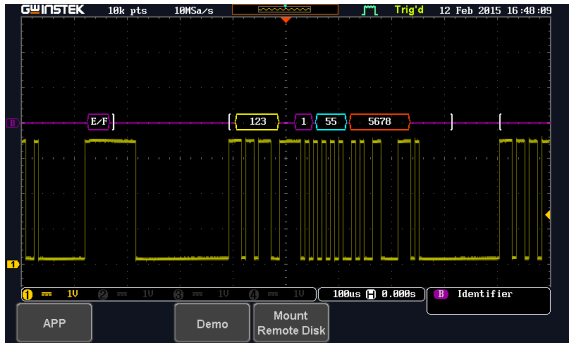


3. Press the Down button to select CH Decode Mode 4. A screen confirming CH Decode Mode 4 is selected as shown below appears.





4. Press the *Run* button to display the waveform.

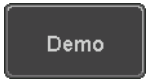


Display LIN (CH Decode Mode 5)

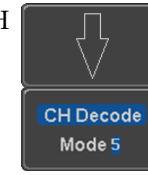
Step

1. Press the *APP* key on the front panel of the GDS-2000E.

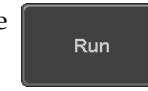
2. Press the *Demo* button.

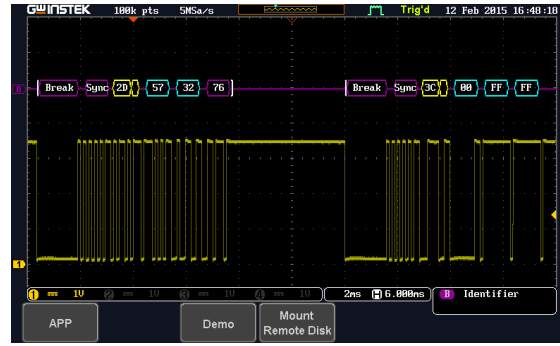


3. Press the *Down* button to select CH Decode Mode 5. A screen confirming CH Decode Mode 5 is selected as shown below appears.



4. Press the *Run* button to display the waveform.





MSO-2000A/AE

Display demo board signal

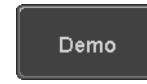
Except for the following new Logic analyzer display functions, the remaining functions are the same with that of GDS-2000E.

Display LM (Logic Memory)

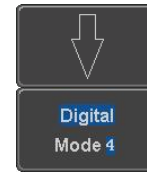
Step

1. Press the *APP* key on the front panel of the MSO-2000.

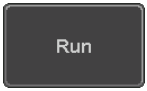
2. Press the *Demo* button.

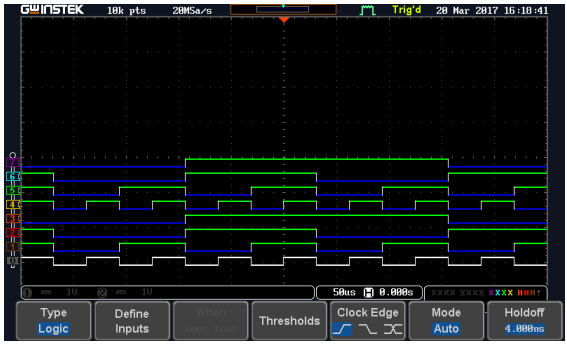


3. Press the *Down* button to select Digital Mode 4. A screen confirming Digital Mode 4 is selected as shown below appears.



4. Press the *Run* button to display the waveform.





Note

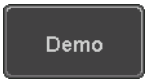
If we compare the waveforms shown above, we can see that we can observe more of the waveform under long memory.

Display UART

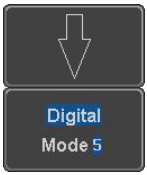
Step

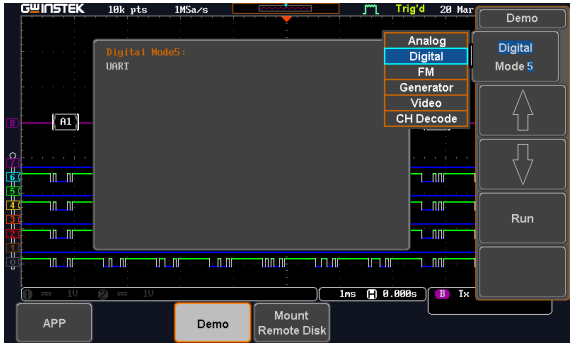
1. Press the *APP* key on the front panel of MSO-2000.

2. Press the *Demo* button.

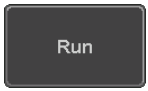


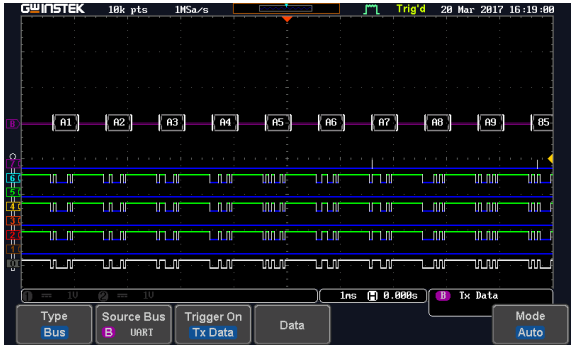
3. Press the *Down* button to select Digital Mode 5. A screen confirming Digital Mode 5 is selected as shown below appears.





4. Press the Run button to display the waveform.



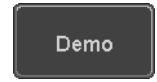


Display I²C

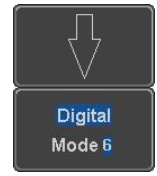
Step

1. Press the *APP* key on the front panel of the MSO-2000.

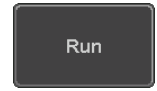
2. Press the *Demo* button.

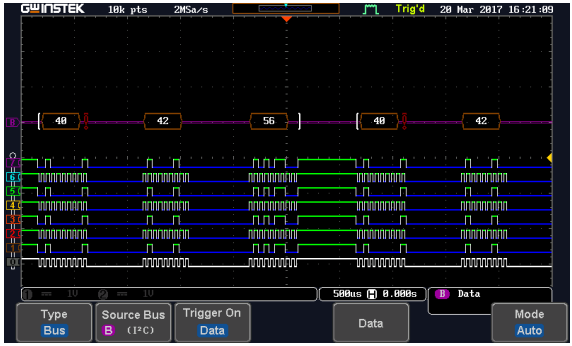


3. Press the *Down* button to select Digital Mode 6. A screen confirming Digital Mode 6 is selected as shown below appears.



4. Press the *Run* button to display the waveform.



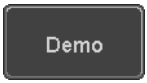


Display SPI

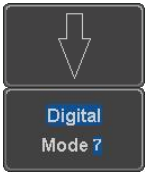
Step

1. Press the *APP* key on the front panel of the MSO-2000.

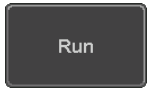
2. Press the *Demo* button.

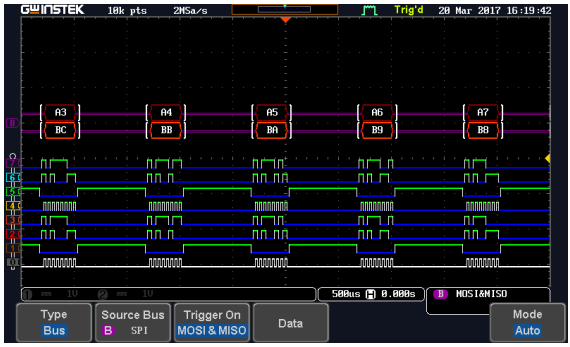


3. Press the *Down* button to select Digital Mode 7. A screen confirming Digital Mode 7 is selected as shown below appears.



4. Press the *Run* button to display the waveform.



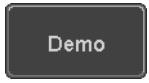


Display CAN

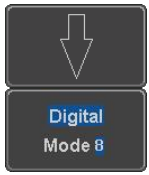
Step

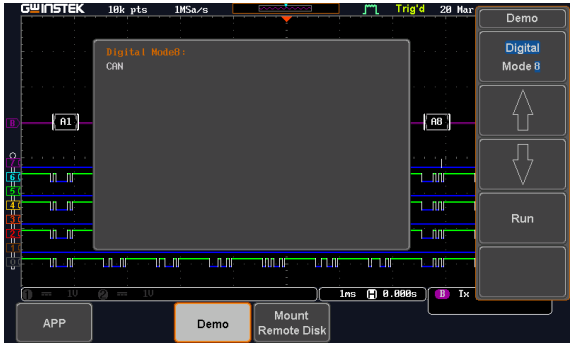
1. Press the *APP* key on the front panel of the MSO-2000.

2. Press the *Demo* button.

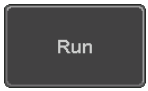


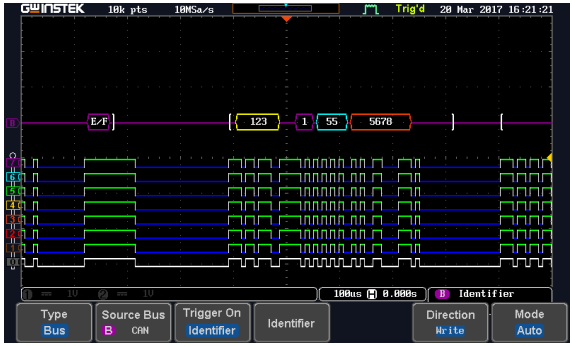
3. Press the Down button to select Digital Mode 8. A screen confirming Digital Mode 8 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



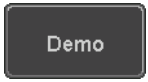


Display LIN

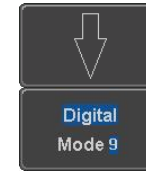
Step

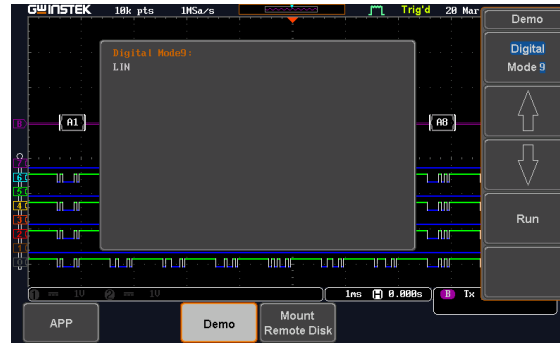
1. Press the *APP* key on the front panel of the MSO-2000.

2. Press the *Demo* button.

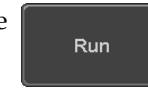


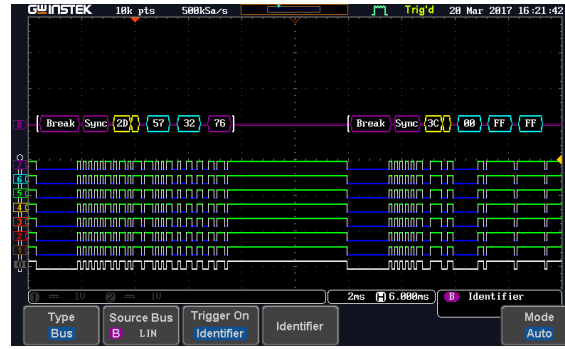
3. Press the *Down* button to Digital Mode 9. A screen confirming Digital Mode 9 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



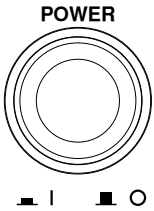


GDS-1000B

Demonstration setup

Step

1. Turn on the GDS-1000B.



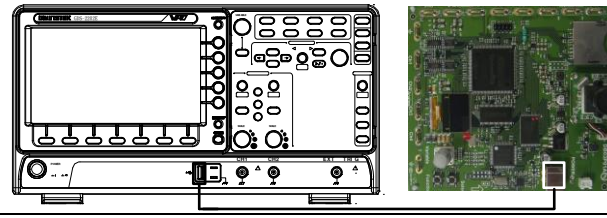
2. Install the Demo module software. Please refer to the chapter "SOFTWARE INSTALLATION" on page 151 for details.

Note

A. Please make sure that the firmware version is V1.0 or above.

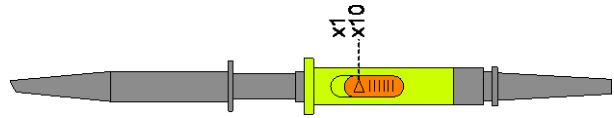
B. Please refer to the "Appendix" chapter for information about updating the firmware.

3. Connect the USB cable as shown in the following diagram to power up the demo board. Connect the Type A plug to the GDS-1000B and the Type B plug to the demo board.



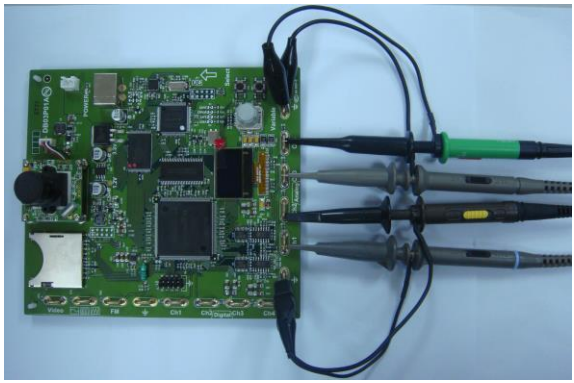
Note	Make sure the power LED on the demo board turns on.

4. Select x10 as the attenuation on the probe to limit the input signal amplitude if the probe you are using is selectable from x1 and x10.

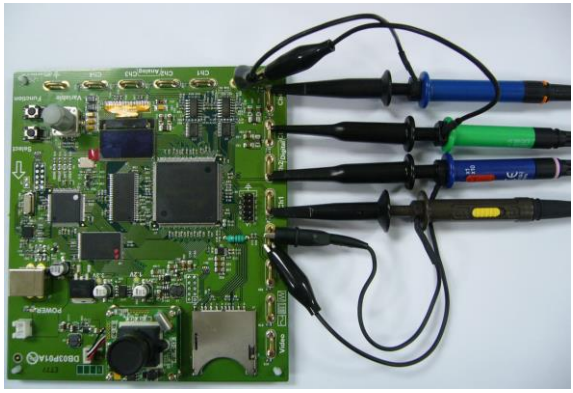


5. Depending on the type of waveform you want to display, connect the probes to the terminals marked, Analog CH1~CH4, Digital CH1~CH4, Video, FM as shown in the diagrams below. Connect the grounding clips to ground terminal (⏚).

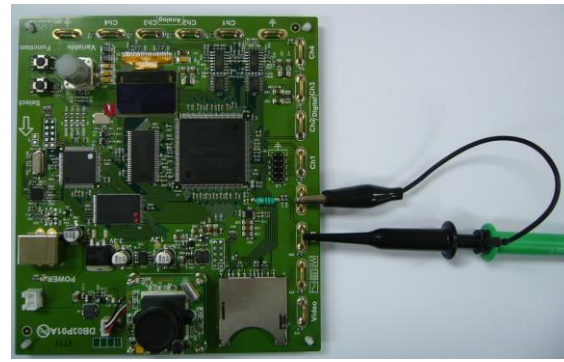
For displaying analog waveform



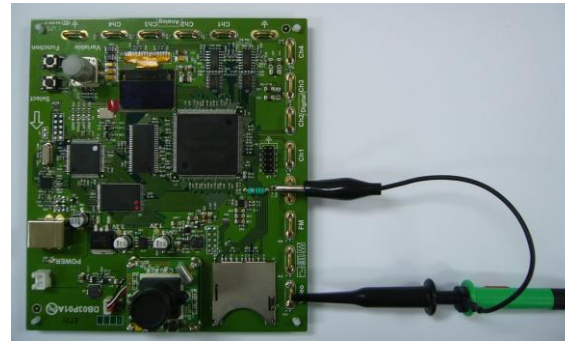
For displaying digital waveform



For displaying FM waveform



For displaying video waveform



6. Connect the other end of the probe(s) to the corresponding CH1 to CH4 terminals on the GDS-1000B.

7. Adjust the *Variable* knob on the demo board to select which oscilloscope to demonstrate when the USB cable is connected to the demo board and the oscilloscope. The New GDS-Series is selected when it is highlighted on the OLED display.

Software installation

Step

1. Insert the USB memory stick with GDB03.fun into the USB port on the front panel of the GDS-1000B.

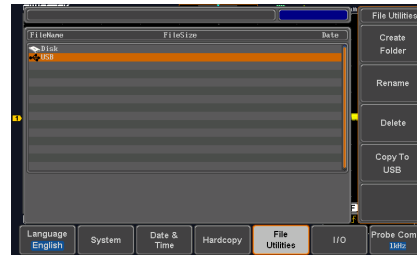
Note

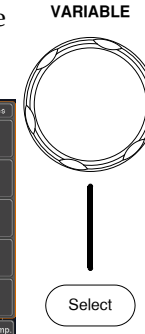
- GDB03.fun comes from the GDB03.zip file. When you unzip the zip file, two files are generated. One is GDB03.fun for the software installation and the other is this user manual in PDF format.
- Make sure the firmware version is V1.00 or higher.

2. Press the *Utility* key.

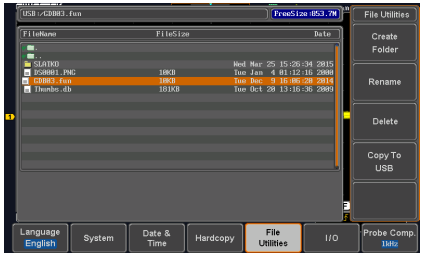
3. Select *File Utilities* from the bottom menu.

4. Use the Variable knob to select the USB memory stick and then press the Select button.

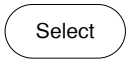




5. Use the Variable knob to select GDB03.fun file and then press the Select button to select it.



6. Press the Select button again to start installation.



7. The installation is complete when a message showing “Please turn off the oscilloscope and turn on again” is displayed.

Display demo board signal

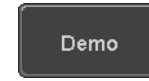
The demo board can be used to display 8 types of analog signals, 3 types of digital signals, FM and video signals. Please follow the procedure listed below to display each signal in sequence.

Display Autoset mode (Analog Mode 1)

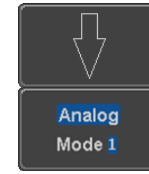
Step

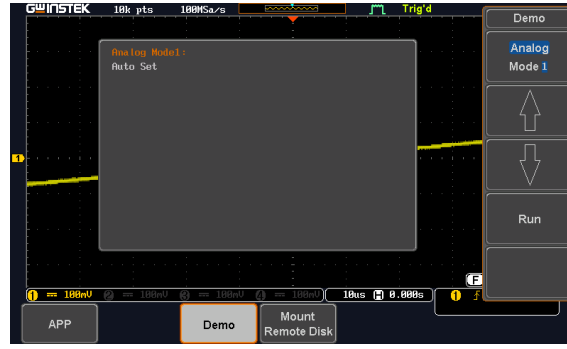
1. Press the *APP* key on the front panel of the GDS-1000B.

2. Press the *Demo* button.

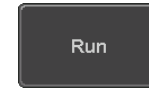


3. Press the *Down* button to select Analog Mode 1. A screen confirming Analog Mode 1 is selected as shown below appears.

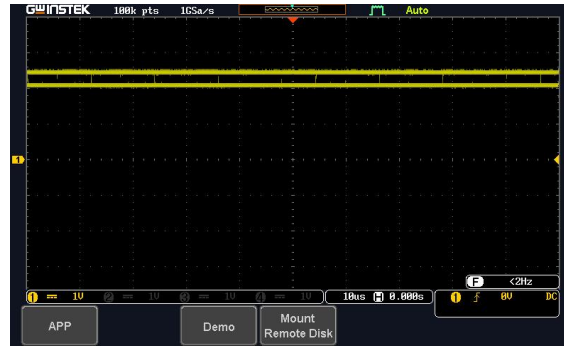




4. Press the *Run* button.



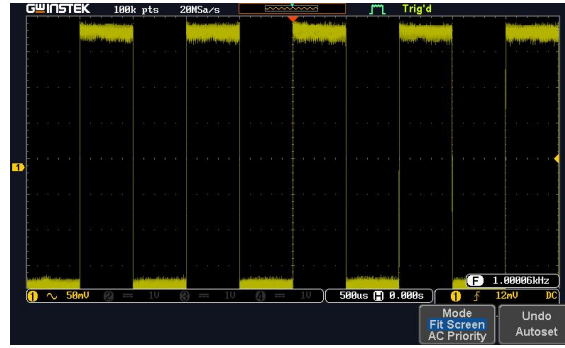
5. Press the *CH1* key to activate CH1.



6. Set the *Coupling* to AC from the bottom menu.

7. Press the *Autoset* key on the panel.

8. A waveform shown as the next page appears.



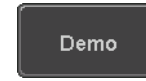
Display XY mode (Analog Mode 2)

Background	Display 2 sets of X-Y waveform at the same time.

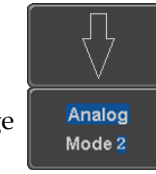
Step

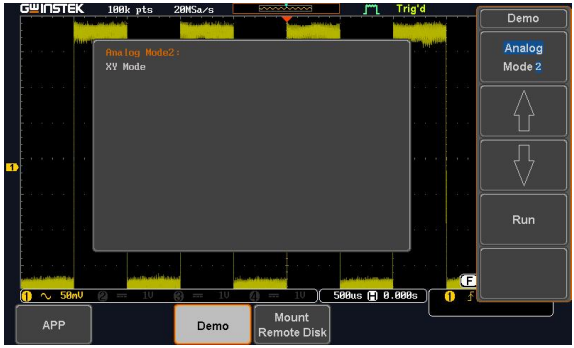
1. Press the *APP* key on the front panel of GDS-1000B.

2. Press the *Demo* button.

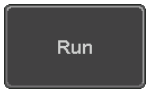


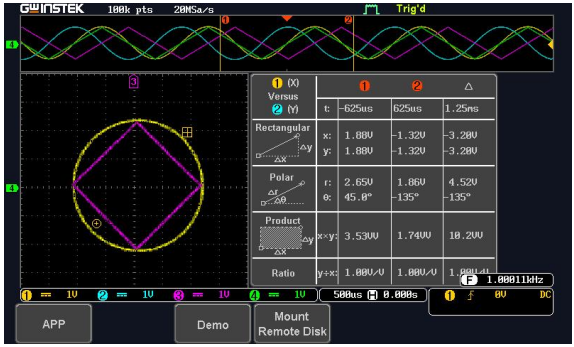
3. Press the *Down* button to select Analog Mode 2. A screen confirming Analog Mode 2 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



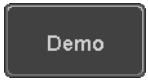


Display Gating Measurement (Analog Mode 3)

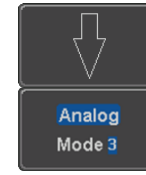
Step

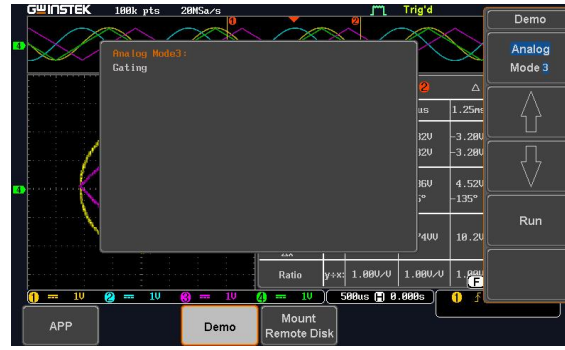
1. Press the *APP* key on the front panel of the GDS-1000B.

2. Press the *Demo* button.

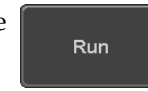


3. Press the *Down* button to select Analog Mode 3. A screen confirming Analog Mode 3 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



Note

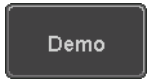
You can set the position of the cursors to set the range of the Gating Measurement.

Display Pulse Runt (Analog Mode 4)

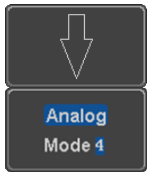
Step

1. Press the *APP* key on the front panel of the GDS-1000B.

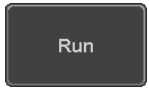
2. Press the *Demo* button.

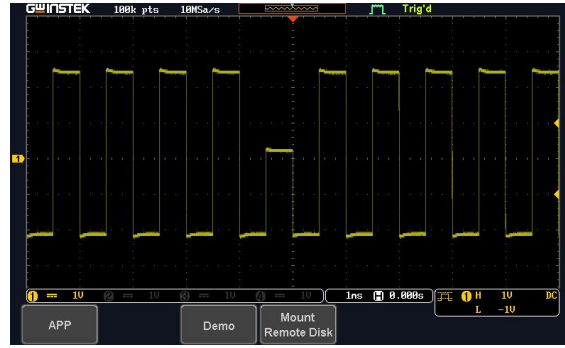


3. Press the *Down* button to select Analog Mode 4. A screen confirming Analog Mode 4 is selected as shown on the next page appears.



4. Press the *Run* button to display the waveform.



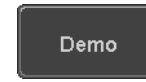


Display Rise Fall (Analog Mode 5)

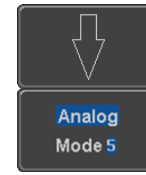
Step

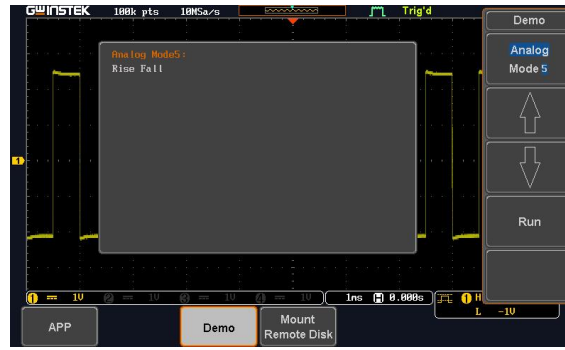
1. Press the *APP* key on the front panel of the GDS-1000B.

2. Press the *Demo* button.

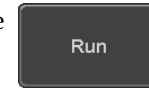


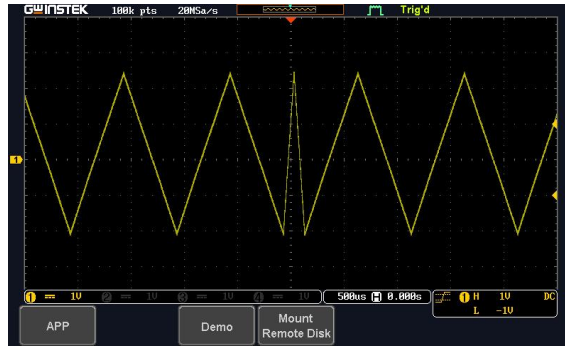
3. Press the *Down* button to select Analog Mode 5. A screen confirming Analog Mode 5 is selected as shown below appears.





4. Press the *Run* button to display the waveform.



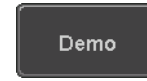


Display Update (Analog Mode 9)

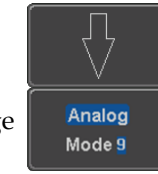
Step

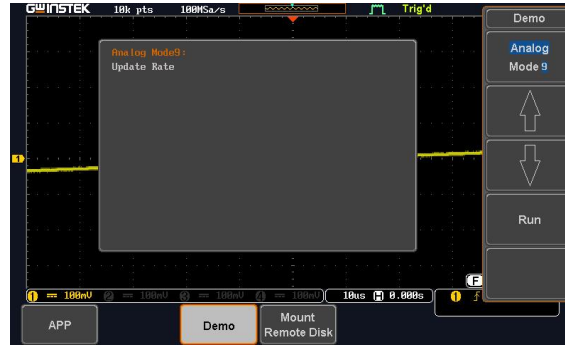
1. Press the *APP* key on the front panel of the GDS-1000B.

2. Press the *Demo* button.

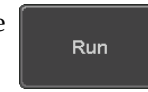


3. Press the *Down* button to select Analog Mode 9. A screen confirming Analog Mode 9 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



Display Pulse Width (Digital Mode 1)

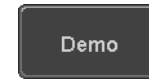
Step

1. Connect the probes to the terminals marked Digital CH1~ CH4, and grounding clips to ground terminal (⏚).

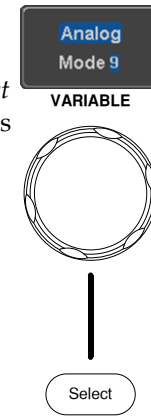
2. Connect the probes to corresponding CH1~CH4 terminals on the GDS-1000B.

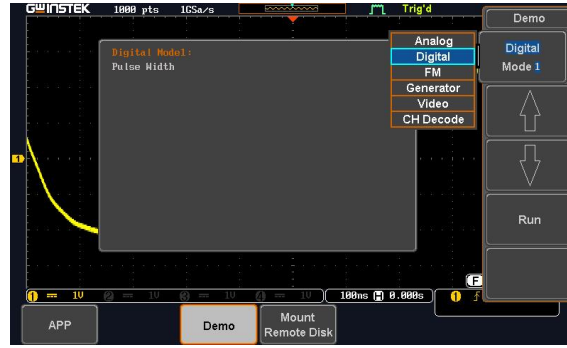
3. Press the *APP* key on the front panel of GDS-1000B.

4. Press the *Demo* button.

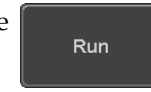


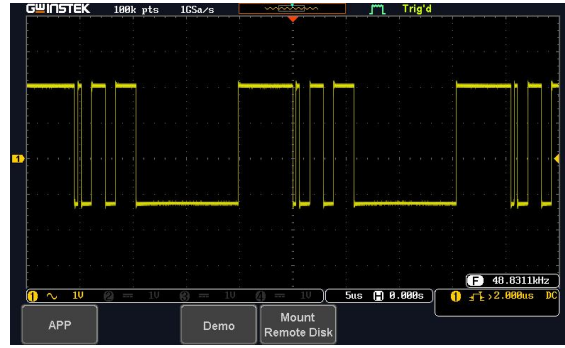
5. Press the *Analog Mode* button (F1 button). Use the *Variable* knob to select Digital mode. Press the *Select* button to confirm Digital Mode 1 is selected.





6. Press the Run button to display the waveform.





Display Delay (Digital Mode 2)

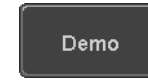
Background

The Delay trigger works in tandem with the edge trigger, by waiting for a specified time or number of events before the edge trigger starts. This method allows pinpointing a location in a long series of trigger events.

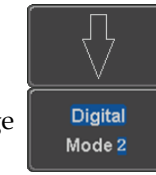
Step

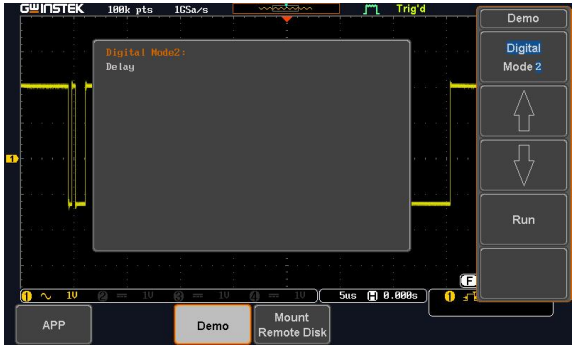
1. Press the *APP* key on the front panel of the GDS-1000B.

2. Press the *Demo* button.

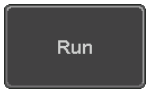


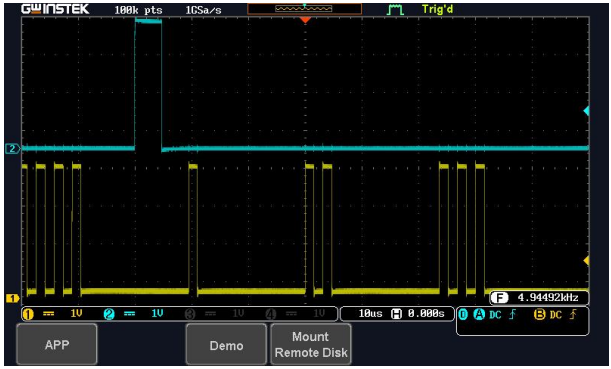
3. Press the *Down* button to select Digital Mode 2. A screen confirming Digital Mode 2 is selected as shown on the next page appears.





4. Press the *Run* button to display the waveform.



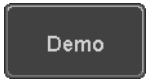


Display LM (Logic Memory) (Digital Mode 3)

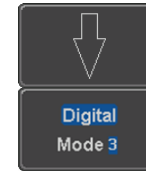
Step

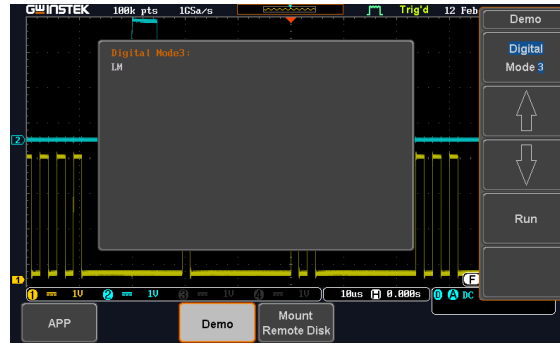
1. Press the *APP* key on the front panel of the GDS-1000B.

2. Press the *Demo* button.

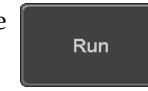


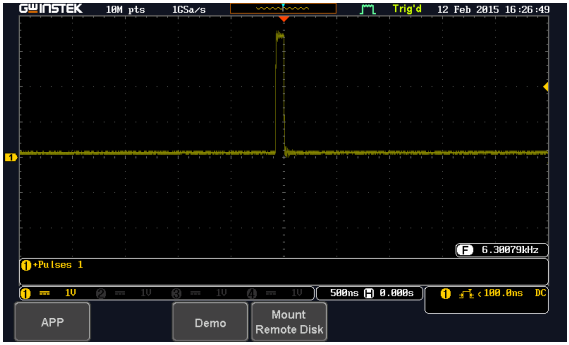
3. Press the *Down* button to select Digital Mode 3. A screen confirming Digital Mode 3 is selected as shown below appears.





4. Press the *Run* button to display the waveform.





Note

If we compare the waveforms shown above, we can see that we can observe more of the waveform under long memory.

Display FM (FM mode)

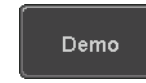
Step

1. Connect a probe to the FM terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

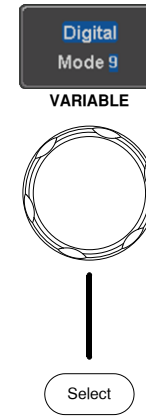
2. Connect the other end of probe to CH1 terminal on the GDS-1000B.

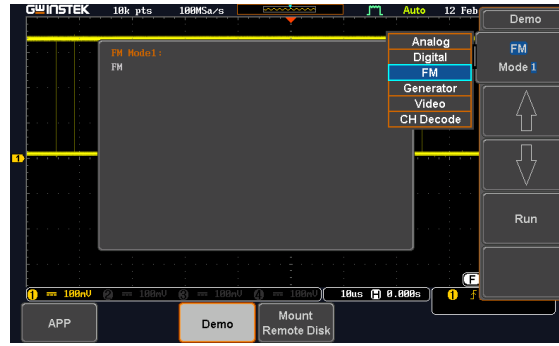
3. Press the *APP* key on the front panel of the GDS-1000B.

4. Press the *Demo* button.

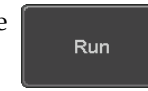


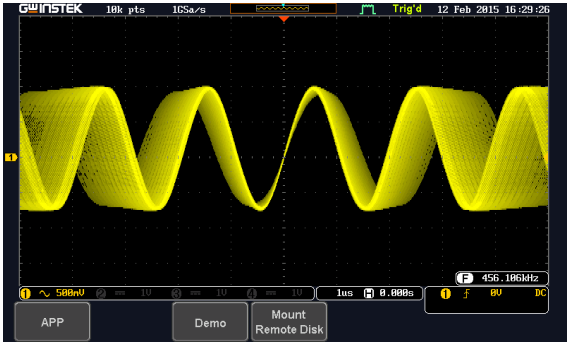
5. Press the *Digital* mode button (F1 button). Use the *Variable* knob to select FM mode. Press the *Select* button to confirm FM Mode 1 is selected.





6. Press the *Run* button to display the waveform.





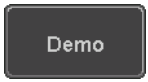
Display Sine, Square and Triangle waveform (Generator mode)

1. Connect the probe to the terminal marked  on the demo board. Connect the grounding clip to the ground terminal (⏚).

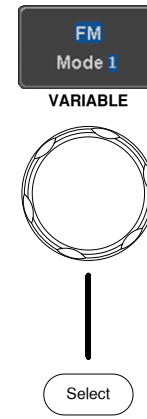
2. Connect the other end of probe to the CH1 terminal on the GDS-2000E.

3. Press the *APP* key on the front panel of the GDS-1000B.

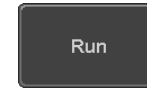
4. Press the *Demo* button.



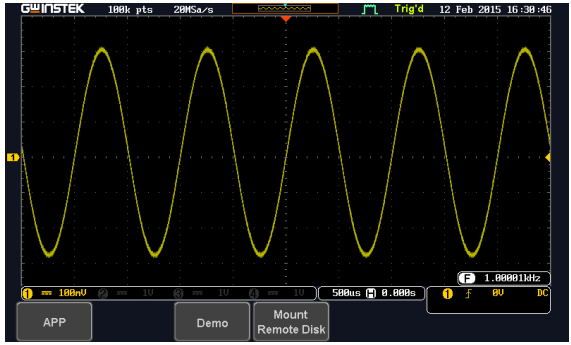
5. Press the *FM Mode* button (F1 button). Use the *Variable* knob to select Generator mode. Press the *Select* button to confirm Generator Mode 1 is selected.



6. Press the *Run* button.

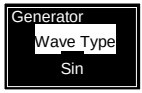


7. Press the AutoSet button to display the Sine waveform.

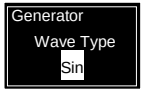


8. Press the *Select* button on the demo board.

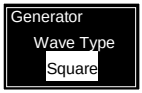
9. Adjust the *Variable* knob on the demo board to select the Wave Type. *Wave Type* is selected when it is highlighted on the OLED display.



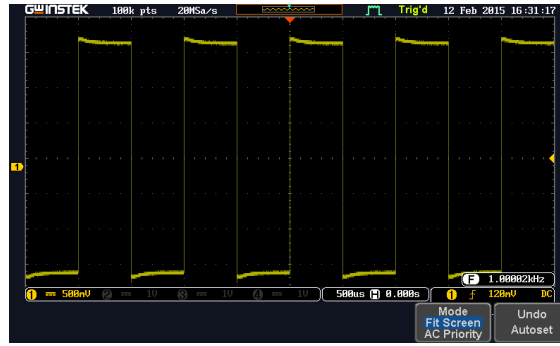
10. Push the *Select* button to change the highlight to the bottom line on the OLED display.



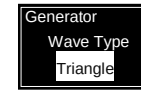
11. Adjust the *Variable* knob on the demo board to select *Square*. *Square* is selected when it is highlighted on the OLED display.



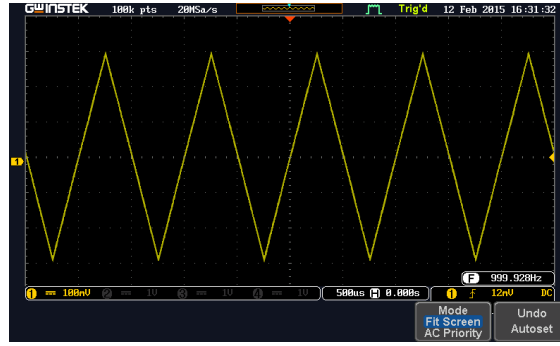
12. Press the *AutoSet* button to display the Square waveform.



13. Adjust the *Variable* knob on the demo board to select *Triangle*. *Triangle* is selected when it is highlighted on the OLED display.



14. Press the *AutoSet* button to display the Triangle waveform.



Display Video (Video mode)

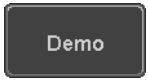
Step

1. Connect a probe to the Video terminal on the demo board. Connect the grounding clip to the ground terminal (⏚).

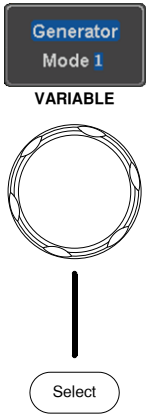
2. Connect the other end of probe to the CH1 terminal on the GDS-1000B.

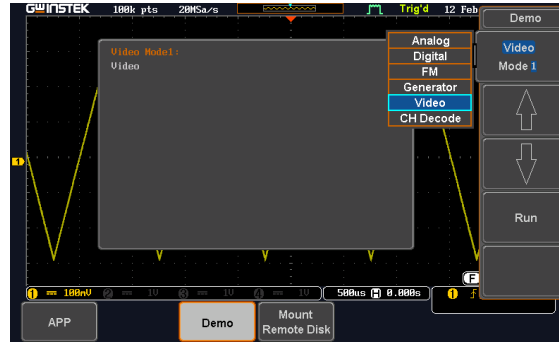
3. Press the *APP* key on the front panel of the GDS-1000B.

4. Press the *Demo* button.

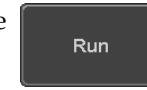


5. Press *Generator mode* button (F1 button). Use the *Variable* knob to select Video mode. Press the *Select* button to confirm Video Mode 1 is selected.





6. Press the *Run* button to display the waveform.



APPENDIX

Upgrading the GDS-3000/GDS-2000A/GDS-2000E/GDS-1000B Firmware

Upgrade Procedure

This firmware upgrade guide describes how to upgrade both the DSO firmware and the operating system kernel.

Note

The following note is for the GDS-3000 only.

If the existing firmware version is earlier than v1.07, please repeat this firmware upgrade procedure twice.

For firmware versions earlier than v1.07 (v1.00~v1.06), please upgrade both the DSO firmware and the OS kernel (follow the operation steps 1 to 10). This means that you need to do the same upgrade procedure twice .

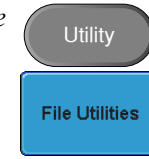
If upgrading the firmware from V1.07 to v1.08 or later, only update the firmware. The kernel upgrade is not required (follow operation steps 1 to 6).

Upgrade firmware

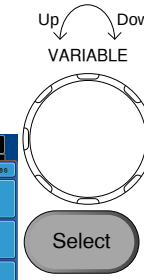
1. Insert a USB flash disk containing the firmware file, **xxx.upg** into the front panel USB slot.

2. Remove all probes and cables from the BNC terminals.

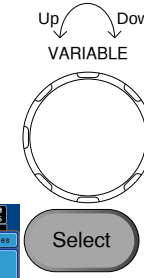
3. Press the *Utility* key and select *File Utilities* from the bottom menu.



4. Rotate the *Variable* knob to select the USB directory and then press the *Select* key.



5. Rotate the *Variable* knob to select the **xxx.upg** file and then press the *Select* key. Press the *Select* key again to begin the upgrade procedure.



6. When the procedure has completed restart the scope.

Note

For the GDS-3000 models:

Steps 7 & 8 only apply to 5GSa/s models (GDS-3154, GDS-3254, GDS-3352/4).

2.5GSa/s models (GDS-3152 & GDS-3252) will bypass these two steps.

Upgrade Kernel

7. When the screen goes "blank" during the booting process, press the lit CH1 key **three times**. (For GDS-3154, GDS-3254, GDS-3352/4 , 5GSa/s models only)

CH1 X3

8. The scope will return to the main screen after the *CH1* key has been pressed. (For GDS-3154, GDS-3254, GDS-3352/4 , 5GSa/s models only)

9. Repeat steps 3~6 to upgrade the kernel. The same file is used again to upgrade the kernel.

10. When the calibration message appears for the second time after the oscilloscope has restarted, press "TEST" in order to perform the phase calibration officially. (For GDS-3154, GDS-3254, GDS-3352/4 , 5GSa/s models only)

    Please note that the entire phase calibration may take about 10 minutes.

11. The upgrade procedure is complete after the second upgrade.

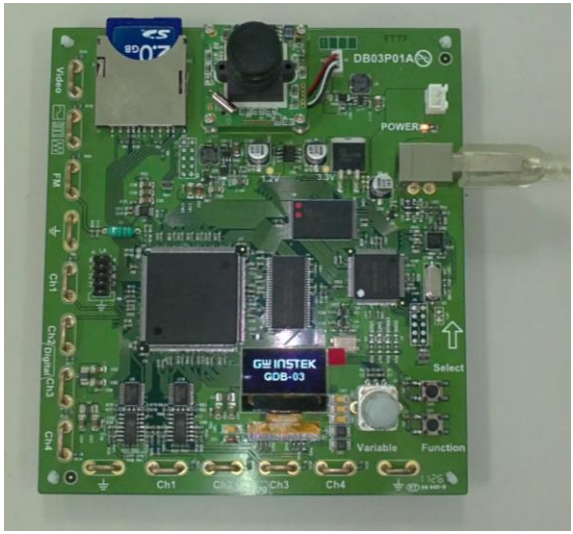
For more information, contact your local dealer or GWInstek at www.gwinstek.com / marketing@goodwill.com.tw.

Upgrading the GDB-03 Demo Board Firmware

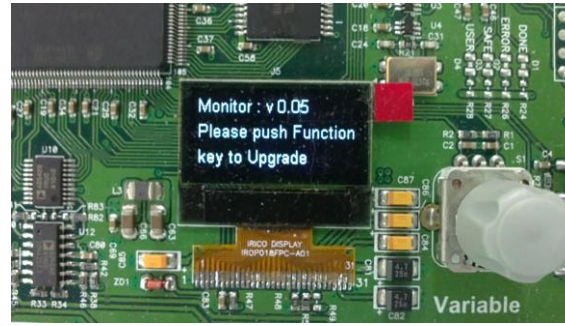
Step

1. Please copy the gdb3h.rom, gdb3m.rom and gdb3s.rom (3 files in total) from GDB-03 CD to root directory of an SD card.

2. Insert the SD card into the SD card slot on the GDB-03 demo board and connect the USB cable to the GDS-2000A, GDS-2000E or GDS-3000.



3. When “GW INSTEK” is displayed on the GDB-03 OLED screen, quick turn the *Variable* knob to trigger the firmware upgrading process. A message on the OLED screen as shown in the photo will appear.



4. Press the *Function* button key to start the procedure. A message on the OLED screen as shown in the photo below will appear during upgrading process.

5. Upgrading the firmware is complete. Disconnect the USB cable. Reconnect USB cable and adjust the *Variable* knob to select which model (GDS-3000, GDS-2000A or New GDS Series) the demo board will be used for.


GDB-03
Select Demo Mode
GDS3000
Variable


GDB-03
Select Demo Mode
GDS2000A
Variable


GDB-03
Select Demo Mode
New GDS-Serial
Variable
Function
Ch1
Ch2
Analog
Ch3
Ch4