

GDB-03 Demo Module

USER MANUAL

GW INSTEK PART NO. 82DB-03000M01



ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

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Display Sine, Square and Triangle waveform
(Generator mode) 43

G E T T I N G S T A R T E D

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

GDS-3000 Series Overview

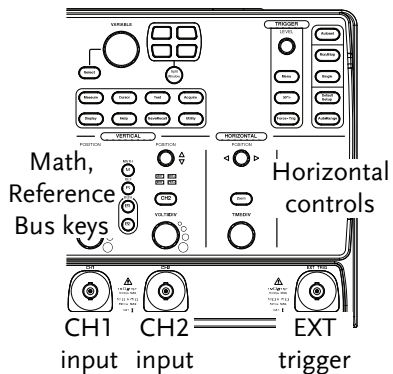
Series lineup

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

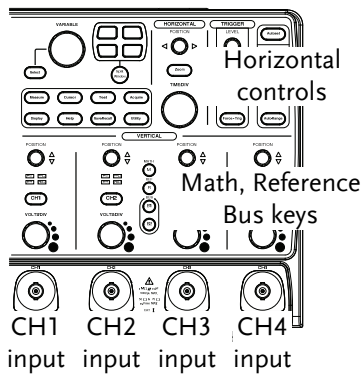
Model name	Frequency bandwidth	Input channels	Real-time Sampling Rate
GDS-3152	150MHz	2	2.5GSa/s
GDS-3252	250MHz	2	2.5GSa/s
GDS-3352	350MHz	2	5GSa/s
GDS-3154	150MHz	4	5GSa/s
GDS-3254	250MHz	4	5GSa/s
GDS-3354	350MHz	4	5GSa/s

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



Required tools

- GDS-3000 x 1
- Demo board x 1
- USB type A- type B cable x 1. Used for demo board's power
- Deep memory: 25k points record length
- Standard oscilloscope probe x 4

Demonstration type

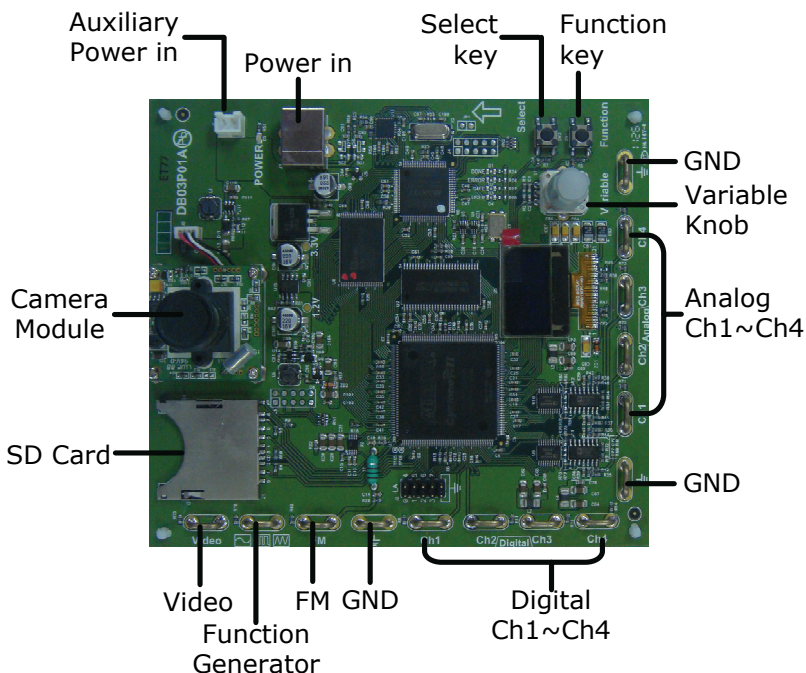
- VPO
- Split window 1
- Split window 2
- Auto Range Function
- Autoset mode
- XY mode
- Gating
- Pulse Runt
- Rise Fall
- Pulse Width
- UART
- I²C
- SPI
- Delay
- FM
- Video
- Generator

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



Specification

Signal output	<ul style="list-style-type: none"> • 5 types for digital analyzer • 9 types for logic analyzer • FM signal • 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

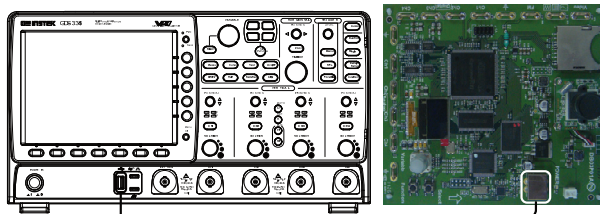
Step

1. Turn on the GDS-3000.

POWER



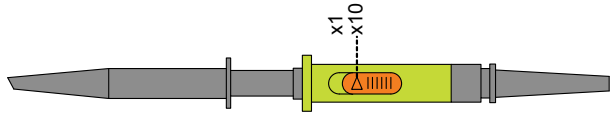
2. Connect the USB cable as shown in the following diagram to power up the demo board. Connect the Type A plug to the GDS-3000 and the Type B plug to the demo board.



Note

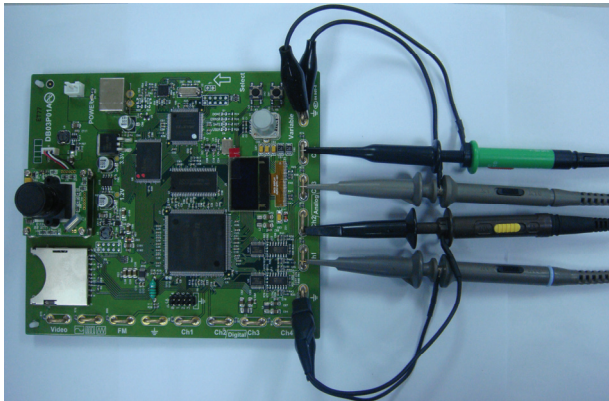
Make sure the power LED on the demo board turns on.

3. 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.

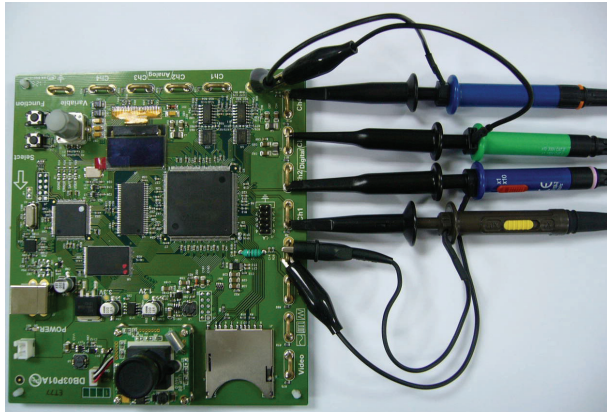


4. Depending on the type of waveform you want to display, connect the probes to the terminals marked, Analog CH1~CH4, Digital CH1~CH4, Video, FM as shown in the diagrams below. Connect the grounding clips to ground terminal (\perp).

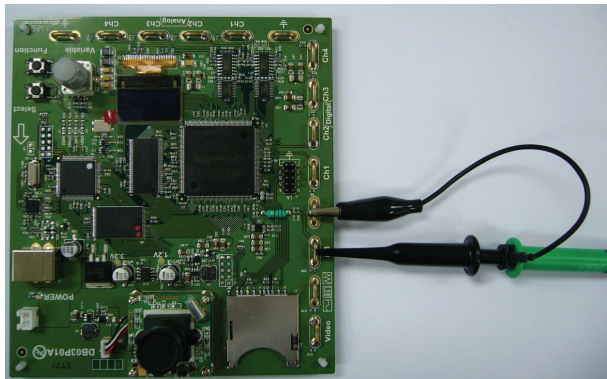
For displaying analog waveform



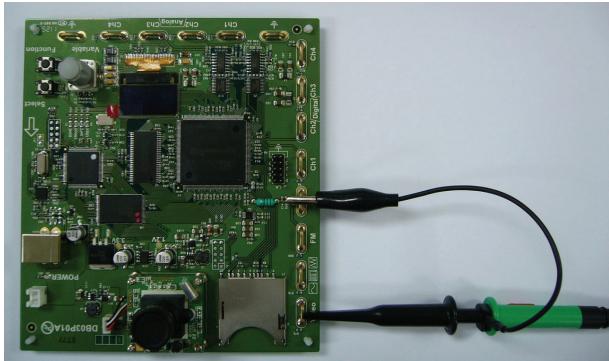
For displaying digital waveform



For displaying FM waveform



For displaying video waveform



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

DISPLAY DEMO BOARD

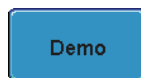
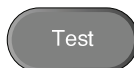
SIGNAL

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.

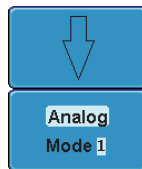
Display VPO (Analog Mode 1)

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 (\perp).
 2. Connect the probes to corresponding CH1~CH4 terminals on the GDS-3000.
 3. Press the *Test* key on the front panel of 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 appears, as shown on the next page.

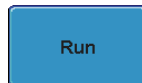


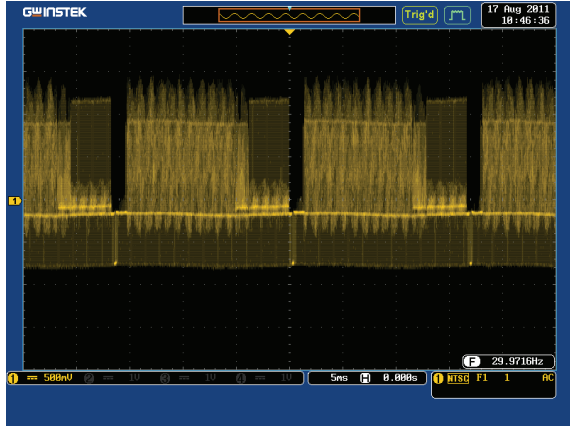
Note

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 30 step 5)




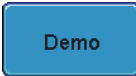

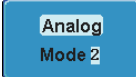
6. Press the *Run* button to display the waveform.



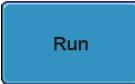


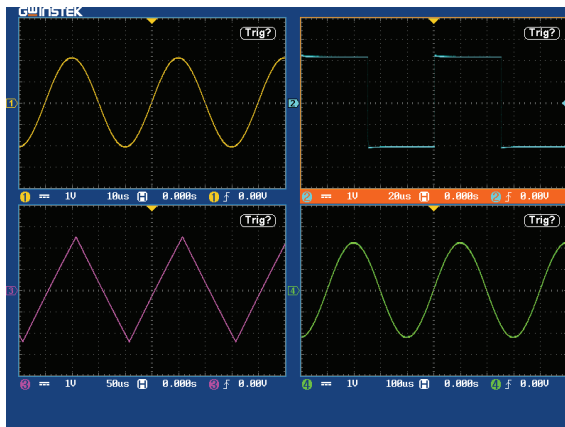
Display Split windows 1 (Analog Mode 2)

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

- | | | |
|-------------|--|--|
| Step | <ol style="list-style-type: none"> 1. Press the <i>Test</i> key on the front panel of GDS-3000. |  |
| | <ol style="list-style-type: none"> 2. Press the <i>Demo</i> button. |  |
| | <ol style="list-style-type: none"> 3. Press the <i>Down</i> button to select Analog Mode 2. A screen confirming Analog Mode 2 is selected as shown below appears. | 
 |



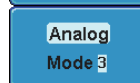
- | | |
|---|---|
| <ol style="list-style-type: none"> 4. Press the <i>Run</i> button to display the waveforms in split windows as shown on the next page. |  |
|---|---|

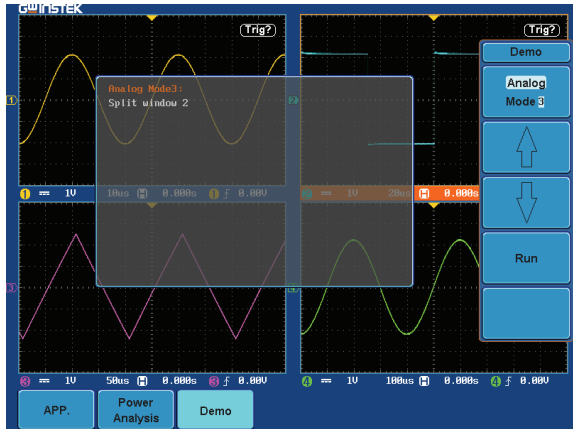


Display Split windows 2 (Analog Mode 3)

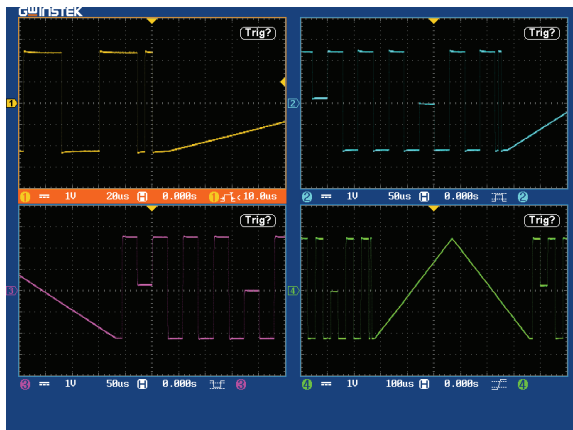
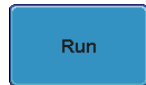
Background Display a signal (a more complex signal) that can have different settings and be displayed in four split windows.

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




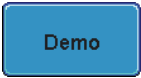

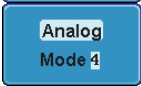


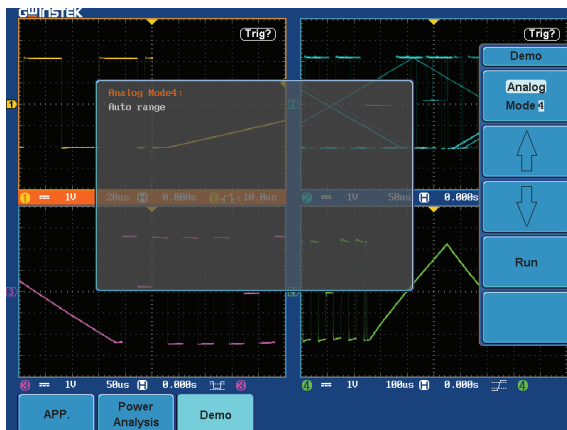
4. Press the Run button to display a waveform in split window as shown below.



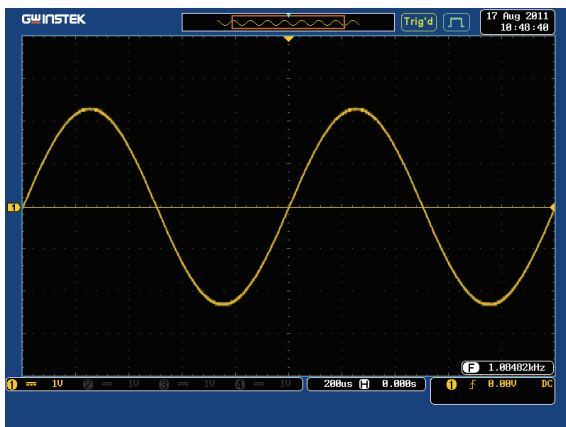
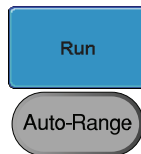
Display Auto-Range Function (Analog Mode 4)

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

- | | | |
|------|--|--|
| Step | <ol style="list-style-type: none"> 1. Press the <i>Test</i> key on the front panel of GDS-3000. |  |
| | <ol style="list-style-type: none"> 2. Press the <i>Demo</i> button. |  |
| | <ol style="list-style-type: none"> 3. Press the <i>Down</i> button to select Analog Mode 4. A screen confirming Analog Mode 4 is selected as shown below appears. | 
 |



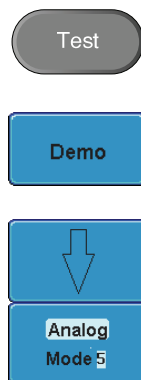
4. Press the *Run* button and *Auto-Range* key to display the waveform.

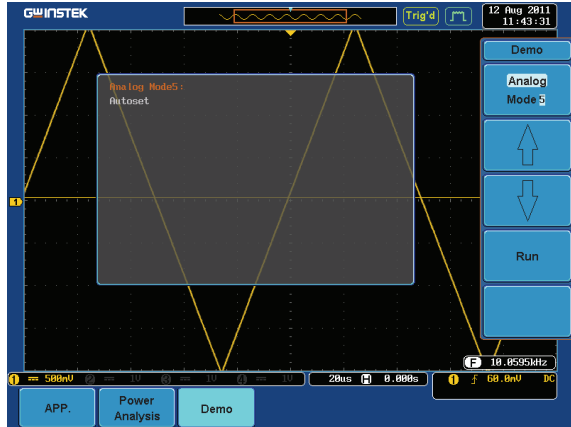


Display Autoset mode (Analog Mode 5)

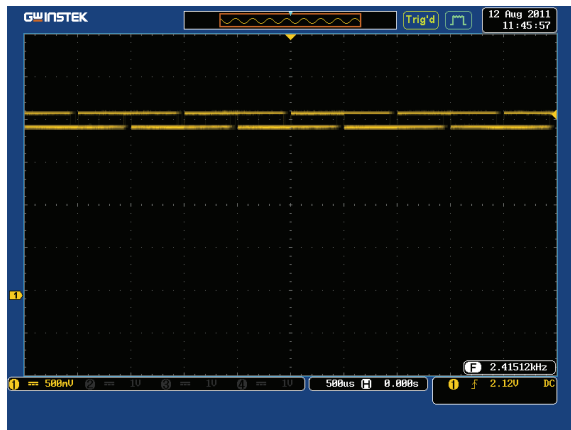
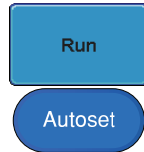
Step

1. Press the *Test* key on the front panel of 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.

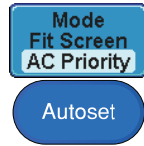




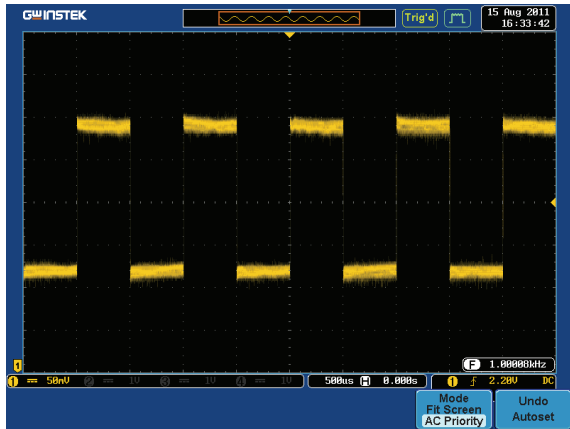
- 4. Press the *Run* button and *Autose* key to display the waveform.



5. Press the *AC priority* button from bottom menu and press the *Autoset* key on the panel.

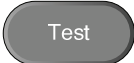


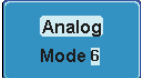


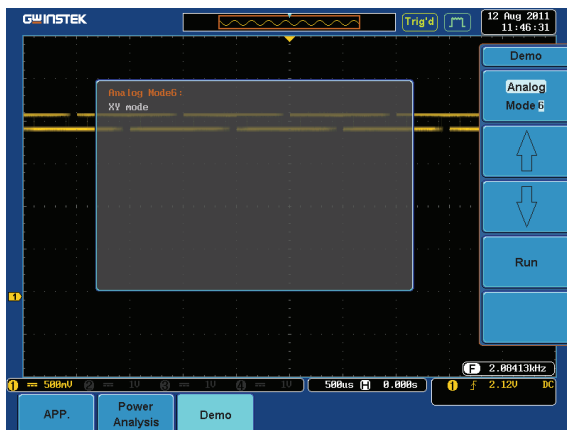
6. A waveform as follow shown appears.



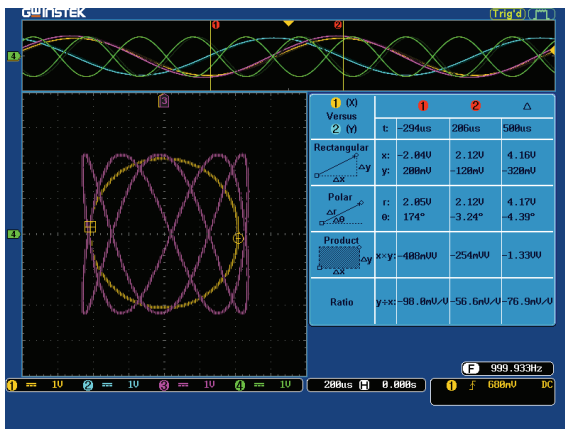
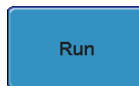
Display XY mode(Analog Mode 6)

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

- | | | |
|------|--|--|
| Step | <ol style="list-style-type: none"> 1. Press the <i>Test</i> key on the front panel of GDS-3000. |  |
| | <ol style="list-style-type: none"> 2. Press the <i>Demo</i> button. |  |
| | <ol style="list-style-type: none"> 3. Press the <i>Down</i> 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.



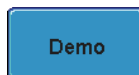
Display Gating (Analog Mode 7)

Step

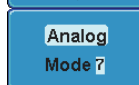
1. Press the *Test* key on the front panel of GDS-3000.



2. Press the *Demo* button.

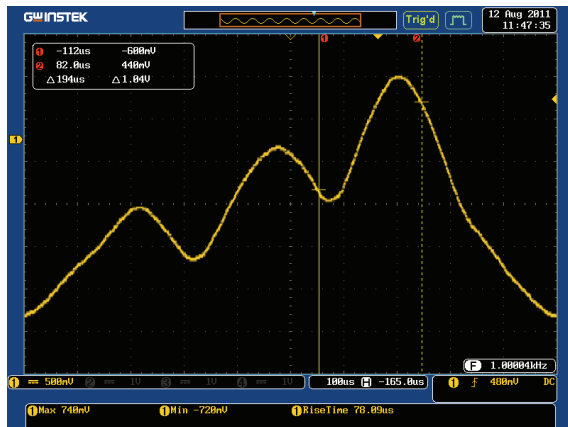
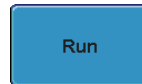


3. Press the *Down* button to select Analog Mode 7. A screen confirming Analog Mode 7 is selected as shown on the next page appears.




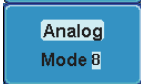


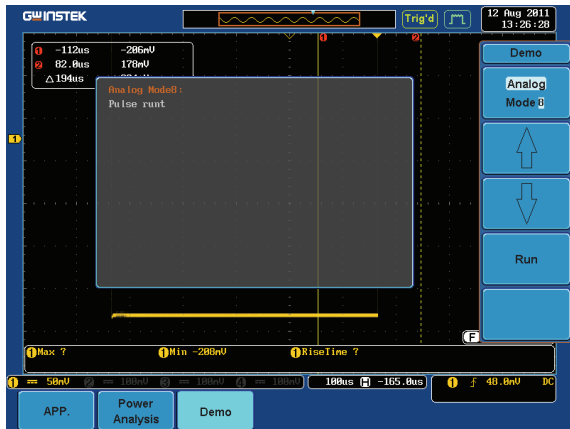


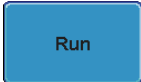
4. Press the *Run* button to display the waveform.

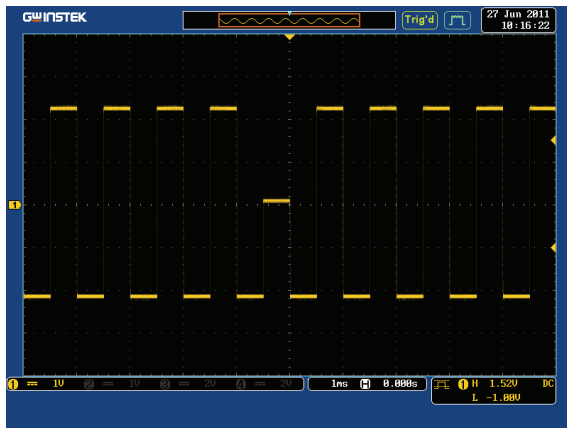


Display Pulse Runt (Analog Mode 8)

- | | | |
|------|--|--|
| Step | 1. Press the <i>Test</i> key on the front panel of GDS-3000. |  |
| | 2. Press the <i>Demo</i> button. |  |
| | 3. Press the <i>Down</i> button to select Analog Mode 8. A screen confirming Analog Mode 8 is selected as shown below appears. | 
 |



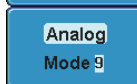
- | | |
|---|---|
| 4. Press the <i>Run</i> button to display the waveform. |  |
|---|---|

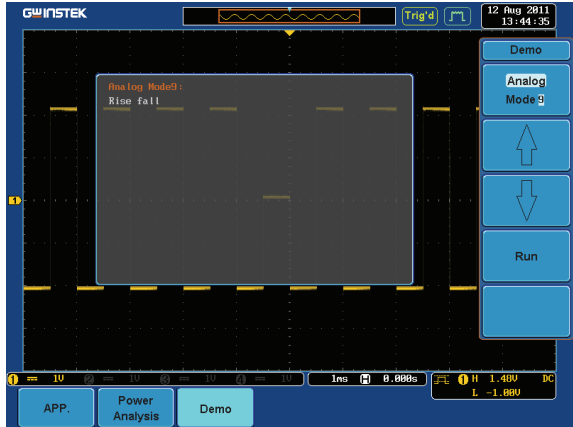


Display Rise Fall (Analog Mode 9)

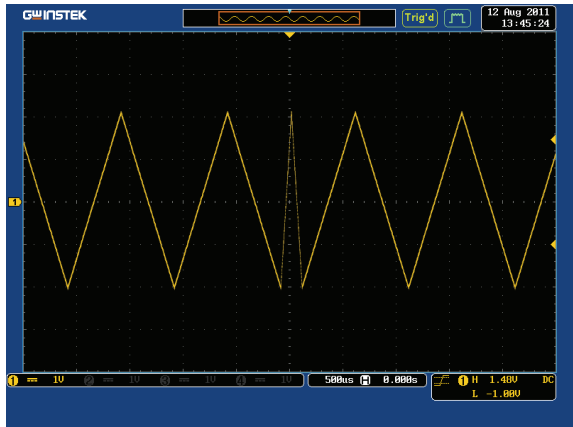
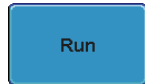
Step

1. Press the *Test* key on the front panel of 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 on the next page appears.



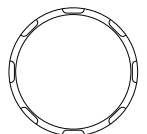
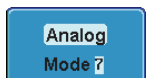
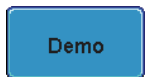


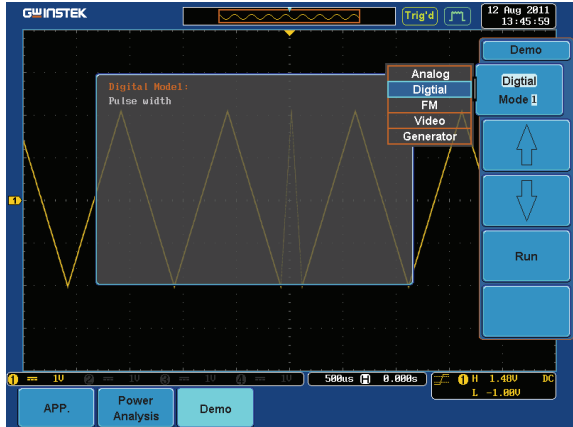
- 4. Press the *Run* button to display the waveform.



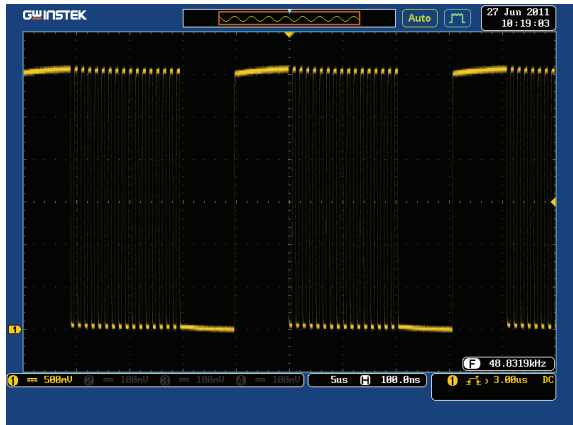
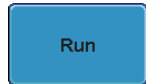
Display Pulse Width (Digital Mode 1)

- Step
1. Connect the probes to the terminals marked Digital CH1~CH4, and grounding clips to ground terminal (\oplus).
 2. Connect the probes to corresponding CH1~CH4 terminals on the GDS-3000.
 3. Press the *Test* key on the front panel of 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 1mode is selected.

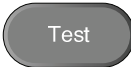







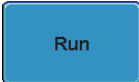
6. Press the Run button to display the waveform.

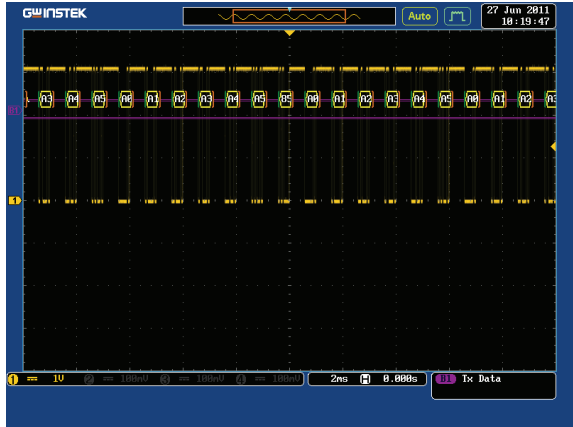


Display UART (Digital Mode 2)

- | | | |
|------|--|--|
| Step | <ol style="list-style-type: none"> 1. Press the <i>Test</i> key on the front panel of GDS-3000. |  |
| | <ol style="list-style-type: none"> 2. Press the <i>Demo</i> button. |  |
| | <ol style="list-style-type: none"> 3. Press the <i>Down</i> button to select Digital Mode 2. A screen confirming Digital Mode 2 is selected as shown below appears. | 
 |



- | | |
|---|---|
| 4. Press the <i>Run</i> button to display the waveform. |  |
|---|---|



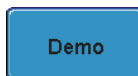
Display I²C (Digital Mode 3)

Step

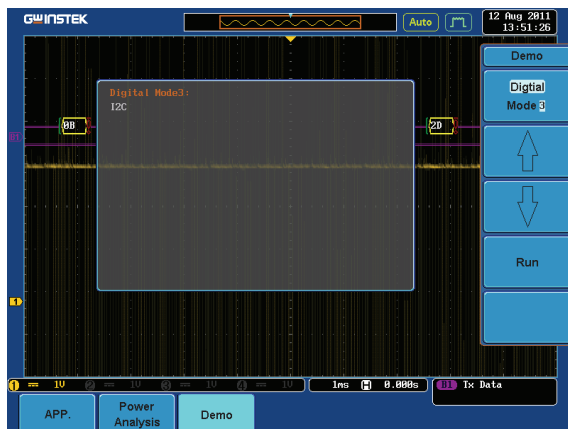
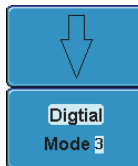
1. Press the *Test* key on the front panel of GDS-3000.



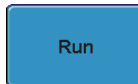
2. Press the *Demo* button.

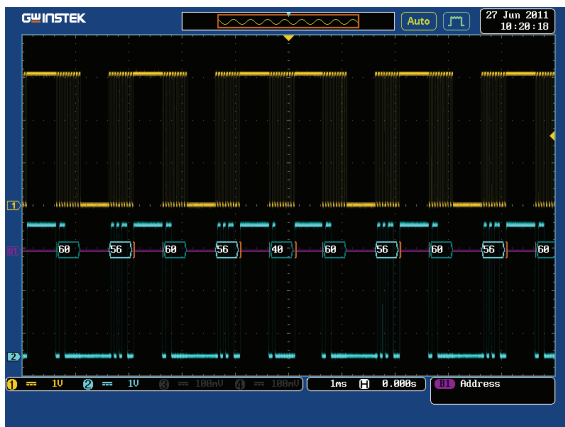


3. Press the *Down* button to select Digital Mode 3. A screen confirming Digital Mode 3 is selected as shown below appears.



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

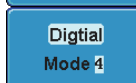
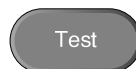




Display SPI (Digital Mode 4)

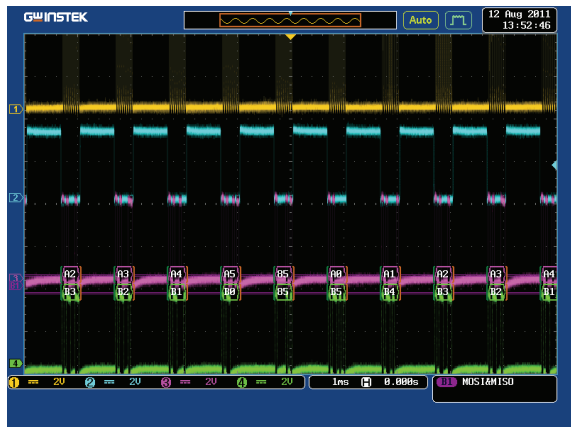
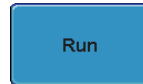
Step

1. Press the Test key on the front panel of 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.



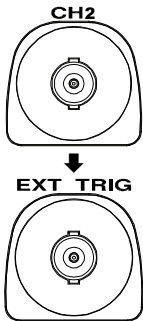
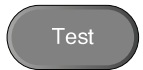

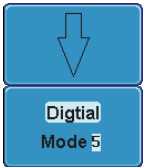


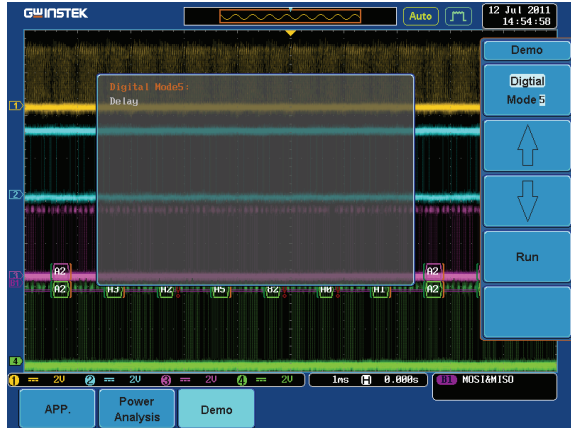
4. Press the *Run* button to display the waveform.



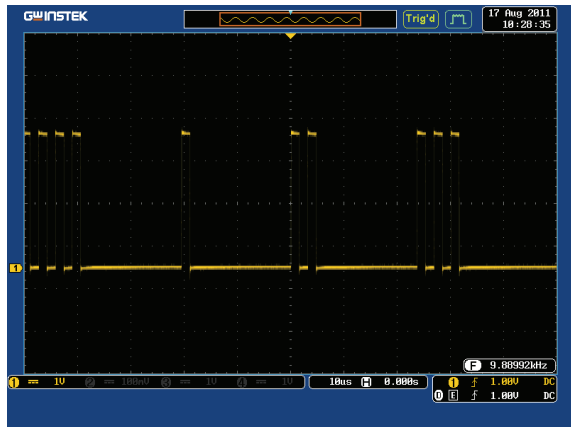
Display Delay (Digital Mode 5)

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 | <ol style="list-style-type: none"> 1. Disconnect the probe from the CH2 terminal on the GDS-3000 and move to the EXT TRIG terminal |  |
| | <ol style="list-style-type: none"> 2. Press the <i>Test</i> key on the front panel of GDS-3000. |  |
| | <ol style="list-style-type: none"> 3. Press the <i>Demo</i> button. |  |
| | <ol style="list-style-type: none"> 4. Press the <i>Down</i> button to select Digital Mode 5. A screen confirming Digital Mode 5 is selected as shown on the next page appears. |  |

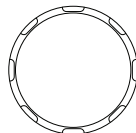
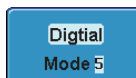
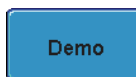


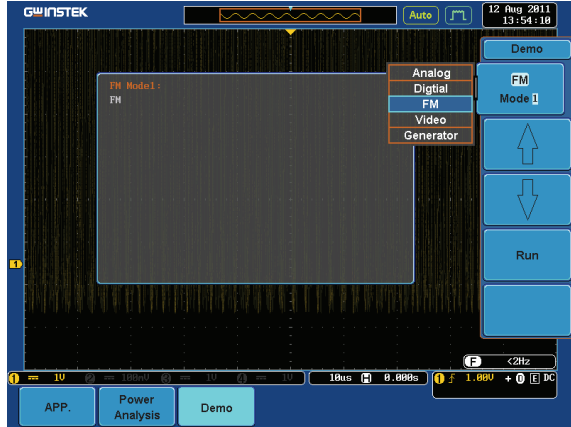
- 5. Press the *Run* button to display the waveform.



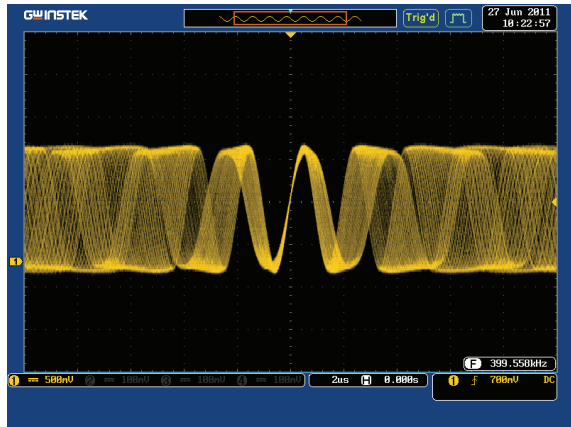
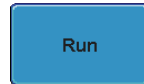
Display FM (FM mode)

- Step
1. Connect a probe to the FM terminal on the demo board.
Connect the grounding clip to the ground terminal (\perp).
 2. Connect the other end of probe to CH1 terminal on the GDS-3000.
 3. Press the *Test* key on the front panel of 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 is selected.



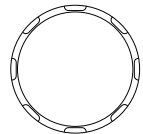
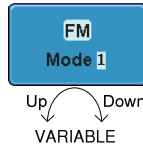
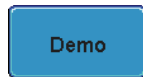


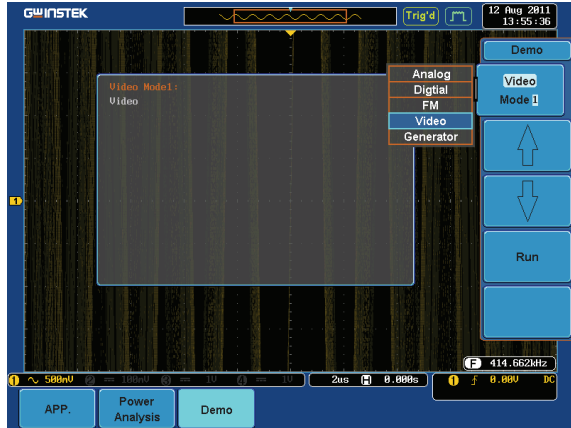
6. Press the *Run* button to display the waveform.



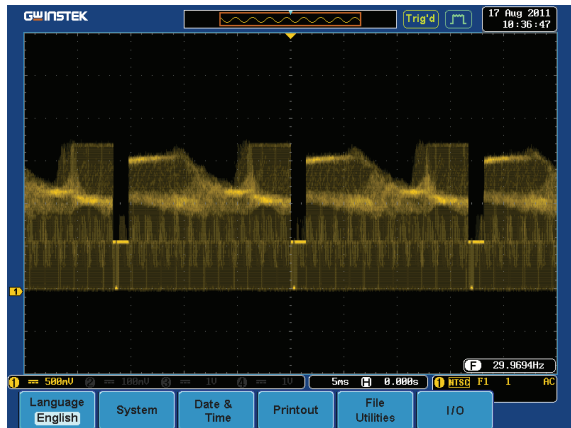
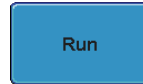
Display Video (Video mode)

- Step
1. Connect a probe to the Video terminal on the demo board. Connect the grounding clip to the ground terminal (\perp).
 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 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 is selected.




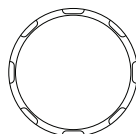
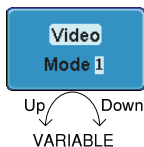
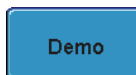


6. Press the *Run* button to display the waveform.



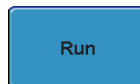
Display Sine, Square and Triangle waveform (Generator mode)

1. Connect the probe to the terminal marked  on the demo board. Connect the grounding clip to the ground terminal (\perp).
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 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 is selected.

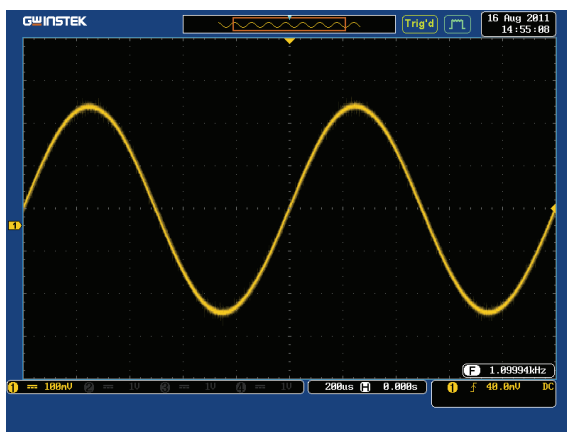
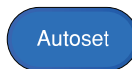




6. Press the *Run* button.



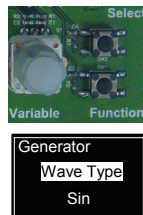
7. Press the AutoSet button to display the Sine waveform.



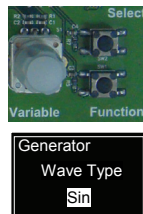
8. Press the *Select* button on the demo board.



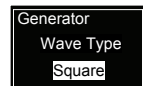
9. Adjust the *Variable* knob on the demo board to select the Wave Type. *Wave Type* is selected when it is highlighted on the OLED display.



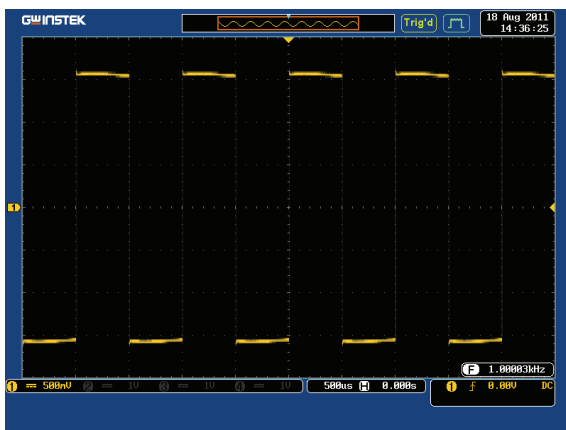
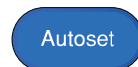
10. Push the Select button to change the highlight to the bottom line on the OLED display.



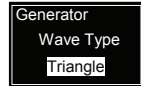
11. Adjust the *Variable* knob on the demo board to select *Square*. *Square* is selected when it is highlighted on the OLED display.



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 highlightd on the OLED display.



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

