Logic Analyzer

GLA-1016/1032/1132

QUICK START GUIDE

GWINSTEK

SAFETY INSTRUCTIONS

This chapter contains important safety instructions that must be followed when operating the GLA and when keeping it in storage. Read the following before any operation to ensure your safety and to keep the GLA in the best possible condition.

Safety Symbols

These safety symbols may appear in the user manual or on the instrument.

⚠ Caution	Caution: Identifies conditions or practices that could result in damage to the instrument or to other properties.

Safety Guidelines

Please follow the guidelines below when using the GLA.

⚠ General Guidelines	• Do not place any heavy object on the GLA.
	• Avoid severe impacts or rough handling that leads to damaging the GLA.
	• Do not discharge static electricity to the GLA.
	• Do not disassemble the GLA unless you are qualified as service personnel.

Cleaning	• Use a soft cloth dampened in a solution of mild detergent and water. Do not spray any liquid into the GLA. • Do not use chemicals or cleaners containing harsh materials such as benzene, toluene, xylene, and acetone.
Operation Environment	Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution (Note below) • Relative Humidity: < 80% • Altitude: < 2000m • Temperature: 0°C to 50°C
Storage Environment	Location: Indoor • Relative Humidity: < 80% • Temperature: -40°C to 80°C

Do not dispose electronic equipment as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased.

GETTING STARTED

The Getting started chapter introduces the GLA main features, panel overview, display overview, installation and power up.

Main Features

Model name	Description
GLA-1016	16 channels, 256Kbit/channel
GLA-1032	32 channels, 128Kbit/channel
GLA-1132	32 channels, 1Mbit/channel
Characteristics	• 100MHz full bandwidth • Internal clock range: 100Hz ~ 200MHz • External clock range: 0.001Hz ~ 100MHz • Rich trigger functionalities: voltage level, count, page, position, delay time and clock, edge and level configuration • Memory utilization: max. x255 ratio data compression • Signal characteristic filtering: Enable function • Various signal display mode: waveform, listing, time, frequency, and address • I2C, RS-232C waveform analyzer • Waveform statistics function • Compact, lightweight profile • PC operation with GUI

environment
- Fast communication: USB 2.0, 1.1 compatible
- USB bus powered
- Various file export: operation setting, waveform data, display image

Package Contents and Accessories

Standard Accessories	GLA-1016	GLA-1032	GLA-1132
Carrying case	✓	✓	✓
Main Unit	✓	✓	✓
USB cable	✓	✓	✓
Quick Start Guide	✓	✓	✓
CD ROM	GLA Software×1, User Manual×1		
Signal cable (250mm)			
• 16pin	—	×1	×1
• 8pin	×2	×2	×2
• 2pin	×1	×1	×1
• 1pin	×1	×1	×1
Signal Grip	×36 pcs	×36 pcs	×36 pcs

Panel Overview and Display

Panel Overview

Item	Description
USB Connector	For power input (USB bus) and communication between the PC. USB 2.0 compatible.
Power Switch	Switch On: ▬ LED On (red)
Power LED	Switch Off: ■ LED Off
Trigger LED	Turns On when the trigger condition is met.
Read LED	Turns On when GLA transmit waveform data to PC.
Run LED	Turns On when GLA is waiting for trigger condition.

Start Switch	Triggers signal capturing. This is the same functionality as the Single Run. ▶ button.

Input Connector
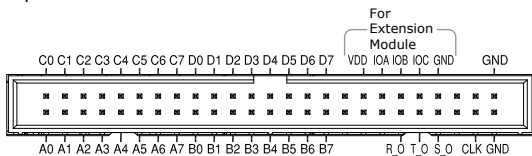
A0~D7	Signal input terminal. C0 ~ C7, D0 ~ D7 are not applicable to GLA-1016.
VDD, IOA/B/C, GND	+3.3V power, IO port, GND terminal for extension module.
R_O, T_O, S_O	Output signals for monitoring data capturing and trigger timing. Read output (R_O) indicates waveform data is transferred to PC, Trigger output (T_O) indicates trigger condition has occurred, and Start output (S_O) indicates GLA started waiting for trigger condition.
CLK	External (synchronous) clock signal input, 0.001Hz ~ 100MHz.
GND	Ground terminals.

Display Overview

Menu bar — Tool bar — Horizontal measurement bar

Scale 62.745MHz
Total 2048us

Bus/signal list

Tooltip

Trigger list

Data capture status
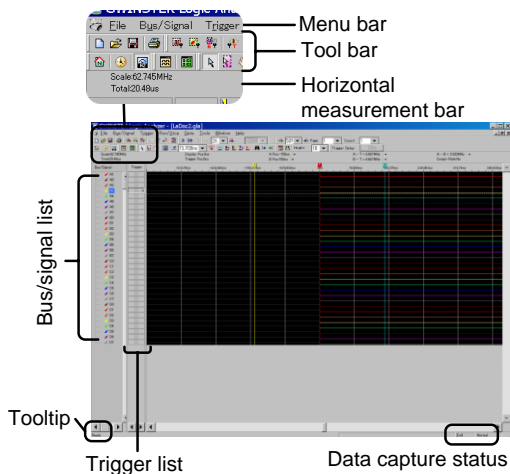
Menu bar	
File	File operations.
Bus/Signal	Bus/Signal configuration.
Trigger	Trigger configuration.
Run/Stop	Data capturing.
Data	Data operation and display setup.
Tools	Display setup, Shortcut setup, I2C analysis, RS-232C analysis.
Window	Display configuration and organization of multiply files.
Help	Help file and system information.

Tool bar		
Standard Group	☐ Create new project file.	
	📂 Open a project file.	
	💾 Save the project file.	
	🖨 Print out the display.	
Trigger Group	🖳 Configure sampling rate.	
	📊 Configure signal bus.	
	🖳 Setup enable function.	
	⬆ Setup bus trigger properties.	
	⬆ Setup signal trigger properties.	
	⬆ Setup general trigger properties.	
	🗓 Enable/disable data compression.	
Run/Stop Group	▷ Single run.	
	▷▷ Continuous run.	
	⬜ Stop running	
Sampling group	⬛ 32k ▼ ⬛	Select sampling memory size.
	∿ 100MH ▼ ∿	Select sampling frequency.
Trigger content set group	⬅ 50% ▼ ➡	Set trigger position.
	Page 1 ▼	Set trigger page.
	Count 1 ▼	Set trigger count.
Display mode group	🏠 Horizontal unit in address.	
	🕐 Horizontal unit in time.	
	🖼 Horizontal unit in frequency.	
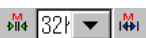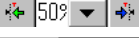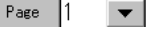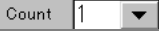
Windows group	![Waveform display mode icon] Waveform display mode.	
	![Listing display mode icon] Listing display mode.	
Mouse pattern group	![Normal arrow icon] Normal arrow mode.	
	![Area selection icon] Area selection (Enclose) mode.	
	![Hand mode icon] Hand mode.	
	![Statistics icon] Show waveform statistics.	
Zoom group	![Show all icon] ▼ Show all waveform data.	
	![Limit icon] ▼ Limit the waveform display area.	
	![Zoom icon] 15.938ns ▼ ![Zoom icon]	Zoom in to/out of data.
Data group	![Delete data bar icon] Delete data bar.	
	![Move A bar icon] Move A bar to the center.	
	![Move B bar icon] Move B bar to the center.	
	![Move T bar icon] Move T bar (trigger) to the center.	
	![Add data bar icon] Add data bar.	
	![Search icon] Search data.	
	![Previous edge icon] Go to the previous edge.	
	![Next edge icon] Go to the next edge.	
Show time/height group	![Show timing icon] Show waveform timing.	
	![I2C icon] Analyze I^2C waveform.	
	![RS-232C icon] Analyze RS-232C waveform.	
	Height 18 ▼	Change the waveform bar height.
Trigger delay group	Trigger Delay 10	
	Set and show the amount of trigger delay.	

Horizontal measurement bar	
Horizontal range	Scale:73.737KHz Total:20.48ms(372.893us)
	Scale (upper line) shows the data acquisition clock frequency.
	Total (lower line) shows the total length of data acquired by GLA, followed by the length covered by the analysis range bar.
Position	Display Pos:0ns A Pos:-150ns Trigger Pos:0ns B Pos:150ns
	Display Pos (position) shows the timing of the display center position.
	Trigger Pos (position) shows the trigger timing.
	A/B Position shows user-defined bar timings.
Time/frequency difference	A - T = 6.667MHz B - T = 6.667MHz A - B = 3.333MHz
	Shows the distance between two bars, whether trigger or user-defined, in time, frequency, or address point.
Compression	Compr-Rate:0.063
	Shows the data compression ratio when the compression mode is enabled.

Bus/Signal and Trigger list
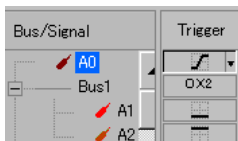
 Signal and bus names are shown in colored codes, with matching trigger setting on the right side.

Software Installation and Power Up

Requirements:

Windows OS:	XP	Vista (Basic/other)	7 (32/64 bit)
CPU:	300MHz	800MHz/1GHz	1GHz
RAM:	256MB	512/1GB	1GB/2GB
Hard disk:	100MB	15GB	16GB/20GB
USB:	2.0	2.0	2.0

Note: Windows Vista and 7 need the DirectX 9.0C Redistributable and suitable graphics hardware, please see the user manual for details.

Software Installation

1. Insert the CD- Insert the software CD-ROM into the PC. If the below Setup screen does not appear, double-click the Setup.exe file.

2. Click the Install Button.

3. Read the license terms and select accept, click Next.

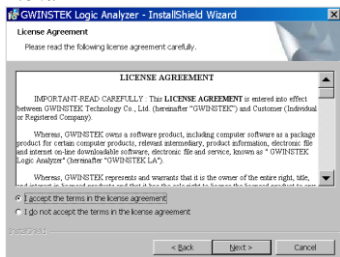4. Enter your user name and organization. Set the range of user access: All users or the user currently logged in.
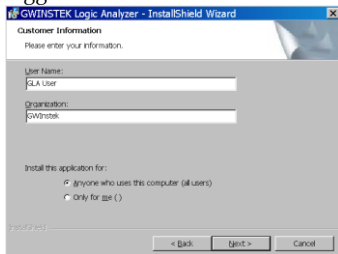
5. Select the setup type:

   Complete setup: All features will be installed. The program directory is automatically set.

   Custom setup: Installed features and program directory are set by the user.
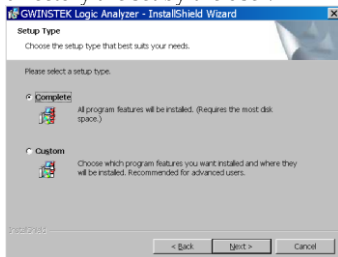
6. Reboot the PC when the installation has completed.

> ⚠️ Note
>
> By default the driver is installed together with the main program. In case the PC requires a separate software driver installation, select USB_LA.inf file in the software package.

Power Up

This section assumes that the Logic Analyzer software has already been installed.

Hardware Connection:

Connect the GLA and the PC via the USB cable. Press the GLA power switch and make sure the power LED turns On.
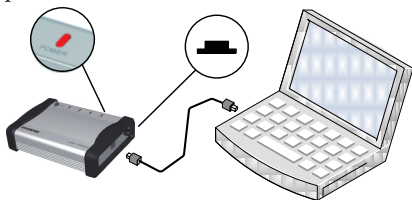
Software Activation

1. Double-click the desktop GLA icon or activate the GLA from the program startup menu.

2. If a hardware connection error message appears, try the following.
   * Reset the GLA USB connection and try again.
   * Make sure GLA and PC are connected by a single USB cable (Do not use USB extension cable).

3. If there is already a setup file (*.gla) being saved, the software asks whether to open it.

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⚠ Do you want to open the last saved file?

4. The display appears.
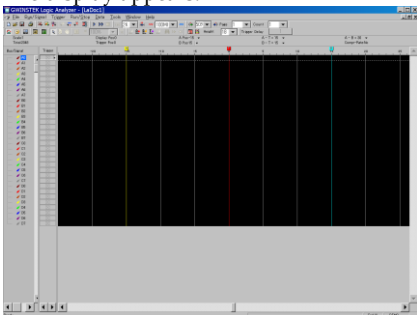
Demonstration Mode

You can still run the software without the GLA hardware. When the Hardware connection failure message appears, click Run Demo button.

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Hardware connection failed!

[Run Demo] [Retry] [Exit]
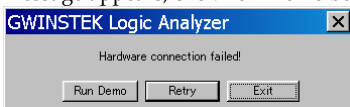
Most of the software features are available, except for signal capturing. You can even recall the old waveform data to be displayed.

Hardware Connection:

Connect GLA and the PC via the USB cable. Press the GLA power switch and make sure the power LED turns On.

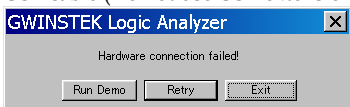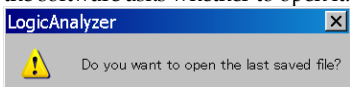See the Power Up section for connection details.

Signal capturing

Do one of the following actions to capture the signal.

- Press the Start button on GLA.
- Click the Run ▷ button on the display.
- Press F5 (shortcut for the single run).
- Select Single Run from the Run/Stop menu.
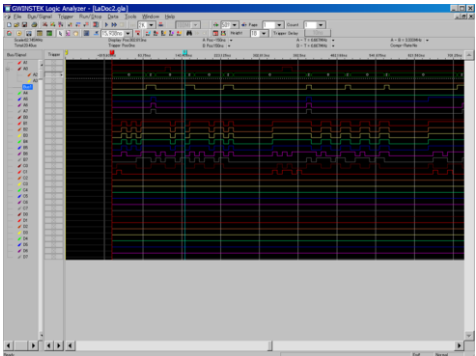
Make sure the signals appear on the display, at the corresponding terminals.

SPECIFICATIONS

The specifications apply under the following conditions: GLA is powered on for at least 30 minutes, within +20°C~+30°C.

General Specifications

	GLA-1016	GLA-1032	GLA-1132
Channels	16	32	32
Memory Total/Per Channel	4Mbits/ 256kbits	4Mbits/ 128kbits	32Mbits/ 1Mbits
Interface	USB 2.0(1.1)		
Operating system	Windows XP/ Windows 7/ Windows Vista		
Bandwidth	100MHz		
Current consumption	Static: Maximum 200mA Working: Maximum 400mA		
Power Dissipation	Static: Max 1W Working: Max 4W		
Power	Interface: USB Working voltage: 4.5V~5.5V		
Temperature	Operating: 0°C~50°C Storage: -40°C~80°C		

Clock

	GLA-1016	GLA-1032	GLA-1132
Internal	100MHz ~ 200MHz, asynchronous	100MHz ~ 200MHz, asynchronous	100MHz ~ 200MHz, asynchronous
External	0.001Hz ~ 100MHz, synchronous	0.001Hz ~ 100MHz, synchronous	0.001Hz ~ 100MHz, synchronous

Trigger

	GLA-1016	GLA-1032	GLA-1132
Channel	16	32	32
Condition	Edge/Pattern	Edge/Pattern	Edge/Pattern
Pre/Post trigger	0% ~ 100%	0% ~ 100%	0% ~ 100%
Level	1	1	1
Threshold	+6V ~ −6V	+6V ~ −6V	+6V ~ −6V
Accuracy	±93mV	±93mV	±93mV
Count	1 ~ 65535	1 ~ 65535	1 ~ 65535
Page	Maximum 8191	Maximum 8191	Maximum 8191

Input

	GLA-1016	GLA-1032	GLA-1132
Maximum Input Voltage	±30V	±30V	±30V
Impedance	500kΩ/10pF	500kΩ/10pF	500kΩ/10pF

Enable

	GLA-1016	GLA-1032	GLA-1132
Channel	16	32	32
Enable Condition	Don't care, Low, High	Don't care, Low, High	Don't care, Low, High
Enable Delay	1 ~ 65535ms	1 ~ 65535ms	1 ~ 65535ms

Data

	GLA-1016	GLA-1032	GLA-1132
Skew	<1.5ns	<1.5ns	<1.5ns
Compression Channels	16	24	24
Compression Ratio	Maximum 255	Maximum 255	Maximum 255

Signal Statistics	Positive/ Negative, Full cycle within length condition	Positive/ Negative, Full cycle within length condition	Positive/ Negative, Full cycle within length condition
Protocol Analyzer	I2C, RS-232C	I2C, RS-232C	I2C, RS-232C