

JLA534F-20G - NAND Protocol Analyzer

User Manual



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1 Version History

Date	Version	Changes
2021-09-10	1.0e	Initial release

2 System Overview

2.1 System Configuration



1. JLA534F-20G



2. P5310A



3. PA Streaming Server



4. Softtouch Compatible Probe Cable



5. PCIe Cable



6. PCIe Host Adaptor



7. FireFly Cable Assembly

Module	Description
Hardware	① JLA534F-20G Protocol Analyzer Mainframe
	② P5310A Probe Module
	③ Storage Server (Option)
	④ Probe Cable
	⑤ PCIe Host Cable
	⑥ PCIe Host Adapter
	⑦ Probe Module Cable (*4pcs)
Software	⑧ Instruments Driver
	⑨ Protocol Analyzer Software (TeraView2.0)

2.2 Overview

The JKI JLA534F protocol analyzer system is the industry's highest performance NAND protocol analyzer with deep acquisition memory depth up to 512GB and highest sampling rate up to 20GHz. Our high-speed and powerful memory trace solutions enable you to debug and validate NAND based memory systems up to 2.4 Gb/s

Large Memory for Data Capturing

Large memory depth up to 512GB allows you to debug very complex problems by long capturing time.

Ultra-fast Sampling Speed

Ultra-fast sampling speed up to 20GHz allows you to capture data rate up to 2.4 Gb/s for all channels without any extra options.

Probe Solution

To minimize signal degradation in the probe system, the analog module is separated from the digital module and placed as close as possible to the device.

Interposer Solution

We provide variety of interposer and connecting solutions: NAND(2.4Gbps) interposers

2.3 Features

Maximum Sample Rate

- Max. 20 GHz
- 1.25/2.5/5/10/20G GHz options

Number of Channels: total 34 CH

Single-ended channels (32 CH)

- Per-pin termination level
- Per-pin threshold level
- Per-pin timing delay

Differential Option channels (2 CH)

- Differential or single-ended clock and or data

Analysis mode

- Timing mode
- Filtering mode

Acquisition Memory

- Max. 512 GB (standard 128 GB)
- Full memory depth up to 20 GHz
- Hardware data compression / Software data decompression

Hysteresis settings for all channels

Host Interface: PCIe Gen3 x8

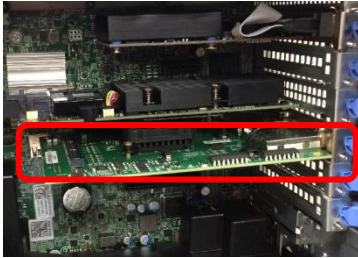
Target application

- NAND protocol analysis

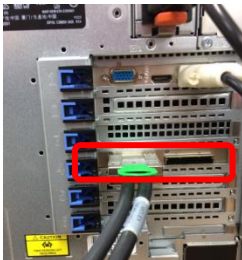
3 Setting Up the Protocol Analyzer

3.1 Installation

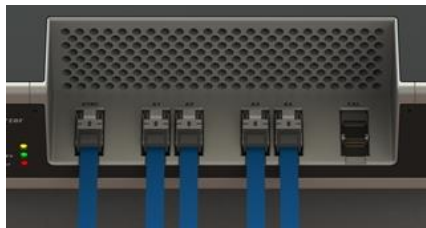
- ① Install PCIe host adapter card into Host PC's PCIe Gen3 x 16 slot.



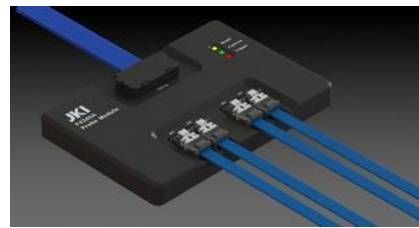
- ② Connect Protocol analyzer and Host PC with PCIe cable.



- ③ Connect Probe module cables *4ea between to Protocol Analyzer and Probe Module. (A1:A4 ports) as below.



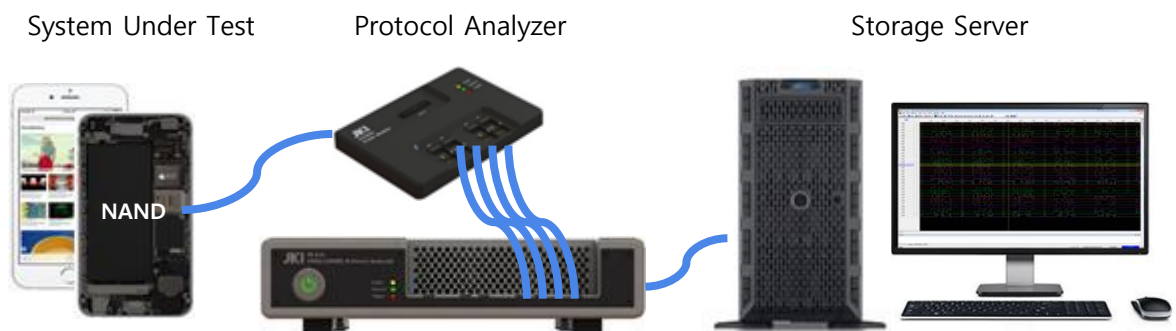
A1/A2/A3/A4



A1/A2/A3/A4 (to same port)

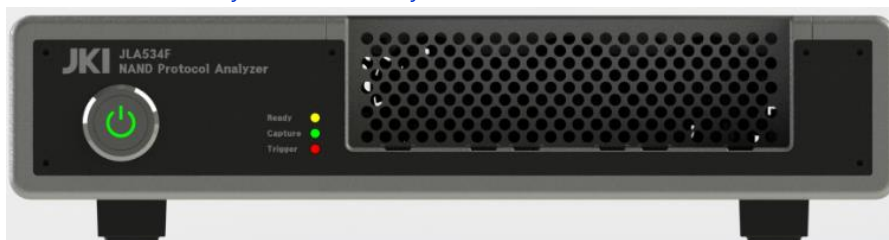
- ④ Connect Probe module cables* 4ea to Probe Module (A1:A4 ports) .
* Refer to 6.6 Probe Module Cable Assembly Insertion And Removal Instructions.

- ⑤ Connect the probe cable to Protocol Analyzer and an interposer of Target System



3.2 Turning on Protocol Analyzer

- ① Power on the Protocol analyzer.
- ② Power on the Host PC.
- ③ Make sure the "Ready" (Status LED) is turned on and the "Ready" LED will be lit yellow.
(Check that the yellow LED(Ready) is turned on.)



LED	Status	Description
Yellow	Ready	Yellow LED shows that Link is connected to PCIe Gen3 X8 properly.
Green	Capture	During in Capture, Green LED is turned on.
Red	Trigger	Red LED shows that Trigger, which you set, is detected.

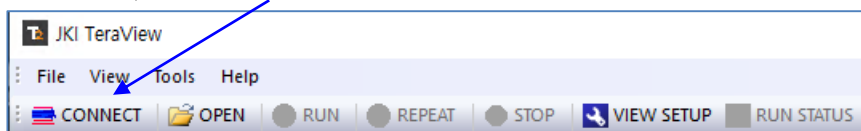
3.3 Start Program

On the Windows desktop, double-click the "T2" shortcuts.



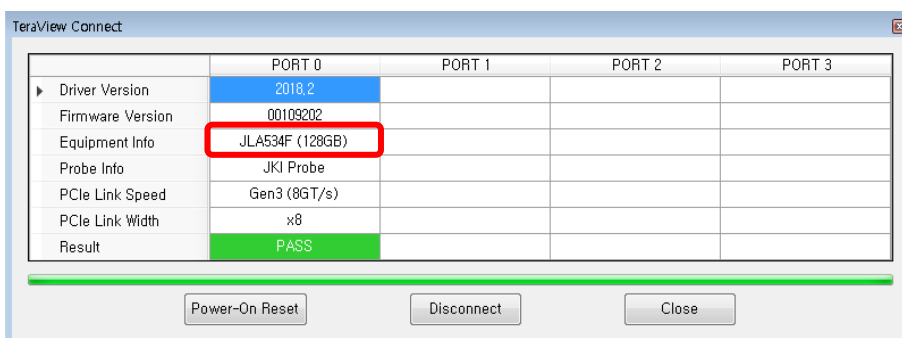
3.4 Connect Instruments

After it runs, click the "CONNECT" in Main menu.



If it is connected successfully, PASS status shows as below.

"Hardware Info." The item displays the size of the memory installed with the name of the connected instrument as shown below.



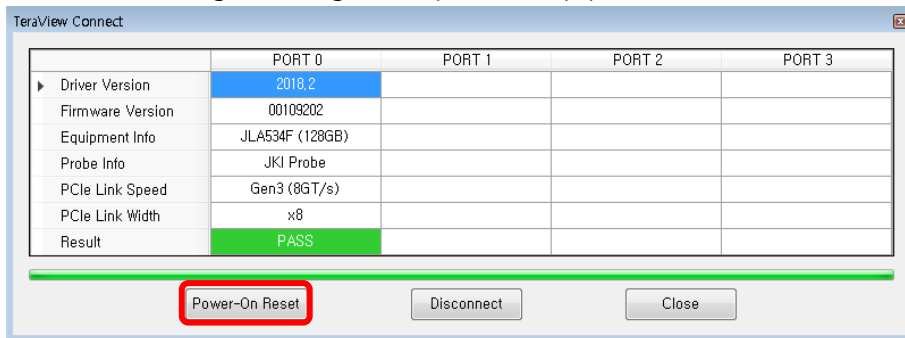
After all the work, Off Line status changes to On Line located at JKI TeraView Screen's lower end as below.



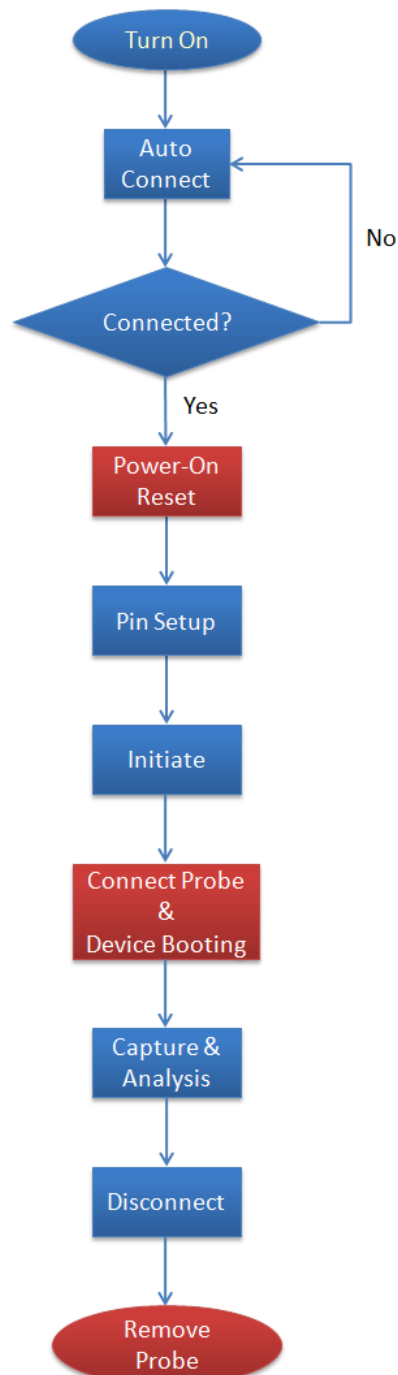
3.5 Power-On Reset

After the equipment power is turned on, the power-on reset process must be performed once.

When disconnecting or turning off the power of equipment, Power-On Reset must be performed.



[TeraView2 Operation Block Diagram]



3.6 Main Window Description

Main Window

- Provide all the menu for equipment control and waveform analysis
- Provide logic timing waveform view and memory protocol list view

Setup Window

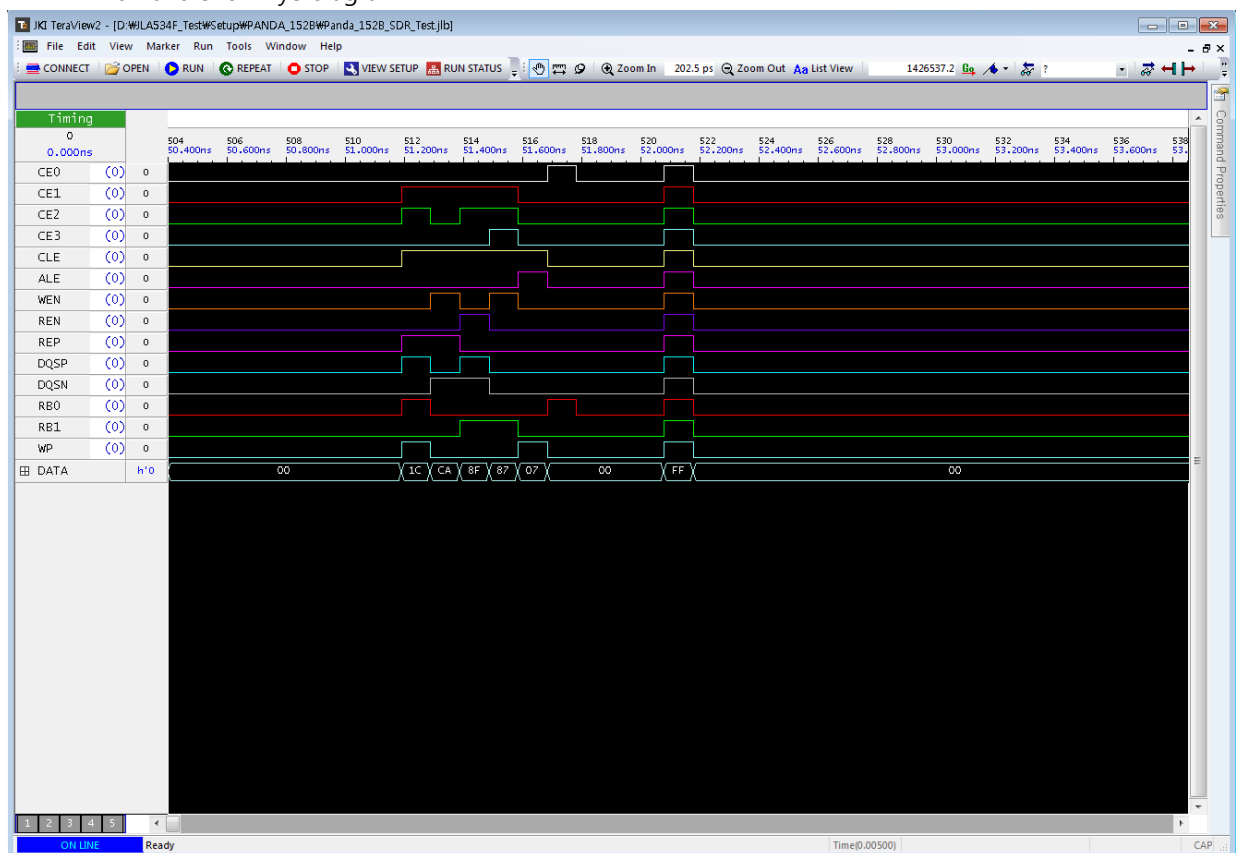
- It is composed of items that set required configuration before starting the measurement
- Set pin information and Trigger condition for each

Run Status

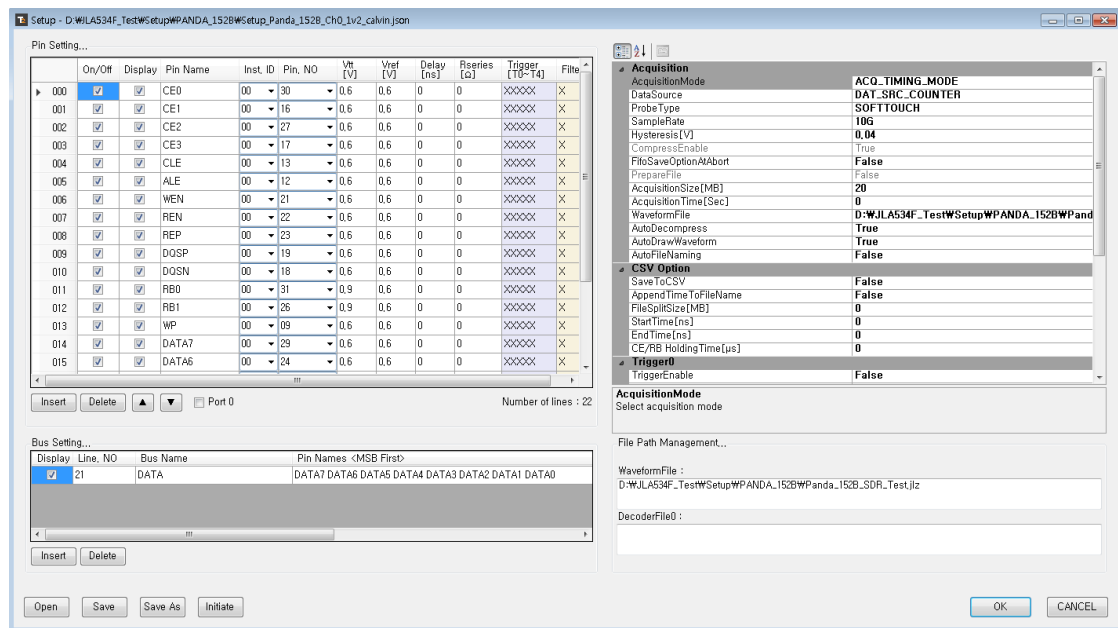
- Show the "Capture" progress after the Run

Eye Window

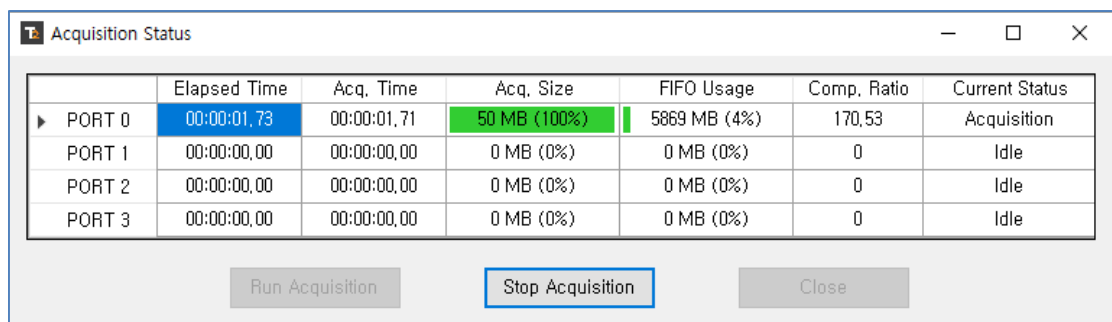
- Run and show Eye diagram



[Main Window]



[Setup Window]



[Run Status]

3.7 Setup Channel Conditions

Pin Setting...

	On/Off	Display	Pin Name	Inst. ID	Pin. NO	V _{tt} [V]	V _{ref} [V]	Delay [ns]	R _{series} [Ω]	Trigger [T0~T4]
000	☒	☒	CE0	00	00	0.9	0.9	0	100	XXXXX
001	☒	☒	CLE	00	19	0.9	0.9	0	100	HHLLX
002	☒	☒	ALE	00	10	0.9	0.9	0	100	XXXXX
003	☒	☒	WEN	00	22	0.9	0.9	0	100	RRRRX
004	☒	☒	REN	00	33	0.9	0.9	0	100	XXXXX
005	☒	☒	RB0	00	06	1.19	0.9	0	100	XXXXX
006	☒	☒	DQSP	00	32	0.9	0.99	0	100	XXXXX
007	☒	☒	DATA7	00	28	0.9	0.99	0	100	LHLLX
008	☒	☒	DATA6	00	23	0.9	0.99	0	100	LLLLX
009	☒	☒	DATA5	00	25	0.9	0.99	0	100	LLLLX
010	☒	☒	DATA4	00	29	0.9	0.99	0	100	LLLLX
011	☒	☒	DATA3	00	11	0.9	0.99	0	100	LLLLX
012	☒	☒	DATA2	00	15	0.9	0.99	0	100	LLLLX
013	☒	☒	DATA1	00	18	0.9	0.99	0	100	LLLLX
014	☒	☒	DATA0	00	14	0.9	0.99	0	100	HLLXX
015	☒	☒	WP	00	05	0.9	0.9	0	100	XXXXX
016	☒	☒	CE1	00	01	0.9	0.9	0	100	XXXXX
017	☒	☒	CE2	00	02	0.9	0.9	0	100	XXXXX
018	☒	☒	CE3	00	03	0.9	0.9	0	100	XXXXX
019	☒	☒	VCC	00	09	0.9	3.6	0	0	XXXXX
020	☒	☒	VCCQ	00	17	0.9	1.794	0	0	XXXXX

Insert Delete ▲ ▼ ☐ Port 0 Number of lines : 21

Bus Setting...

Display	Line. NO	Bus Name	Pin Names <MSB First>
☒	7	DATA	DATA7 DATA6 DATA5 DATA4 DATA3 DATA2 DATA1 DATA0

Insert Delete

Defining Pin & Bus

Before you can use Protocol Analyzer, you must define buses and pins by

- ① Adding bus or pin names.
- ② Select "☐ Port 0" (Port 0 means 1st Protocol Analyzer when you use multiple Protocol Analyzer)
- ③ Assigning Protocol Analyzer pin to bus or pin names.
- ④ The following tasks are performed in Pin Setting/Bus Setting (Pin Settings tab):
 - Select Insert to add a new pin or bus
 - Select Delete to delete a new pin or bus
 - Select ▲/▼ to move up/down the order of the selected pin in Pin Setting
 - Select Open to open already saved setup file.
 - Select Save to save current setup file.
 - Select Save As to save a new setup file.
 - Select "Initiate" to apply current configuration to this system.
 - Port0: Select or except selected port all pins. When It is turned off, Off-pin Data is excluded.

- Pin area: Input each pin's information and Electrical Specification
- Bus area: Show Signals, which tied to the Bus (Classify to MSB first and Space)
- Set All area: An item that separately is inputted from Pin area can be collectively inputted to the all pins
- Pin Name: Determine the name of the pins
- Pin. NO: Select the pin matched to each pin name (refer to Interposer pin-map)

Setting Termination Voltage (Vtt)

- To import signals from the Target System to device, impedance matching is necessary for Signal Integrity. Coaxial cable from JKI equipment is 50 ohm impedance cable. Set to an appropriate value (generally Center value) of the voltage according to the target signal environment. Setting individual or all pins is available
- Range: 0 ~ 1.2V, Resolution: 1mV

Setting Reference Voltage (Vref)

- Set the Reference (Threshold) to determine the measured Voltage High/Low of the signal and Setting individual or all pins is available
- Range: 0 ~ 1.2V, Resolution: 1mV

Setting Timing Delay (Delay)

- To calibrate Timing Skew for each pin, you can set Offset Delay for each pin or all pins is available.
- Range: -2.0 ~ +2.0 ns, Resolution: 100ps

Specifying Triggers

- JLA534F consists of patterns combination of 34 channels and supports Start capture trigger function.
- You can set trigger for two consecutive Trigger Sequence.
- It consists of 6 pattern types: don't care(X), Low (L), and High (H), Rising edge(R), Falling edge(F), Either edge(E)



X : don't care
 L : Low status
 H : High status
 R : Rising edge status
 F : Falling edge status
 E : Either edge status

Specifying Filter

JLA534F supports the function of extracting data under a specific event basis for reducing acquisition size. The following events can be set for all channels and data of all channels is saved when these events are occurred. Event settings can be specified for each channel separately.

- Data size will be 8bytes when one event occurs.
 (Raw data of 34ch, Time information, tag type)

R : Rising edge status

F : Falling edge status

E : Either edge status

3.8 Setup Capture Options

Acquisition	
AcquisitionMode	ACQ_FILTERING_MODE
DataSource	DAT_SRC_CAPTURE_DATA
Probe Type	SOFTTOUCH
SampleRate	10G
Hysteresis[V]	0.02
CompressEnable	True
FifoSaveOptionAtAbort	False
PrepareFile	False
AcquisitionSize[MB]	10
AcquisitionTime[Sec]	0
WaveformFile	D:\JLA534F_Test\Setup\WBIS152CP_ST\WBIS1
AutoDecompress	True
AutoDrawWaveform	True
AutoFileNaming	False
Filter	
FilterConfigFile	D:\JLA534F_Test\Setup\WBIS152CP_ST\WFilter
Trigger0	
TriggerMode	INTERNAL_TRIGGER
ReferenceClock	WEN
ExternalTriggerLV[V]	0
PreTriggerSize[MB]	1
TrigInterval0_Min (T0~T1) [UI]	0
TrigInterval0_Max (T0~T1) [UI]	2
TrigInterval1_Min (T1~T2) [UI]	0
TrigInterval1_Max (T1~T2) [UI]	2
TrigInterval2_Min (T2~T3) [UI]	0
TrigInterval2_Max (T2~T3) [UI]	2
TrigInterval3_Min (T3~T4) [ns]	0
TrigInterval3_Max (T3~T4) [ns]	100
BusDecoder	
DecoderFile	
Message	
AcquisitionMode Select acquisition mode	
File Path Management...	
WaveformFile : D:\JLA534F_Test\Setup\WBIS152CP_ST\WBIS152CP_ST_CAPTURE.jif	
DecoderFile0 : 	

Acquisition Mode

Acquisition Mode

- ACQ_TIMING_MODE : This is way of acquisitioning DATA by sampling clock. (Asynchronous mode)
- ACQ_FILTERING_MODE : This is way of acquisitioning DATA by events of each channel. (Asynchronous mode)

Data Source

- Select "DAT_SRC_CAPTURE_DATA"
 - DAT_SRC_CAPTURE_DATA(default): Acquisition inputted signal from Probe
 - DAT_SRC_LOOPBACK (debugging purpose): For Calibration per each CHs
 - DAT_SRC_COUNTER (debugging purpose): Testing with counter pattern generated internally.

Probe Type

- SAMTEC: SAMTEC Probe connector type
- SOFTTOUCH: SOFT-TOUCH probe connector type

Sample Rate

- Select Sampling rate: 10GHz/ 5GHz/ 2.5GHz / 1.25GHz

Hysteresis[V]

- Set hysteresis voltage (V_{hys}) The difference between the positive-going and the negative-going input threshold voltages.
- Range: 0 ~ 50 mV

Compress Enable

- True: Save the acquisition data with compression (jlz file format)
- False: Save the acquisition data without compression (jlb file format)
- Set always as True in JLA534F

FIFO Save Option at Abort

- When the acquisition stops by the user, it is an option to store the remaining data of FIFO.

Prepare File

- As a function of generating a file in advance to improve performance of file storage, it can improve the Streaming performance acquisition. (requires additional time to generate file before data acquisition)

Acquisition Size

- Input data size for acquisition (unit: MB)

Acquisition Time

- Input time size for acquisition (unit: Second)
- If the acquisition size is satisfied first, the acquisition time is ignored and the acquisition ends.

Waveform File

- Select the file path and name to save the acquired data.

Auto Decompress

- Option to decompress captured data automatically after data acquisition.

Auto Draw Waveform

- An option to display waveform to the screen after data acquisition.

Auto File Naming

- Auto file naming with date and time on acquisition.
- If select true, not overwrite previous acquisitioned file.

Filter**FilterConfigFile**

- This is path of decoder file for filtering

Filtering Decoder file

There are 2 kinds of event condition.

- Main Event condition : command condition (WEn rising)
- Sub Event condition : other condition(DQS or Ren)

Please refer to manual of General Filtering.

Trigger

Trigger Enable

- Select whether to capture data with user trigger condition or not.
- True: Start Trigger enable.
- False: Start Trigger disable

Pre Trigger Size

- Select the amount of data capacity to save before Start user trigger condition (unit: MB)

Pre Trigger Time

- Select the amount of time to save before Start user trigger condition (unit: us).

TrigInterval0_Min (T0~T1) [UI]

TrigInterval0_Max (T0~T1) [UI]

- Condition of trigger interval for between T0 to T1.
- $\text{TrigInterval0_Min} \leq \text{Interval} \leq \text{TrigInterval0_Max}$
- Unit : Reference Clock edge

TrigInterval1_Min (T1~T2) [UI]

TrigInterval1_Max (T1~T2) [UI]

- Condition of trigger interval for between T1 to T2.
- $\text{TrigInterval1_Min} \leq \text{Interval} \leq \text{TrigInterval1_Max}$
- Unit : Reference Clock edge

TrigInterval2_Min (T2~T3) [UI]

TrigInterval2_Max (T2~T3) [UI]

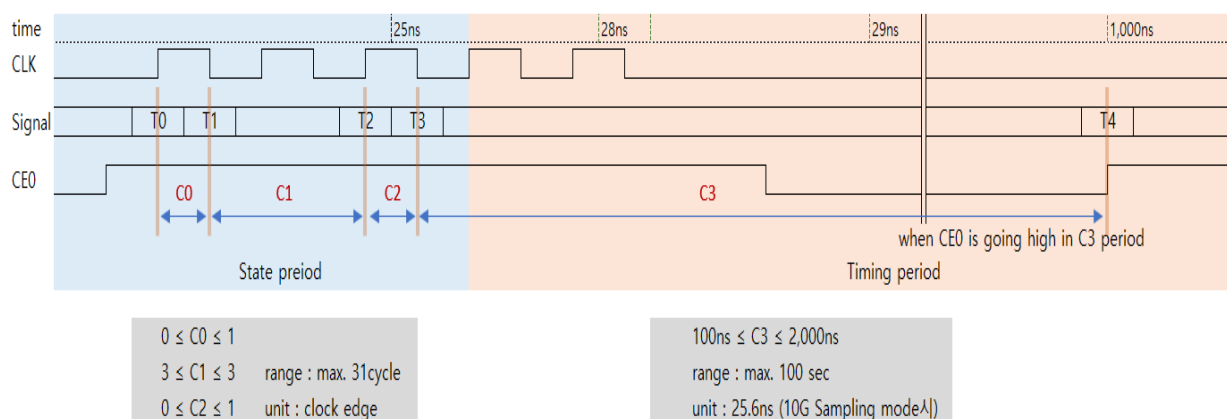
- Condition of trigger interval for between T2 to T3.
- $\text{TrigInterval2_Min} \leq \text{Interval} \leq \text{TrigInterval2_Max}$
- Unit : Reference Clock edge

TrigInterval3_Min (T3~T4) [ns]

TrigInterval3_Max (T3~T4) [ns]

- Condition of trigger interval for between T3 to T4.
- $\text{TrigInterval3_Min} \leq \text{Interval} \leq \text{TrigInterval3_Max}$
- Unit : $16 * \text{Sampling period}$ (ex, 1.6ns at 10G sample rate)

Example Triggering



BusDecoder

DecoderFile

- For command analysis in waveform, select the file in which the condition was stored.

Message

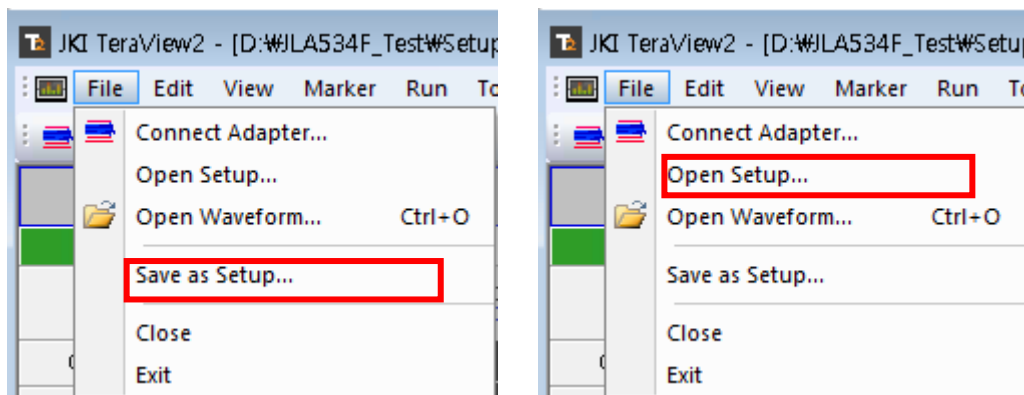
Message Mode

- Set the message output level for debugging.
- INFO_MESSAGE_MODE: Does output to action information level message (default)
- NO_MESSAGE_MODE: Does not output any message

3.9 Saving & Loading Configuration

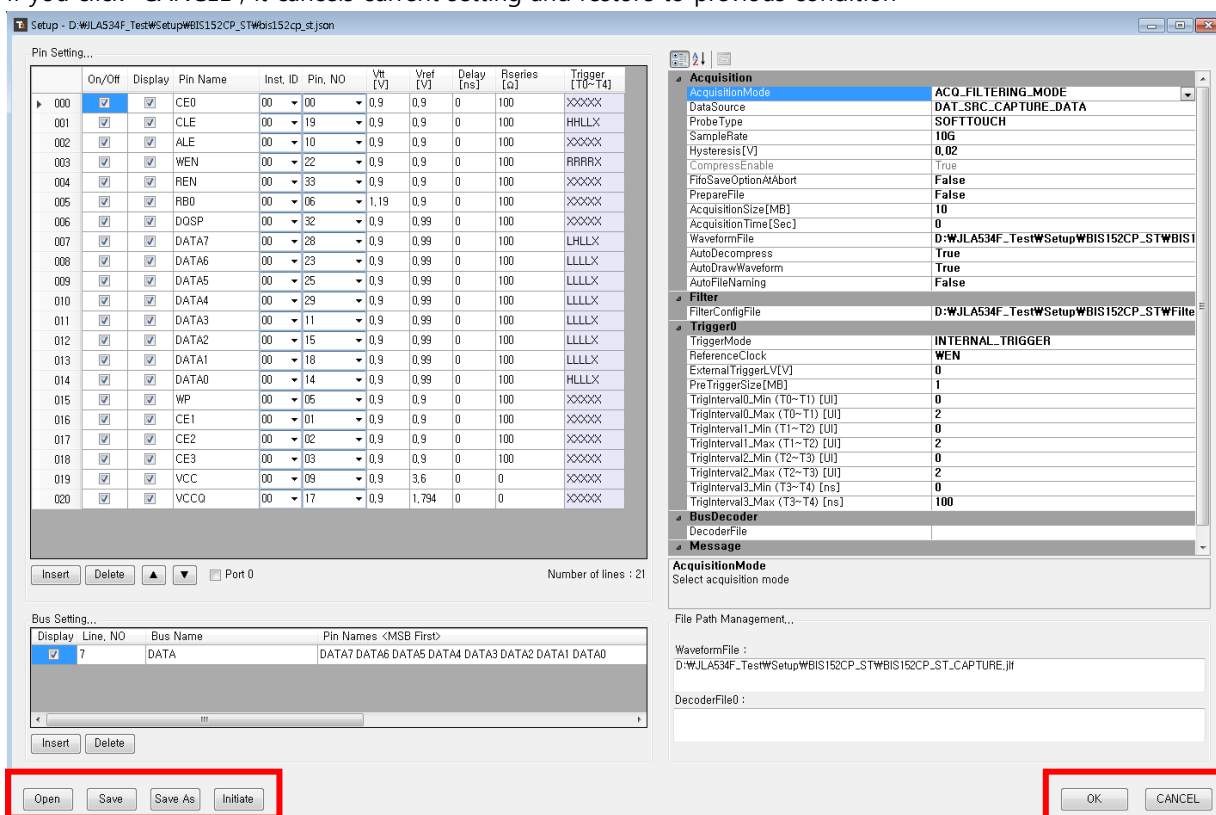
Save as Setup

- If you choose "Save as Setup..." from the File Menu, you can save the current settings to a new Setup file
- You can load the settings of the file at desired Setup file through "Open Setup" "Open Setup..."



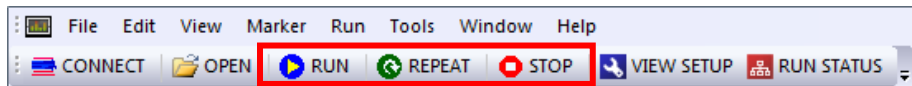
Save Setup & Initiate

- If you click "Open" located at bottom of Setup Window, you can open to already saved setup file.
- If you click "Save", it saves current condition at opened setup file.
- If you click "Save AS", it saves current condition at new setup file.
- If you click "Initiate", it applies current setting to the system.
- If you click "OK", It maintains current setting but does not save the file.
- If you click "CANCEL", it cancels current setting and restore to previous condition



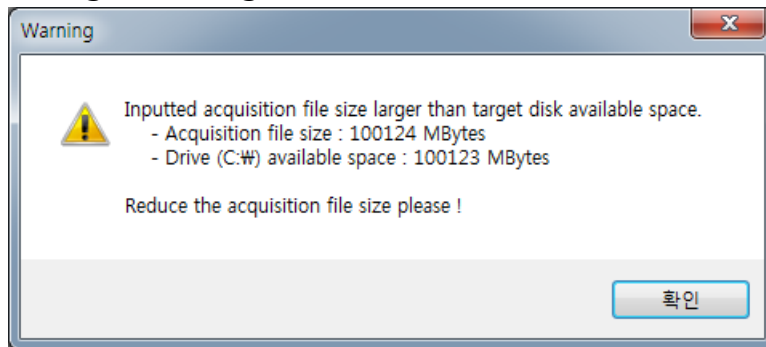
4 Acquisitioning Data from the Device Under Test

4.1 Run / Stop Measurements

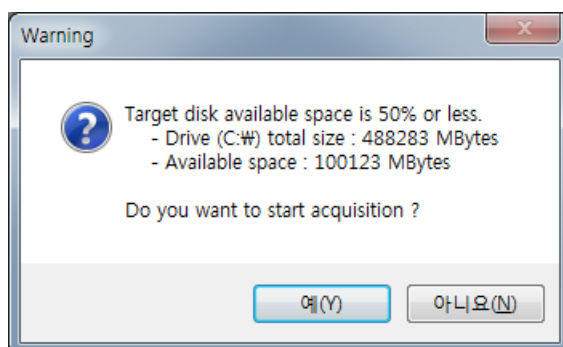


- RUN: Apply current Setup condition to system, and then start acquisition
- REPEAT: Apply current Setup condition to system, and then repeat data acquisition till the user stops it.
- STOP: Stop the current data acquisition. (Acquisition data by the point of STOP is stored in the file)

4.2 Checking Disk Usage

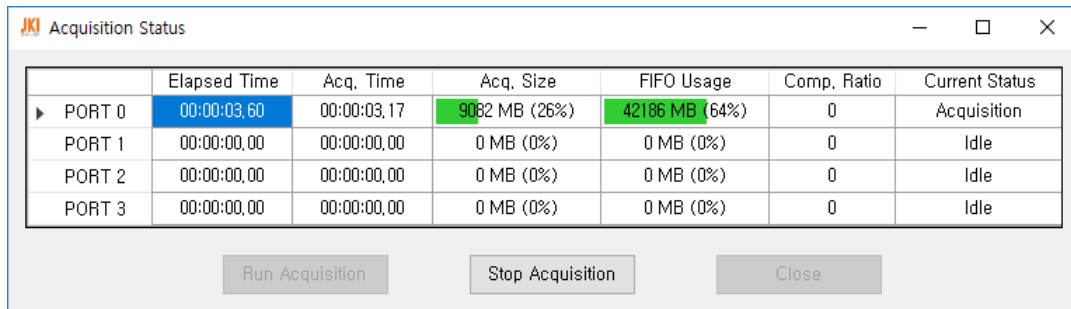


- If the inputted Acquisition Size is larger than the available capacity of the save target drive, an alarm is generated and it is stopped.



- If the save target disk available space is 50% or less, an alarm will appear asking if the acquisition is to proceed.
- Select "Yes", start Acquisition regardless of disk space.
- Select "No", stop Acquisition regardless of disk space.

4.3 Acquisition Status



	Elapsed Time	Acq. Time	Acq. Size	FIFO Usage	Comp. Ratio	Current Status
▶ PORT 0	00:00:03.60	00:00:03.17	9082 MB (26%)	42186 MB (64%)	0	Acquisition
PORT 1	00:00:00.00	00:00:00.00	0 MB (0%)	0 MB (0%)	0	Idle
PORT 2	00:00:00.00	00:00:00.00	0 MB (0%)	0 MB (0%)	0	Idle
PORT 3	00:00:00.00	00:00:00.00	0 MB (0%)	0 MB (0%)	0	Idle

Run Acquisition Stop Acquisition Close

Acquisition Status includes the following items.

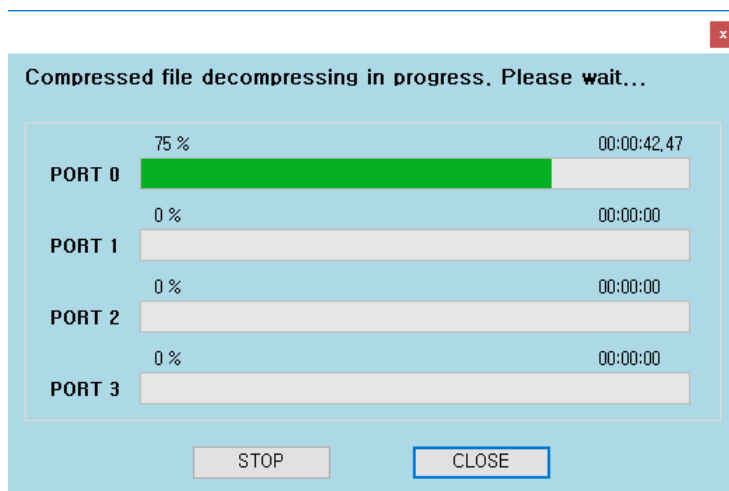
Acquisition Status Info

- Elapsed Time: Display the total elapsed time per port after the acquisition
- Acq. Time: Display the total elapsed time per port after on the real acquisition state
- Acq. Size: Display the total acquisition size per port in real time
- (If use the Prepare File mode, it displayed prepared size per port in real time)
- FIFO Usage: Display acquisition memory usage per port in real time
- Comp. Ratio: Indicate Data compression ratio → (input) / (output)
- Current Status: Display the current action status the system per port
- (Idle → Prepare file → Wait for trigger → Acquisition → Flushing FIFO data → Idle)
- Run/Stop Acquisition: You can start new data acquisition or, stop current acquisition.

4.4 Automatic File Decompress

If you set the "AutoDecompress" to True as shown below, automatically decompress file after acquisition.

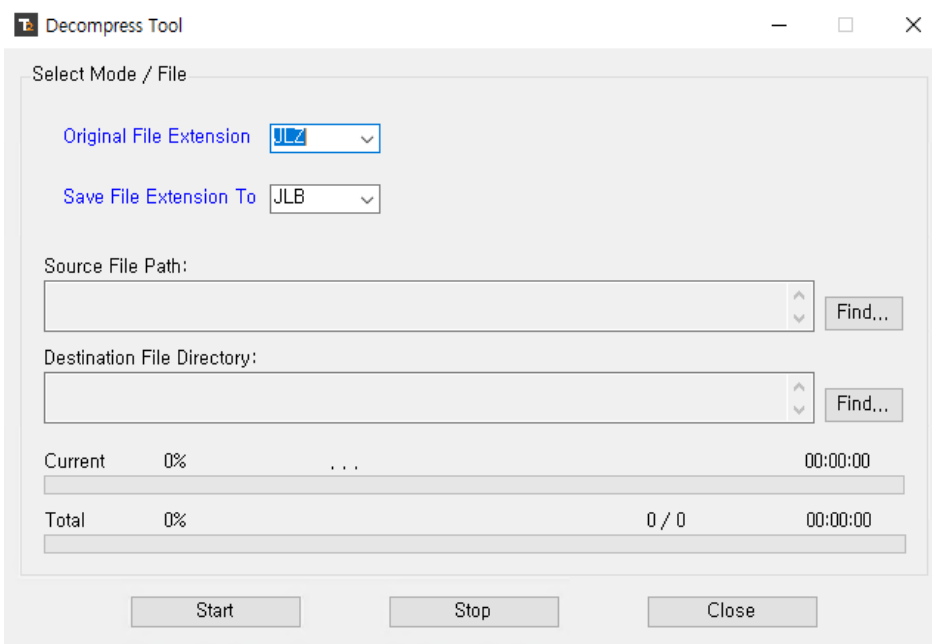
Acquisition	
AcquisitionMode	ACQ_TIMING_MODE
DataSource	DAT_SRC_COUNTER
Probe Type	SOFTTOUCH
SampleRate	10G
Hysteresis[V]	0.04
CompressEnable	True
FifoSaveOptionAtAbort	False
PrepareFile	False
AcquisitionSize[MB]	20
AcquisitionTime[Sec]	0
WaveformFile	D:\JLA534F_Test\Setup\WPANDA_152B\WPanda_...
AutoDecompress	True
AutoDrawWaveform	True
AutoFileNaming	False



4.5 Use Decompress Tool

Select "Tools" → "Decompression", it is displayed as below.

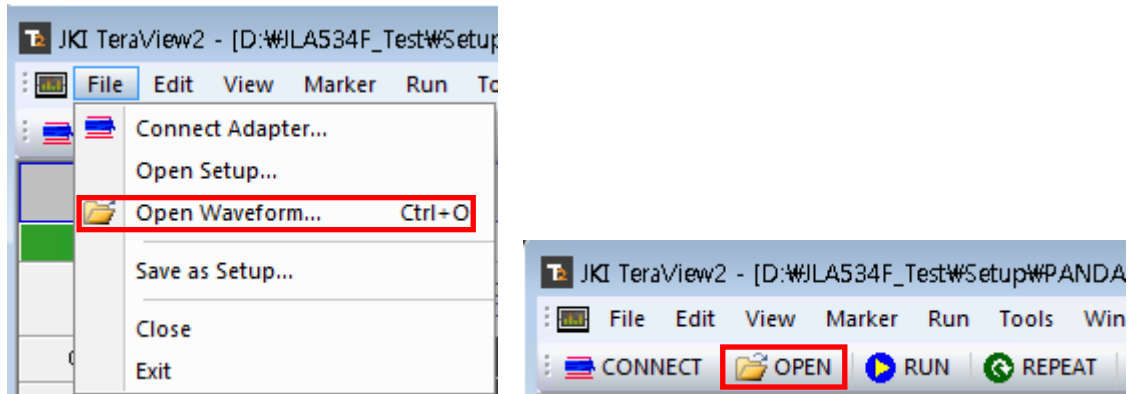
Compressed acquisition data can be decompressed and saved in destination path.



5 Analyzing the Captured Data

5.1 Loading Saved Data

File → Open Waveform File : File Raw data(jlb) is available to open in Open Waveform.



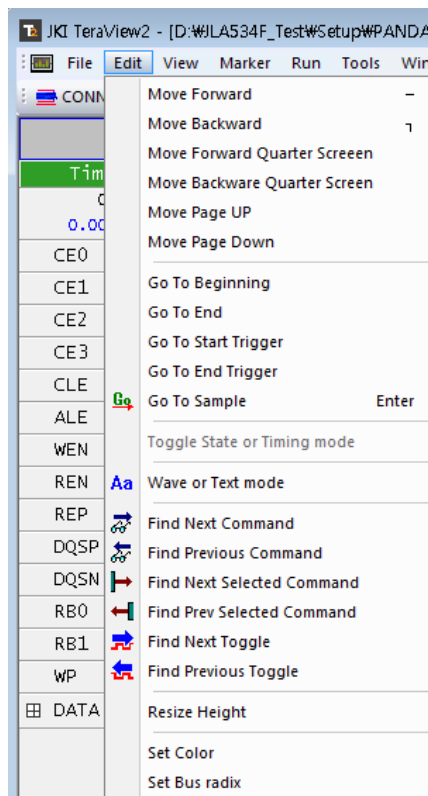
5.2 Analysis Mode

JLA534F supports Timing mode only. (does NOT support State mode)

Timing mode is shown at top left. Ruler shows the Time number as blue at the bottom and the Sample number at the top. The Timing information is drawn in Waveform in Timing mode.

5.3 Navigating Waveform

You can move Waveform through shortcuts or mouse in Edit menu, or screen.



Move Forward

- Shortcut : Ctrl + F
- The function to move Waveform forward as the smallest unit. It moves by 1 sample clock time in timing mode.

Move Backward

- Shortcut: Ctrl + B
- The function to move Waveform backward as the smallest unit. It moves by 1 sample clock time in timing mode.

Move Forward Quarter Screen

- Shortcut: Right arrow
- The function to move Waveform forward by Quarter unit.

Move Backward Quarter Screen

- Shortcut: Left arrow
- The function to move Waveform backwards by Quarter unit.

Move Page Up

- Shortcut: Page Up
- The function to move Waveform backwards from current view by page unit.

Move Page Down

- Shortcut: Page Down
- The function to move Waveform forward from current view by page unit.

Go to Beginning

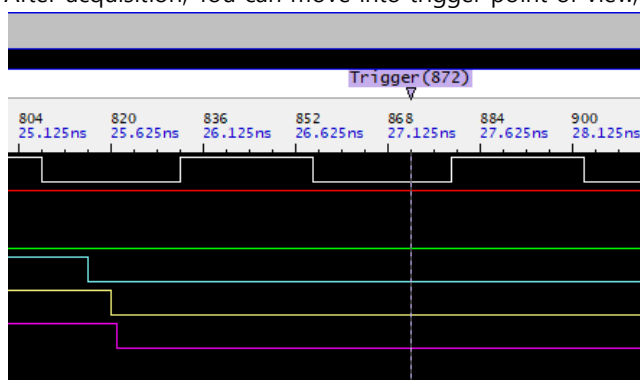
- Shortcut: Home
- The function to move Waveform at the starting point

Go to End

- Shortcut: End
- The function to move Waveform at the last point

Go to Trigger

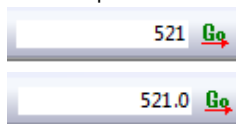
- After acquisition, You can move into trigger point of view, and then, marks that trigger (Sample) location.

**Go to Start Trigger**

- Shortcut: None
- The function to move Waveform to Start Trigger point.

Go to Sample

- The function to move Waveform to target sample point
- The method of use is to input Sample or Time value in Tool box at first. Then, clicking "Go button" or "Enter" allows screen to move into specific Sample. Sample value and Time value areas sorted by decimal point. It shows Sample Number if there is no decimal point, shows Time Number if there is decimal point

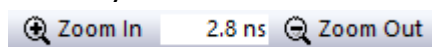


Sample Number (Input integer)

Time Number (Input decimal point)

Scroll

- You can move sample location with mouse drag/press in bottom of Viewer.

Zoom In / Out

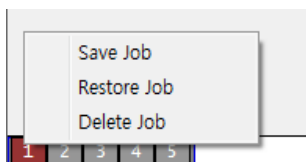
- Zoom In – Shortcut : Shift + I
- Zoom Out – Shortcut: Shift + O
- You can Zoom In / Zoom Out with the button shown in the above.
- Drawing quadrangle with left mouse button zooms in corresponding area in Waveform screen.

Copy Sample or Time

- Sample Number and Time Number are shown at the top left. Copy pop-up appears by clicking this area. "Copy Sample" copies Sample number and "Copy Time" copies Time number. "Copy All" copies all of Sample and Time value and separates Sample Time value with Space character.

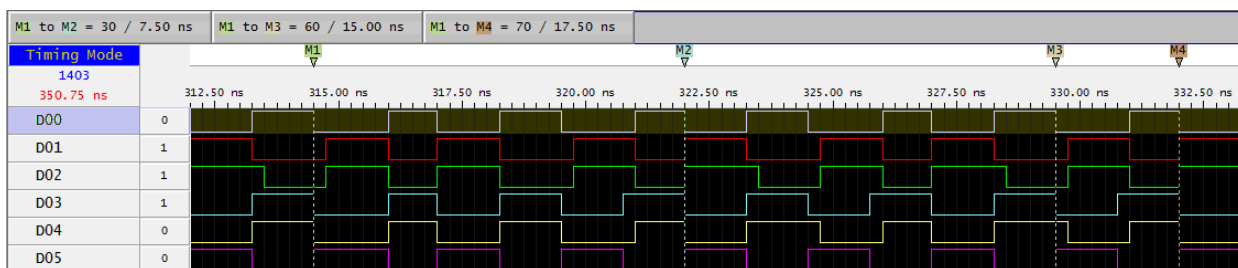
Save Current Screen

- Save/Restore Job function located at the bottom left allows to save Waveform screen into program and to restore the file up to five screens. Pop-up menu appears by clicking mouse right button on certain numbers as shown in the bottom picture. It saves at certain number by clicking "Save Job", and it moves to the saved screen by clicking Restore Job or double click.



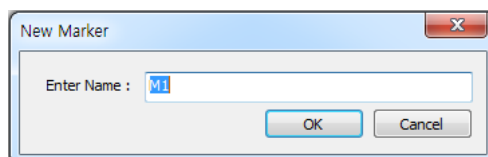
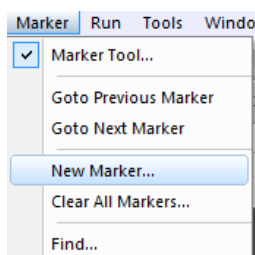
5.4 Marker

- Marker function is to show or to move into location of Waveform.



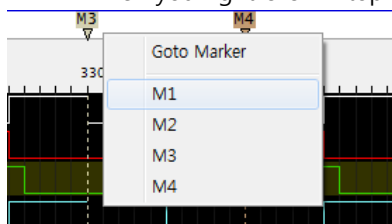
New Marker

- Double click Marker bar area at the top of Ruler or Run Marker -> New Marker from Menu or Tool bar  creates new Marker. You can drag created Marker to move into desired position.



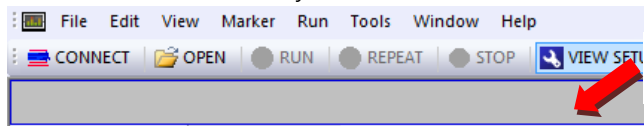
Goto Marker

- When you right-click in top of the sample position, Marker list pops up as shown below.



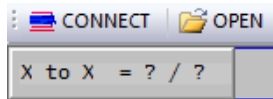
Marker Tool

- Marker Tool is created if you click "Marker -> Marker Tool" from Menu or Tool bar. 

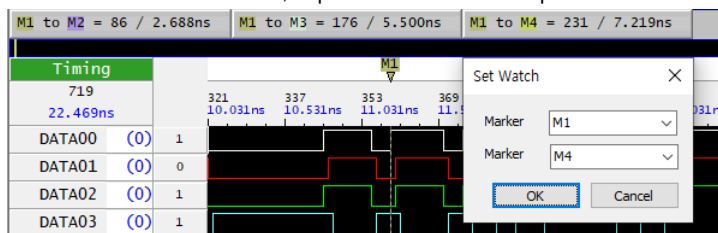


Double Click

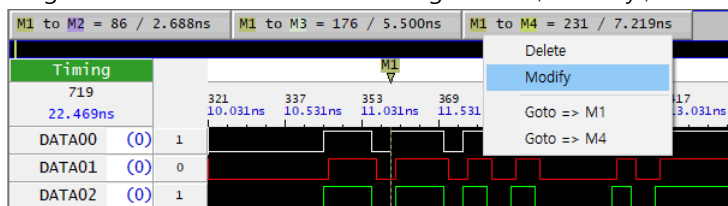
- Tool box is created if you double click or right-click of Marker Tool area.



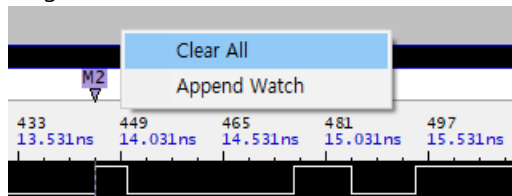
- Double click Tool box as shown above first. Then, the window, which appoints two Markers, pops up as shown below. After that, inputs number of sample and Time information between Markers.



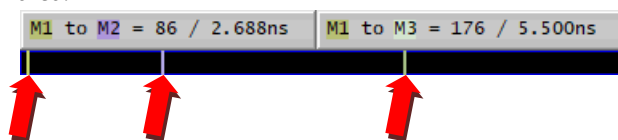
- Right-click of the window allows using "Delete", "Modify", and "Goto Marker" functions.



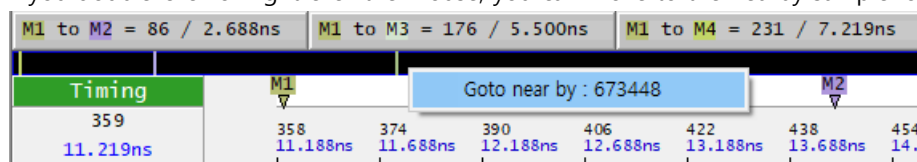
- Right-click of Marker Tool area to use "Clear All" function, which deletes all.



- In the black area below, you can see the approximate distribution of the marker for the entire waveform area.



- If you double-click or right-click the mouse, you can move to the nearby sample location as follows.

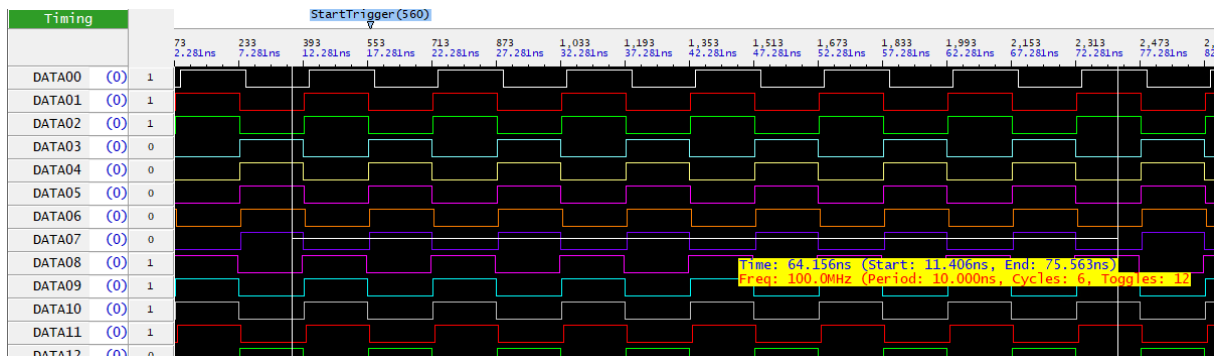


5.5 Ruler

You should select CH you want to measure first.

Two places' information is displayed after dragging two places by clicking  Ruler icon.

- First line - Time interval
- Second line – Frequency, Period, Cycle, Toggles

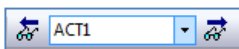


5.6 Toggle Search



You can find previous or next points of signal toggle by clicking two-way arrow as shown above.

5.7 Command Search



All command appears by loading command file from Packet decoder. Select desired command and click either left arrow to move previous Waveform screen or right arrow to move next Waveform screen.

5.8 Selected Command Search

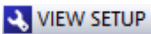


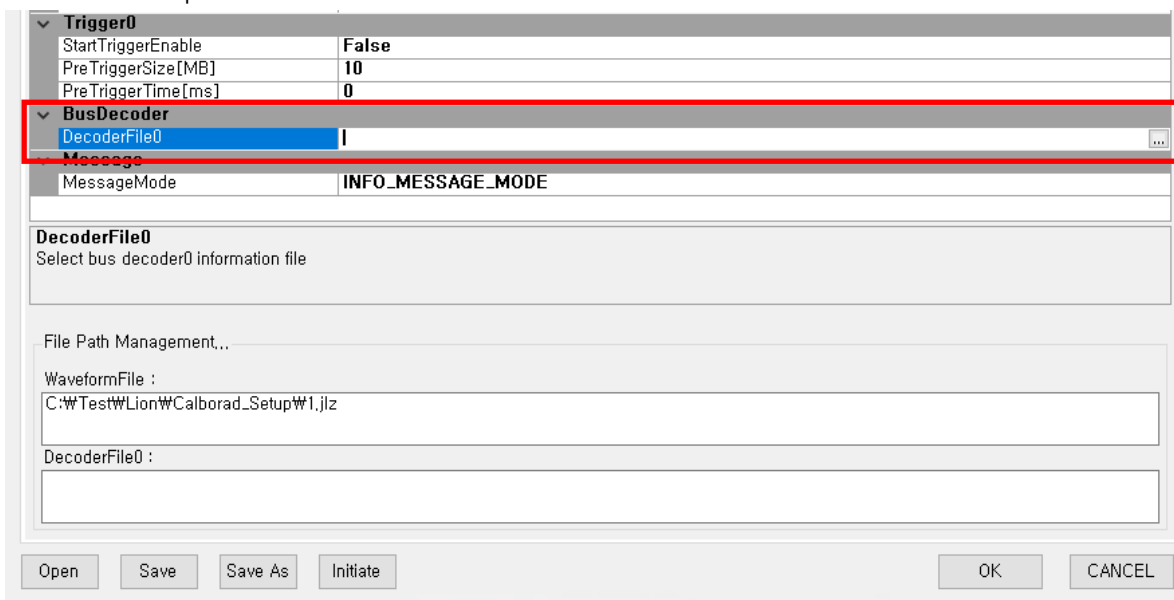
You can find previous or next same command by clicking two-way arrow you selected desired command.

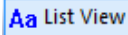
5.9 Bus Decoder

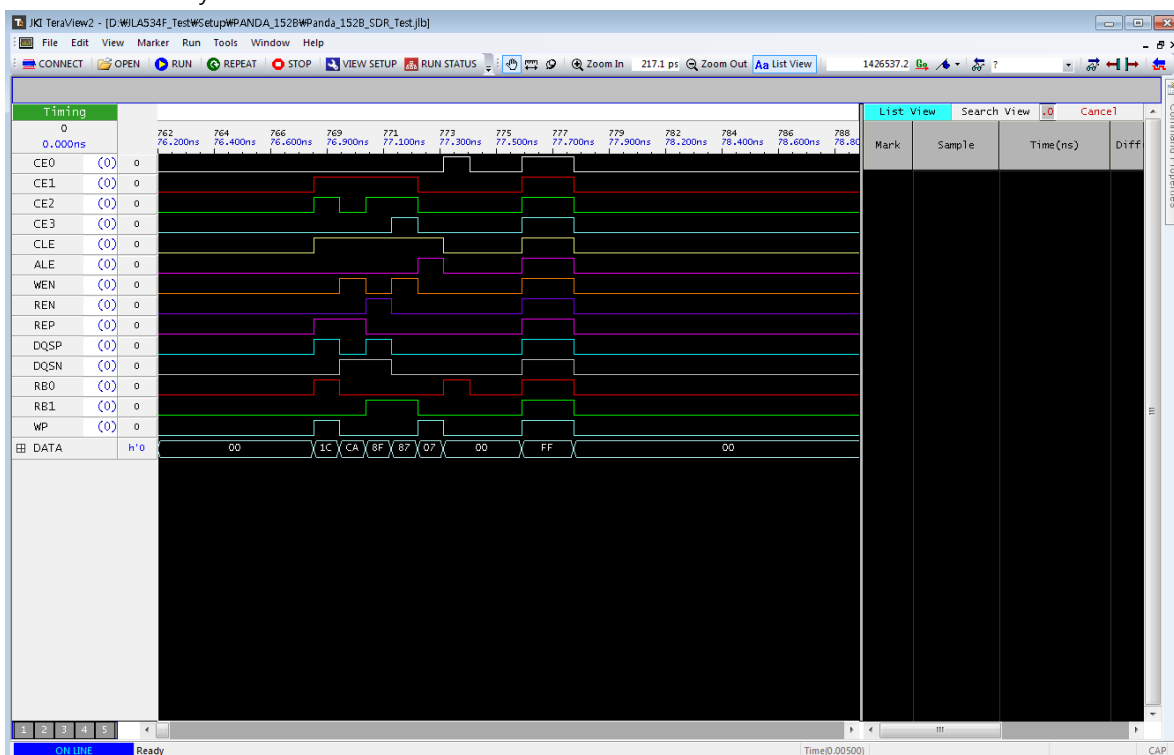
To decode memory bus protocol, we provide pre-defined decoder files for various JEDEC standard memory types.

How to use

-  **VIEW SETUP** → Option tab.
- Select pre-defined decoder file → Click "OK" button.



- If you click the button  **Aa List View** on the top menu, ListView is created horizontally on the right side of Waveform, and as shown above, all Sampling data and Command information can be viewed based on text in synchronization with Waveform.



6 Reference

6.1 System Specification

Channel Specification	
Number of Channels	34 (31 single-ended + 3 differential)
Input Voltage Range	-0.2V to 1.2V (analyzer input)
Minimum Input Voltage Swing	40 mV (analyzer input)
Termination (Vtt) Voltage Range	0V to 1.2V (analyzer input)
Termination (Vtt) Voltage Resolution	1 mV
Threshold (Vref) Voltage Range	0V to 1.2V (analyzer input)
Threshold (Vref) Voltage Resolution	1 mV
Hysteresis (Vhys) Voltage Range	0 ~ 50 mV
Timing Delay Range	-2ns to 2ns
Timing Delay Resolution	50 ps @20 GHz
Input Impedance	50 Ohm (analyzer input) 250 Ohm (5:1 probe) 500 Ohm (10:1 probe)

Acquisition Specification	
Sample Rate	1.25 / 2.5 / 5 / 10 / 20 GHz
Analysis Mode	Timing mode, Filter mode, Eye mode
Acquisition Memory	Max. 512 GB (standard 128 GB)
Host Interface	PCIe Gen3 x8
Data Compression	Hardware compression
Data De-compression	Software de-compression

Trigger Specification	
Trigger Pattern	E(Either edge), R(Rising edge), F(Falling edge), H(High), L(Low), X(Don't care) for all channel
Trigger Sequence	5 burst trigger
Trigger Action	Start capture
Trigger Rate	1.25G
Pre-trigger Size	Max. 128Gbytes (depends on RDIMM Size)

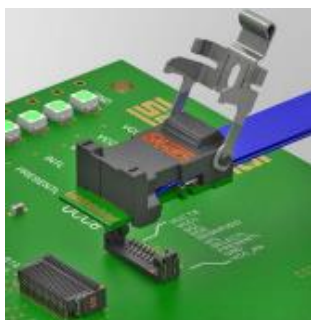
Filtering Specification	
Filter Pattern	E(Either edge), R(Rising edge), F(Falling edge), for all channel
Filtering Rate	1.25G
Filtering Size per a event	8 bytes including raw data and time information

Environmental and physical	
Power Consumption	Max. 150W
Operation Temperature (nom)	0 to +40 dec C
Humidity (nom)	0 to 80% relative humidity
Dimensions (W x H x D)	347 mm x 290 mm x 74 mm
Weight	4.7kg

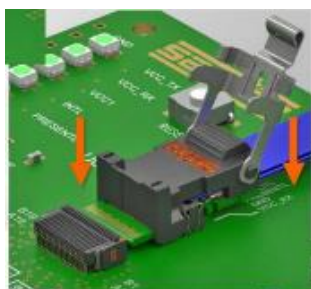
6.2 Probe Connector Pin-outs (Softtouch)

Soft-touch Probe Connector Pin-map					
Channel#	Description	Pin#	Pin#	Channel#	Description
CH_00	Data Channel	A1	B1	GND	Ground
CH_01	Data Channel	A2	B2	CH_02	Data Channel
GND	Ground	A3	B3	CH_03	Data Channel
CH_04	Data Channel	A4	B4	GND	Ground
CH_05	Data Channel	A5	B5	CH_06	Data Channel
GND	Ground	A6	B6	CH_07	Data Channel
CH_32+	Differential+ or single-ended	A7	B7	GND	Ground
CH_32- / NC	Differential- or not-connect	A8	B8	CH_08	Data Channel
GND	Ground	A9	B9	CH_09	Data Channel
CH_10	Data Channel	A10	B10	GND	Not connect
CH_11	Data Channel	A11	B11	CH_12	Data Channel
GND	Ground	A12	B12	CH_13	Data Channel
CH_14	Data Channel	A13	B13	GND	Ground
CH_15	Data Channel	A14	B14	CH_16	Data Channel
GND	Ground	A15	B15	CH_17	Data Channel
CH_18	Data Channel	A16	B16	GND	Ground
CH_19	Data Channel	A17	B17	CH_20	Data Channel
GND	Ground	A18	B18	CH_21	Data Channel
CH_22	Data Channel	A19	B19	GND	Ground
CH_23	Data Channel	A20	B20	CH_33- / NC	Differential- or not-connect
GND	Ground	A21	B21	CH_33+	Differential+ or single-ended
CH_24	Data Channel	A22	B22	GND	Ground
CH_25	Data Channel	A23	B23	CH_26	Data Channel
GND	Ground	A24	B24	CH_27	Data Channel
CH_28	Data Channel	A25	B25	GND	Ground
CH_29	Data Channel	A26	B26	CH_30	Data Channel
GND	Ground	A27	B27	CH_31	Data Channel

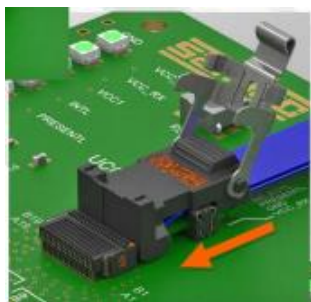
6.3 Probe Module Cable Assembly Insertion and Removal Instructions



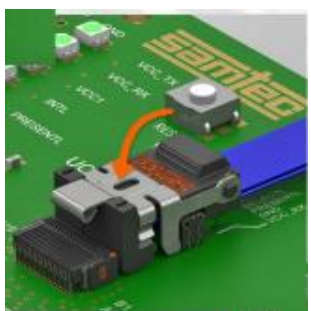
- ① Align optical or copper assembly so that notches in PCB are over the positive latching receptacle.



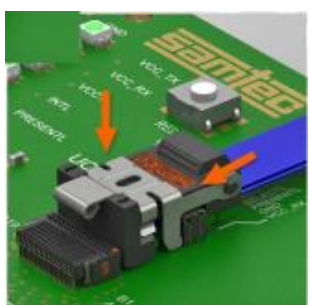
- ② Drop cable assembly down keeping it parallel to the board.



- ③ Slide cable assembly forward until engaged, keeping it level with the board.

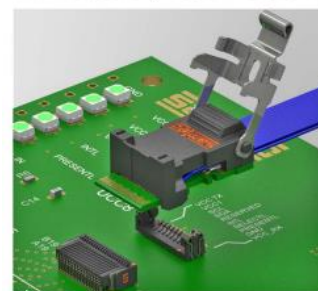


- ④ Rotate latch downwards until parallel to board.



- ⑤ Depress latch to lock cable assembly into the connector. Removal is reverse of installation.

Unmated (Latch Open)



Mated (Latch Down)



6.4 Warranty & Calibration Service

Warranty: JLA534F-20G NAND protocol analyzer is provided with 1 year warranty.

Calibration:

- The JLA534F protocol analyzer does not require an operational accuracy calibration or adjustment.
- We recommend you to take protocol analyzer's performance/functionality test every 3 years.
- The 1st 3 years test service is no charge. Then need to pay for this test service.

*For more details, Contact sales@jkic.co.kr