SIGLENT®

The Best Value in Electronic Test & Measurement

SDS5000X

Introduction

Features & Benefits

Ordering Info

Touch for a solution

Super Phosphor Oscilloscope

Front Panel

Quick Search/Navigate

Play, FFW, Replay capture data frames

10.1'' Touch Screen

Easy use
supports gestures

Probe Calibration Signal

3.3 V, 1 kHz Square wave

4 Analog Channels

Auto attenuation
and power for active
probes

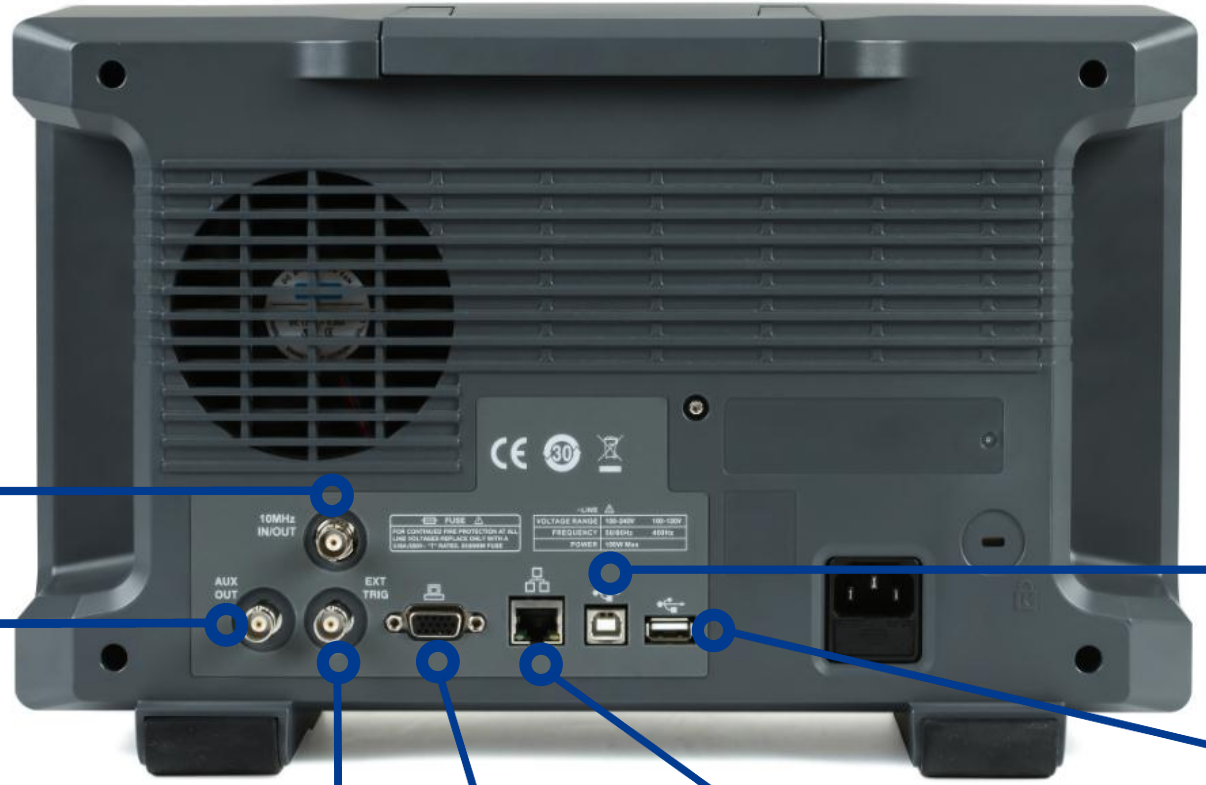
2 * USB HOST

Keyboard mouse
and USB memory
devices

MSO/Logic analysis

16 digital channels

Rear Panel



10 MHz IN/OUT

AUX OUT

USB-DEVICE(USBTMC)

USB HOST

LAN INTERFACE
(VXI-11, telnet, socket, web)

VGA OUTPUT

EXT TRIG

LESS PRICE & MORE POWER

1 GHz
Bandwidth

5 GSa/s
Sample Rate

10.1”
Touch Screen

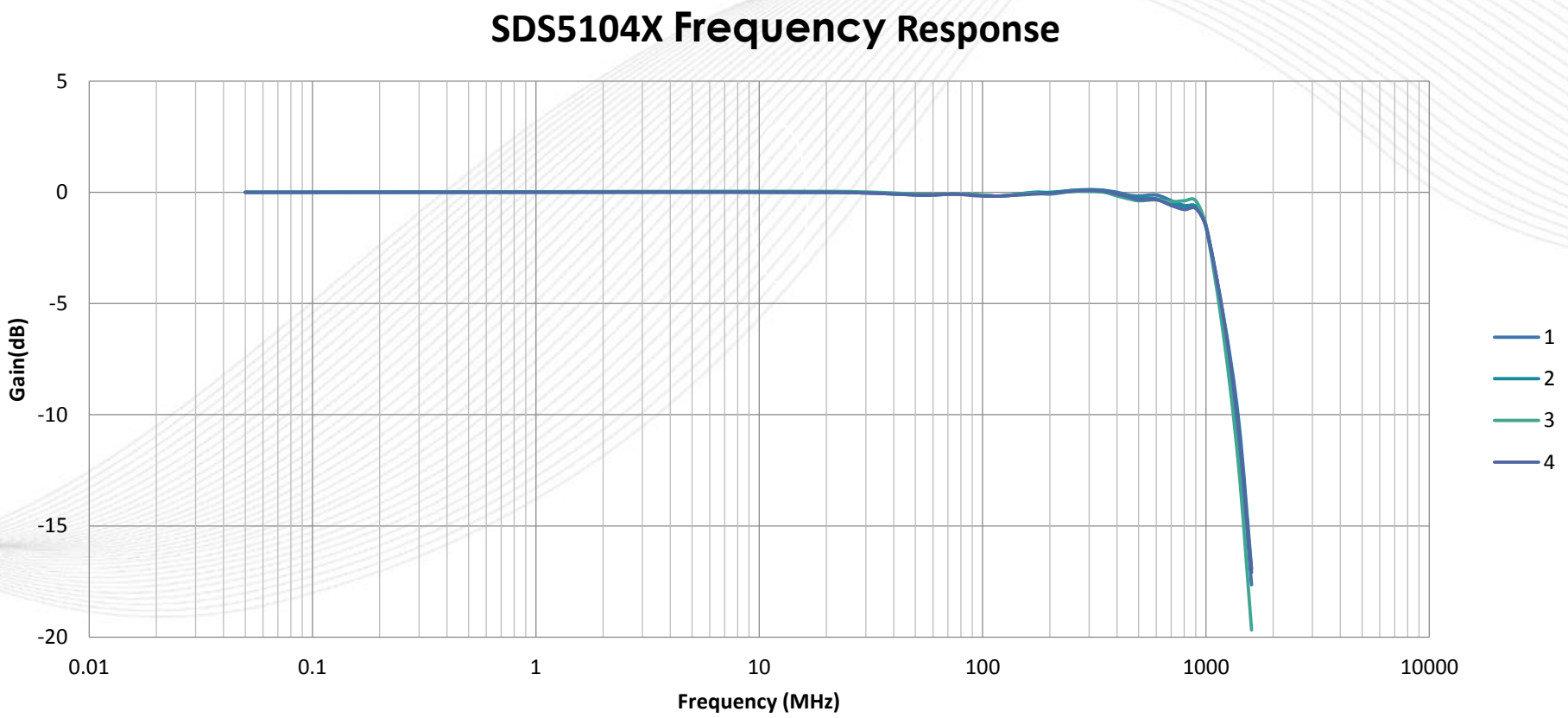
250 Mpts
Record Length

110,000
wfm/s
Waveform Capture Rate

SIGLENT®

Bandwidth

- Increased accuracy for fast rise-time pulses and complex waveforms
- Precisely reproduce waveforms with high frequency components



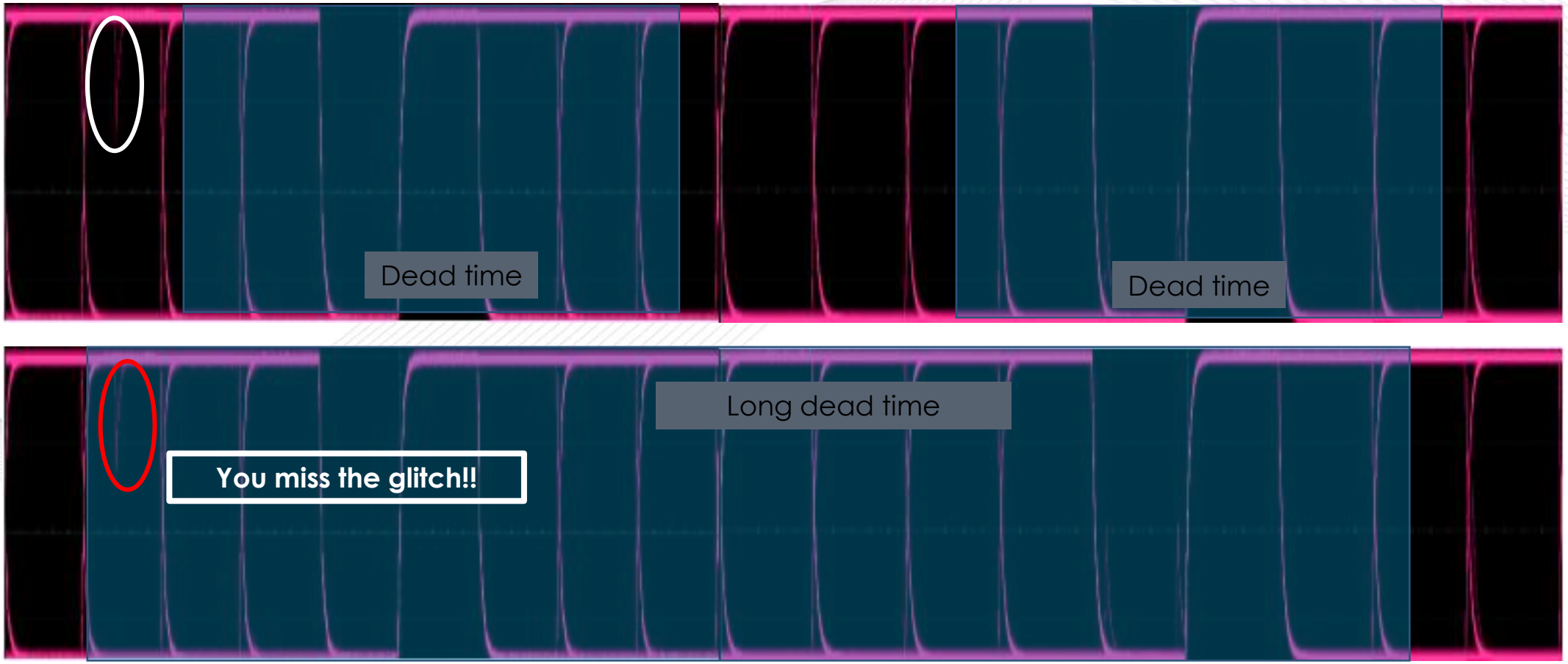
Waveform Capture Rate

- Up to 110,000 wfm/s (Normal mode)
- Up to 480,000 wfm/s (Sequence mode)
- Collect measurement data more quickly

Higher Capture Rate

↓

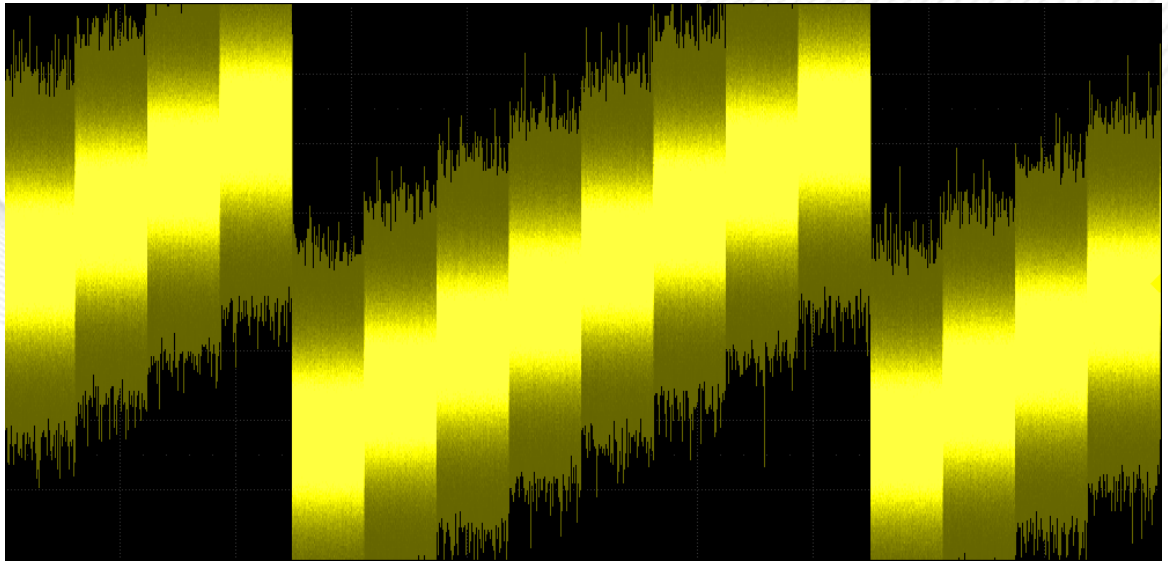
Shorter Dead Time → Quickly identify problems = Faster results



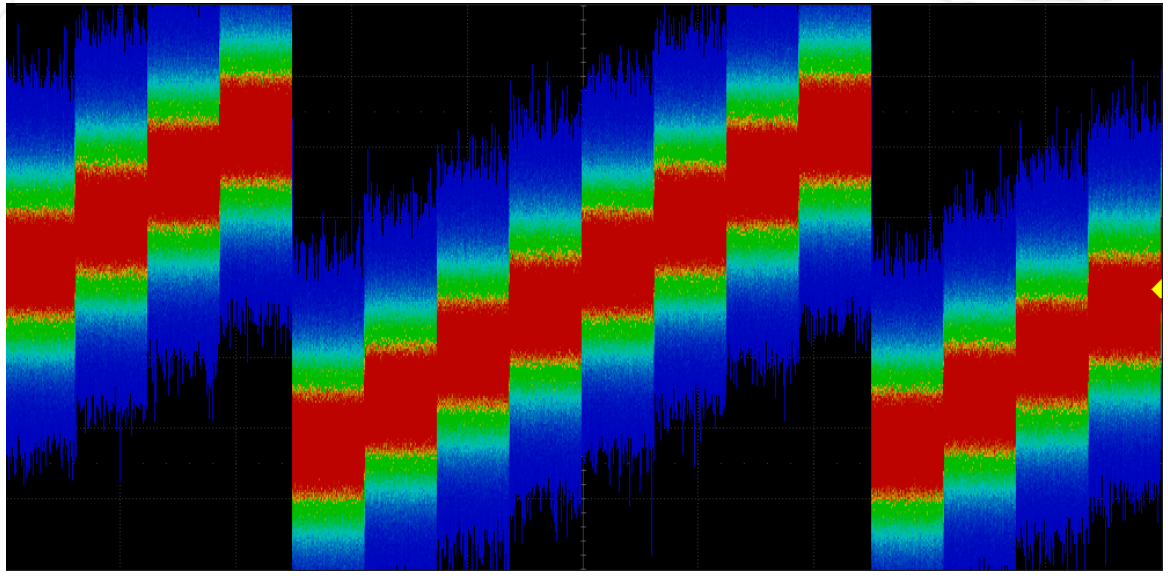
Color and intensity Display

- More frequent events are brighter, or “hotter” (color display mode)
- Significantly increase the probability of observing intermittent and elusive events
- Reveal dynamic signal behavior

- **256-level intensity**



- **Color temperature display**



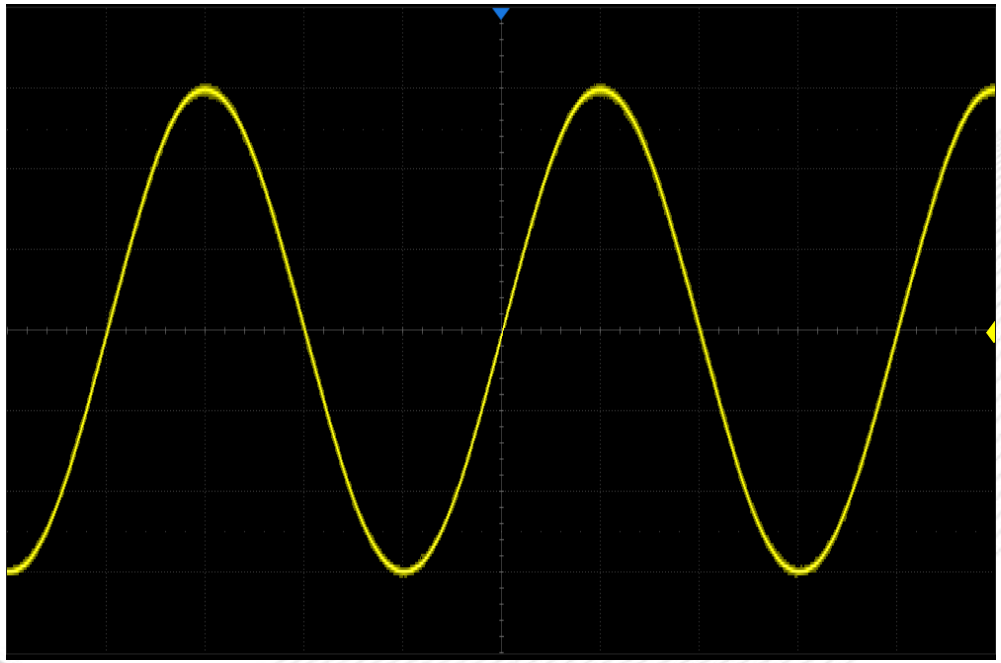
250 Mpts Record Length

- Hardware-based Zoom function
- Benefits: Capture more of signal and zoom in areas of interest
- Don't lose horizontal resolution, don't miss short intermittent signals.
- Monitor slow signals with high sample rate.. Capture seconds of data and still have resolution to see nanosecond scale details
- CH1 & CH2 share 250 Mpts memory

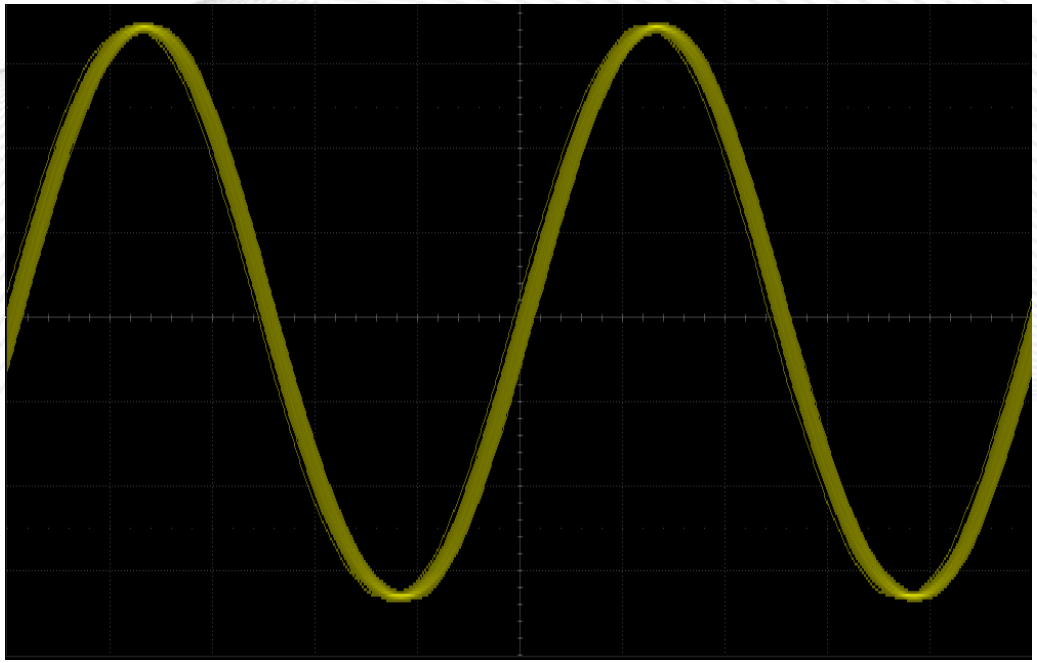
  CH3 & CH4 share 250 Mpts memory

Digital Trigger System

SDS5000X Digital Trigger



Analog Trigger



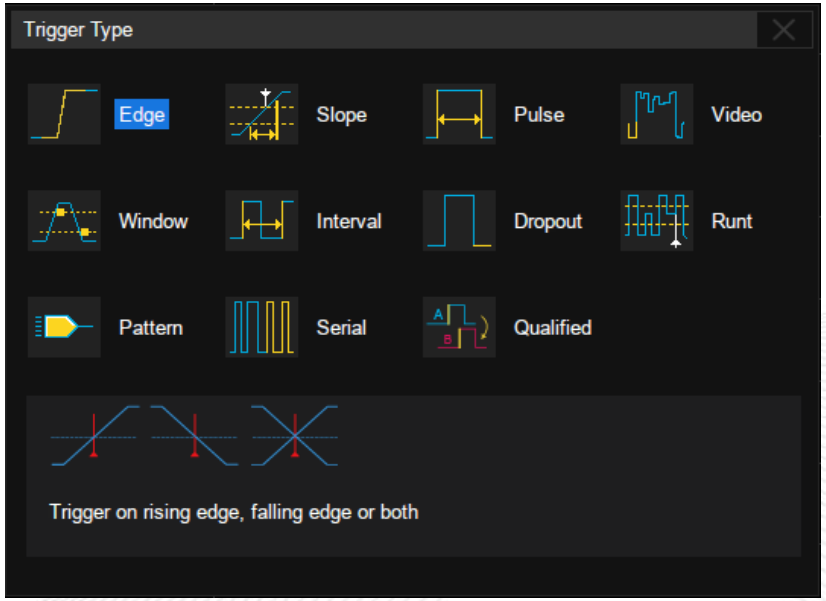
Trigger the same 25 MHz Sine wave

- Unique digital trigger system: **higher trigger sensitivity**, **lower trigger jitter** (less than 100 ps)

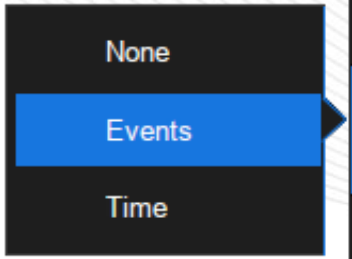
Intelligent Triggers

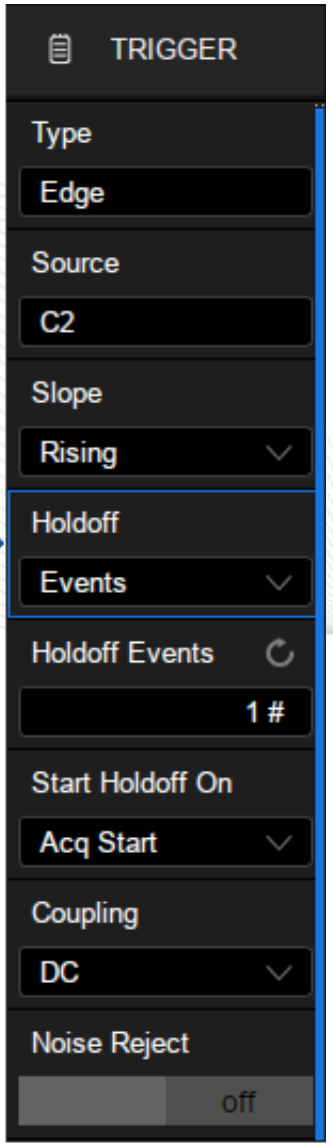
- Featuring Qualified and Zone Trigger
- Hardware trigger: Faster, less jitter

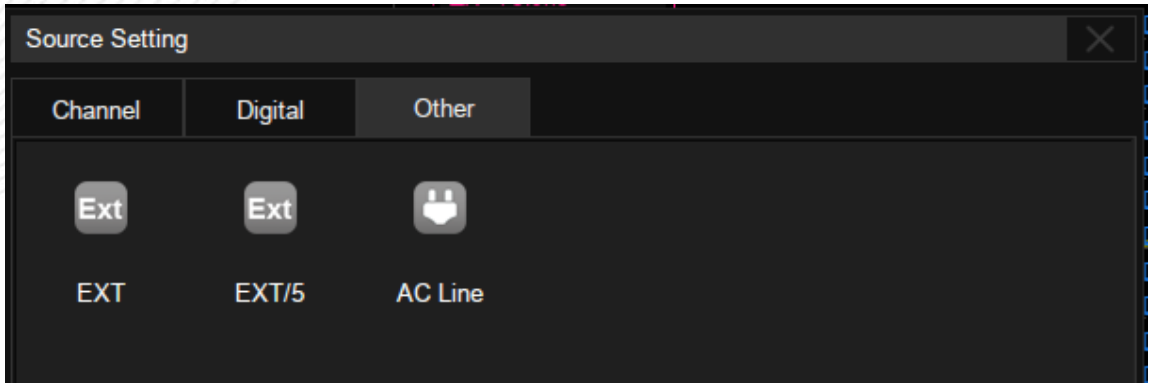
Setup



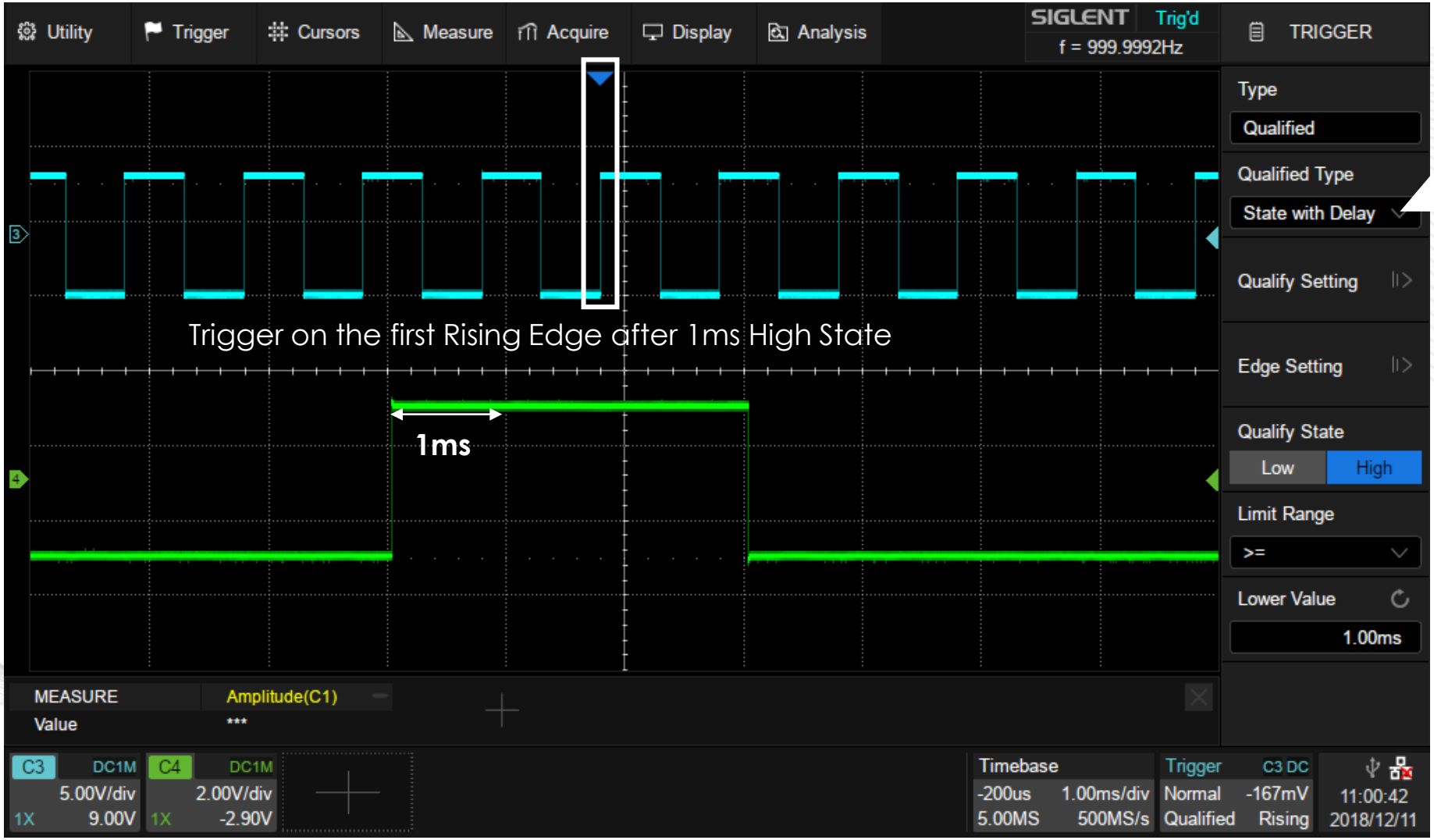
- Multiple trigger types
- Trigger source analog + digital channels + Other
- Hold off by Events or Time







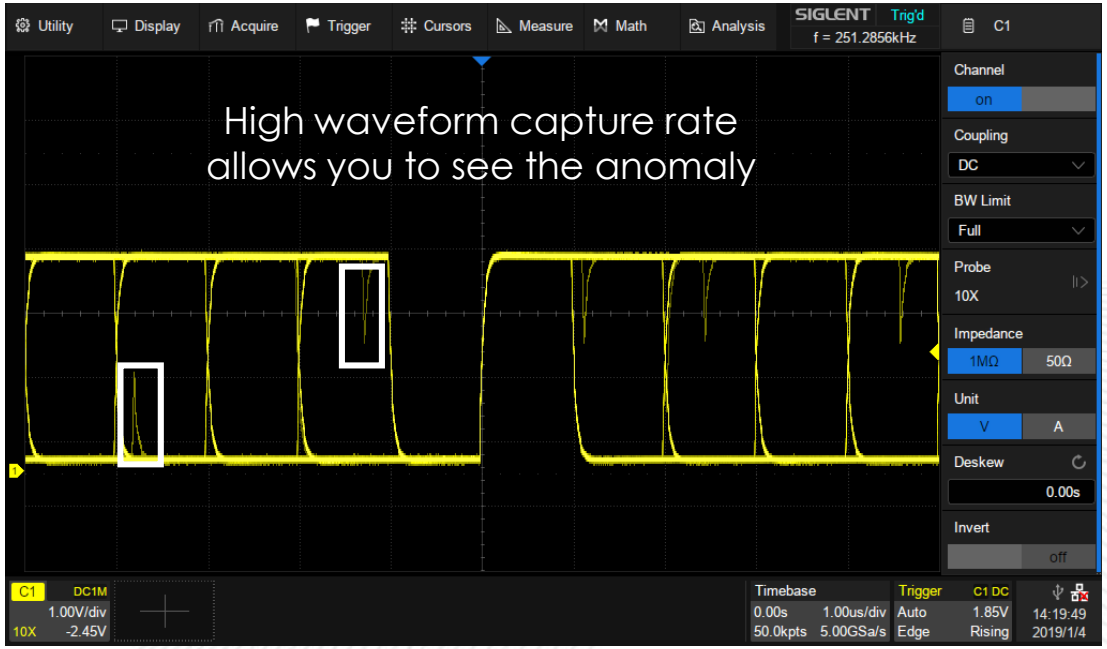
Qualified Trigger

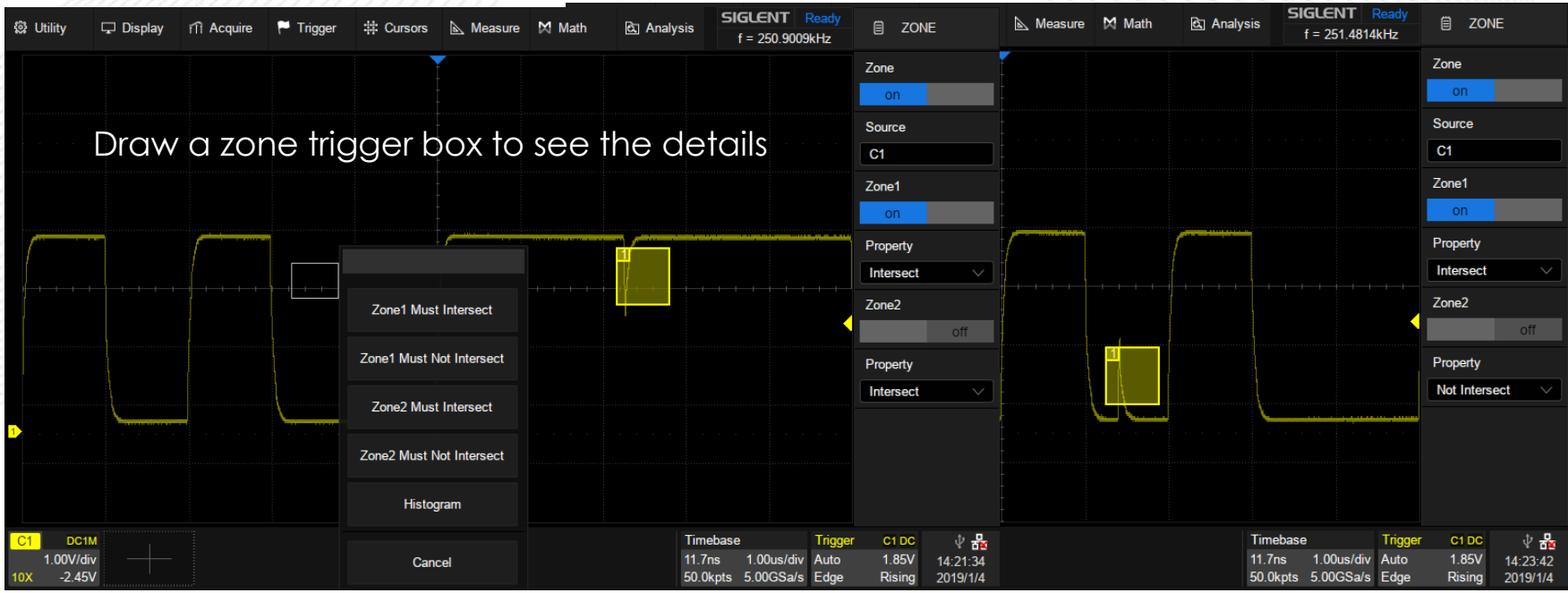


- State
- State with Delay
- Edge
- Edge with Delay

Zone Trigger

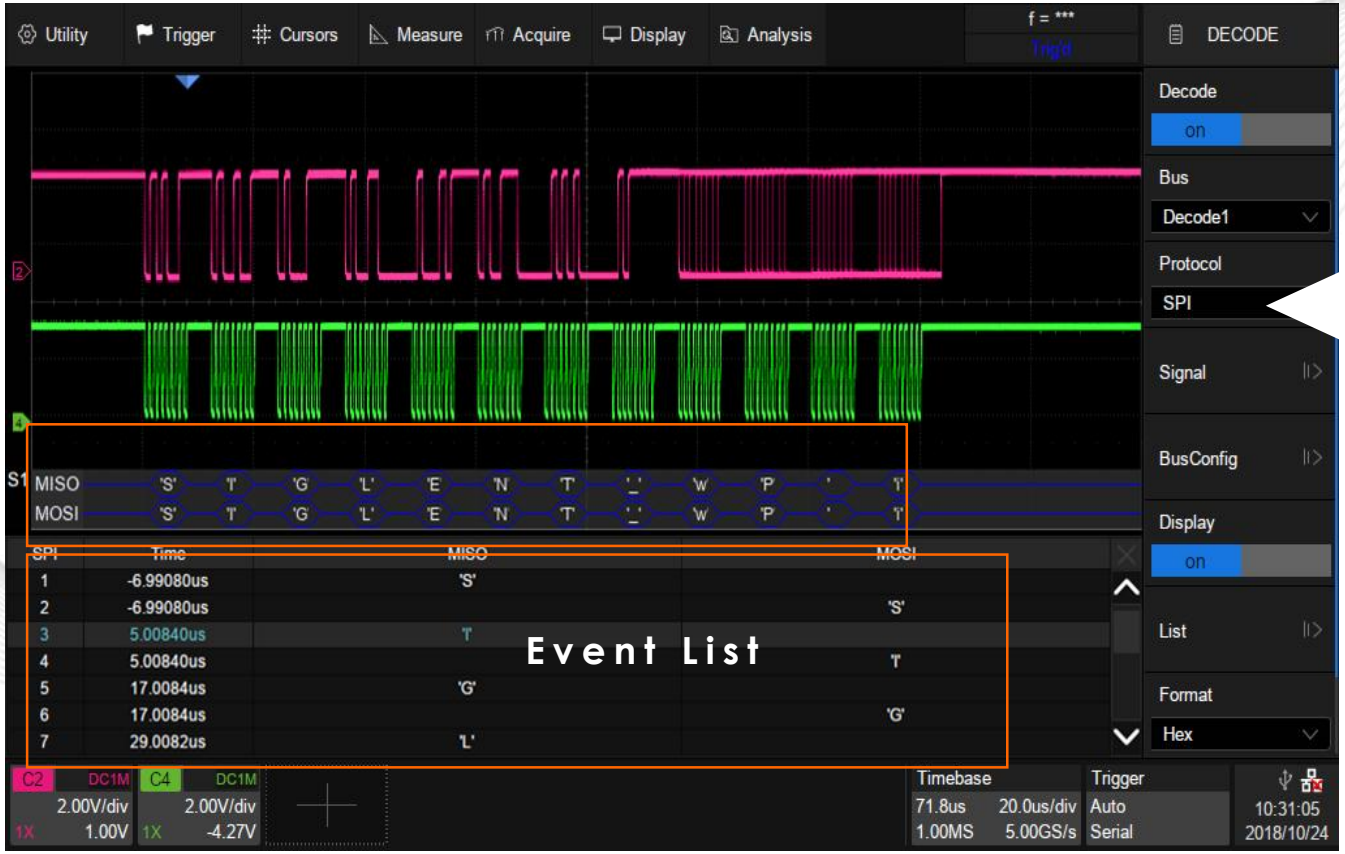
- Once you see a glitch, draw a Zone Trigger box to locate it
- Zone trigger easily isolates it without complicated traditional trigger settings.





Serial Bus Trigger and Decode

- Trigger source: 2/4 analog + 16 digital channels



Protocol

I²C, SPI Embedded serial trigger and analyze
UART Computer serial trigger and analyze
CAN, CAN FD, LIN Automotive serial trigger and analyze
FlexRay serial trigger and analyze
I²S Audio serial trigger and analyze
MIL-STD 1553B serial trigger and analyze

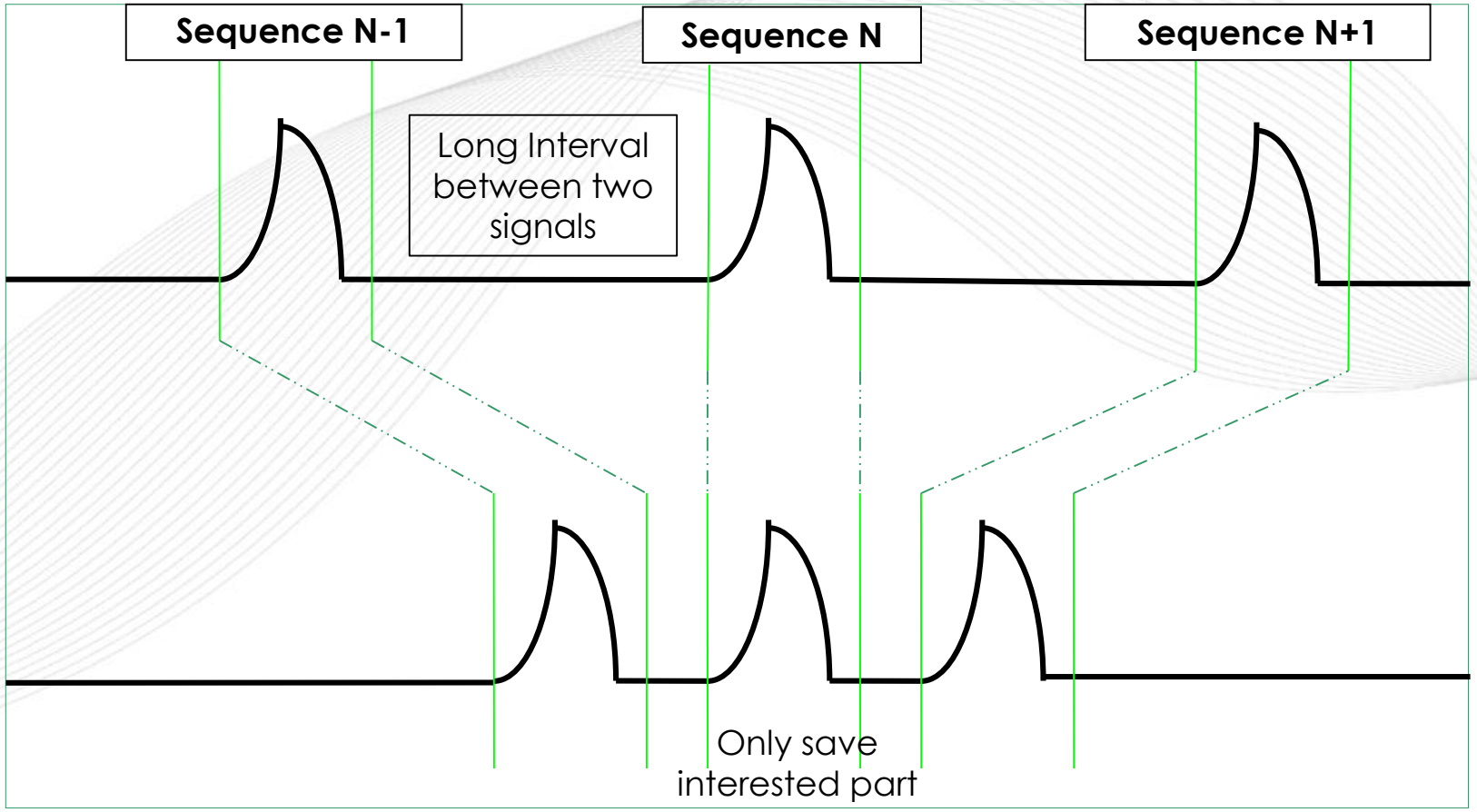
Format

Binary
Decimal
Hex
ASCII

Analog Front End

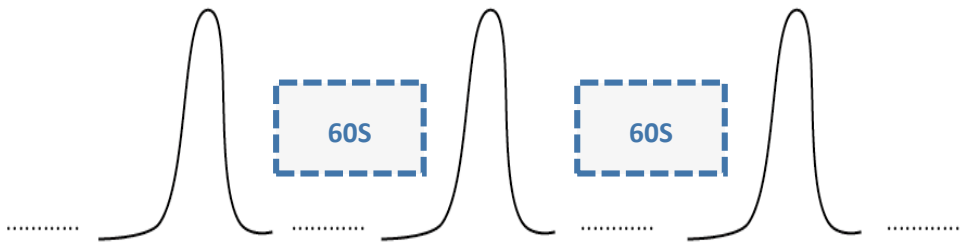
Sequence

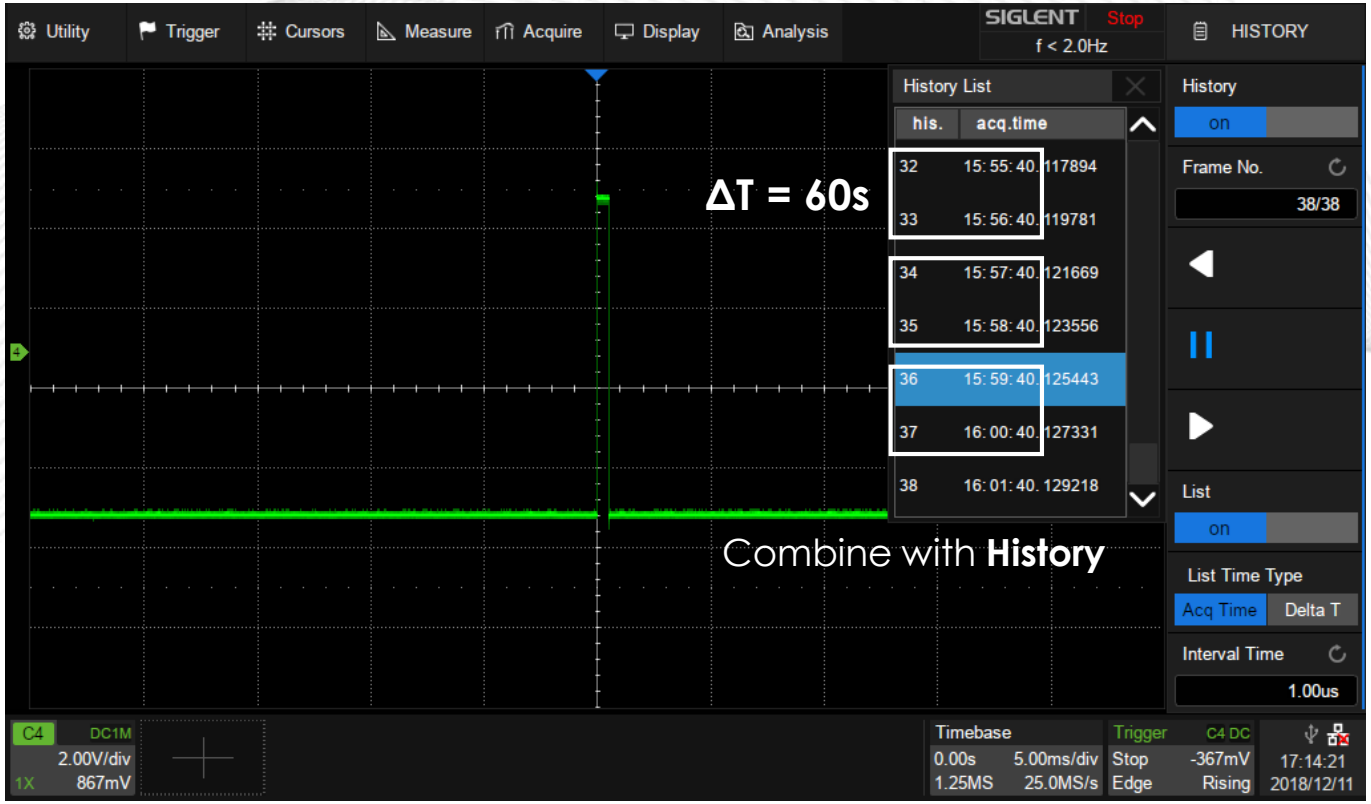
- In Sequence mode, the dead time is only 1/5 of normal mode. Increasing the probability to capture anomalies.



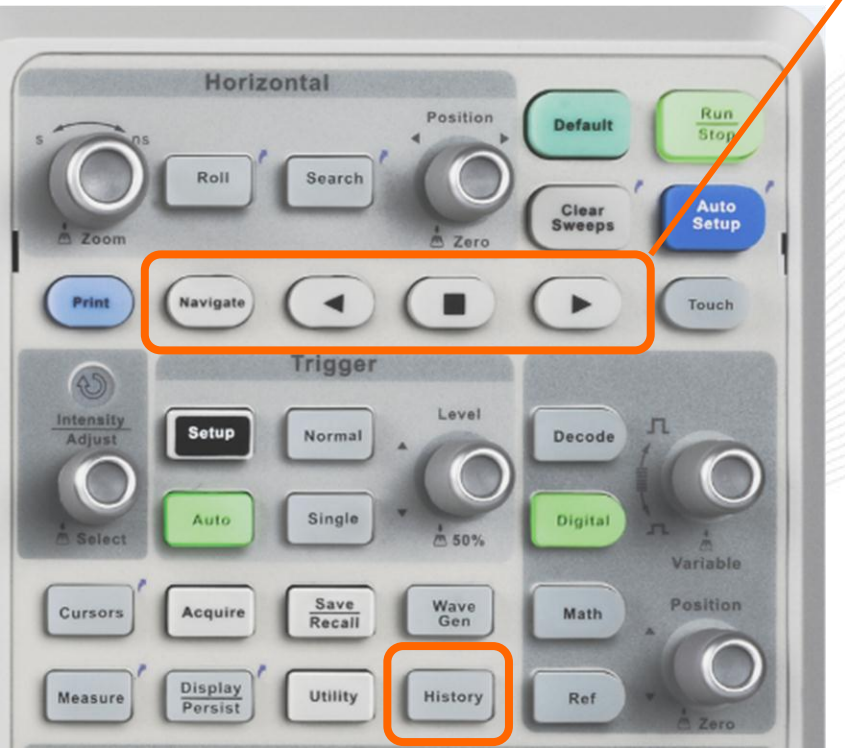
Sequence

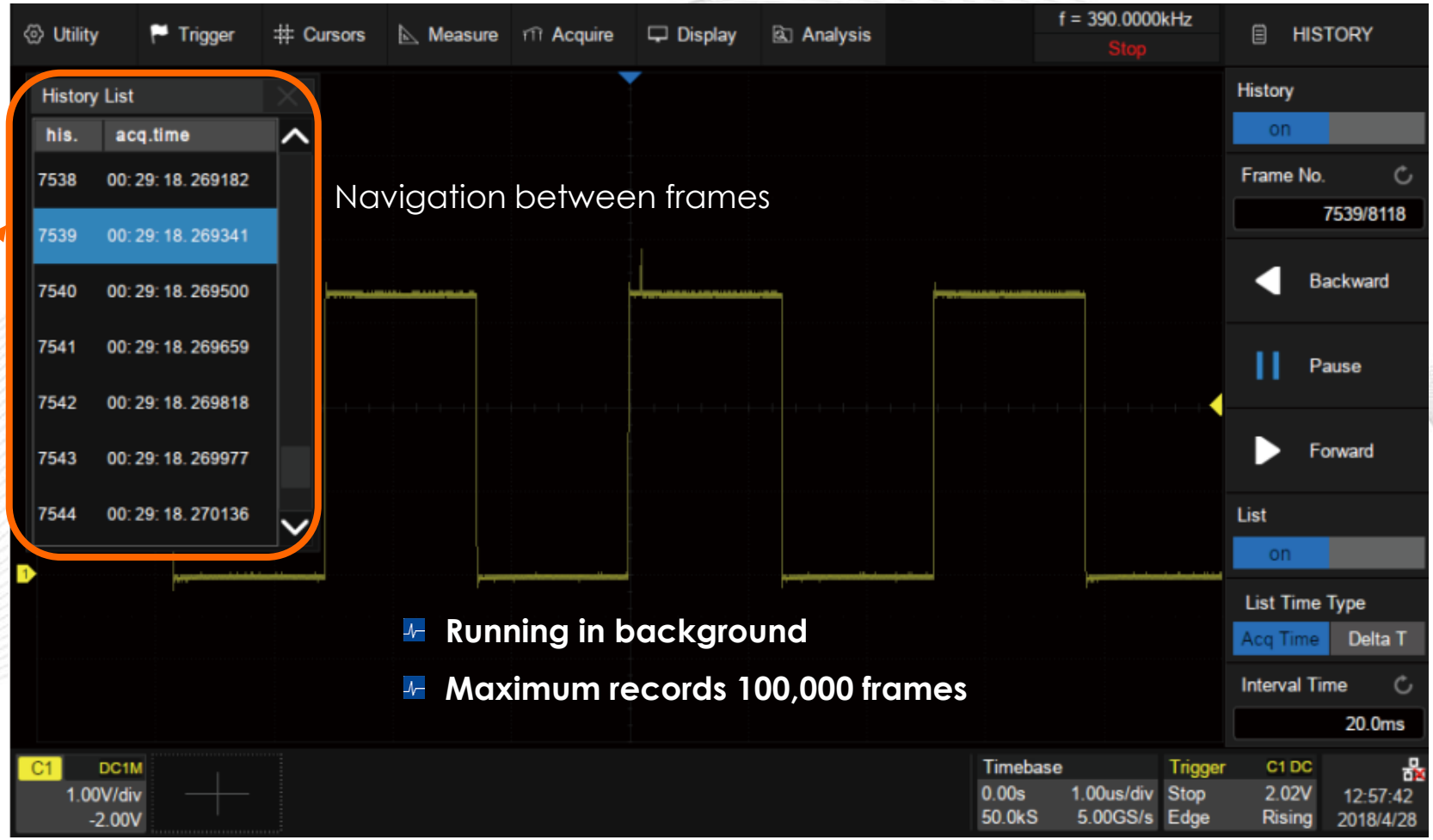
- Capture long interval important signals and leave out idle time
- Time stamp of each segment to analyze the frequency of the event.





History


Horizontal
Position
Default
Run Stop
Roll
Search
Clear Sweeps
Auto Setup
Zoom
Zero
Print
Navigate
Touch
Trigger
Intensity Adjust
Setup
Normal
Level
Decode
Auto
Single
Digital
Select
50%
Variable
Cursors
Acquire
Save Recall
Wave Gen
Math
Position
Measure
Display Persist
Utility
History
Ref
Zero


Utility
Trigger
Cursors
Measure
Acquire
Display
Analysis
f = 390.0000kHz
Stop
HISTORY
History List
his.
acq.time
7538 00: 29: 18. 269182
7539 00: 29: 18. 269341
7540 00: 29: 18. 269500
7541 00: 29: 18. 269659
7542 00: 29: 18. 269818
7543 00: 29: 18. 269977
7544 00: 29: 18. 270136
Navigation between frames
History
on
Frame No.
7539/8118
Backward
Pause
Forward
List
on
List Time Type
Acq Time
Delta T
Interval Time
20.0ms
Running in background
Maximum records 100,000 frames
C1
DC1M
1.00V/div
-2.00V
Timebase
0.00s
1.00us/div
50.0kS
5.00GS/s
Trigger
C1 DC
Stop
2.02V
Edge
Rising
12:57:42
2018/4/28

Measurement

39 kinds of measurements

Vertical: Amplitude values, Mean&Stdev&RMS calculations , Overshoot parameters, Level measured at trigger position

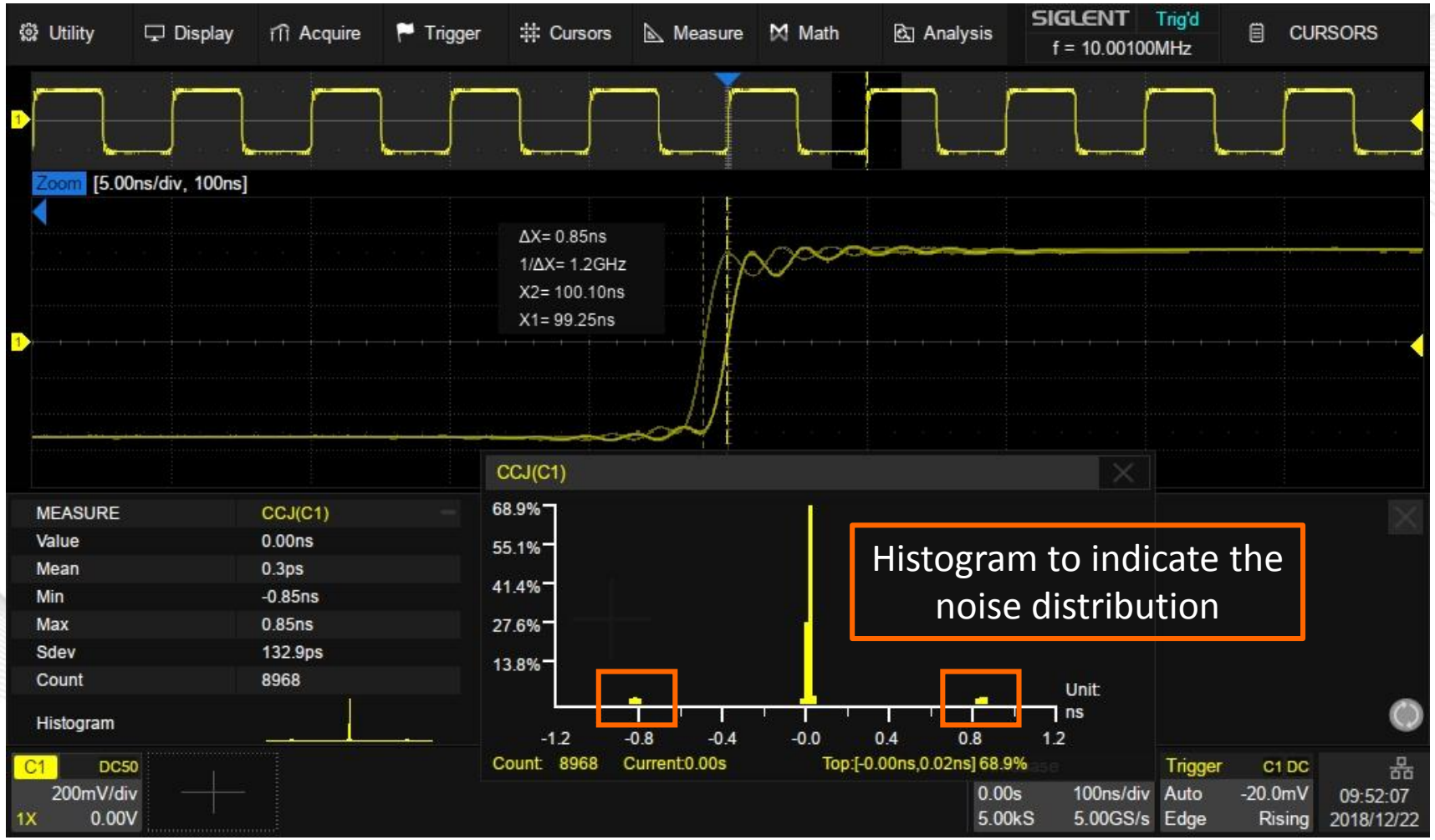
Horizontal: Period, Frequency, Time difference between edges, Rise/Fall time, Duty, Delay, Difference between two continuous periods

CH Delay: Phase difference, Time interval between two channels edges, Skew

Jitter Measurement

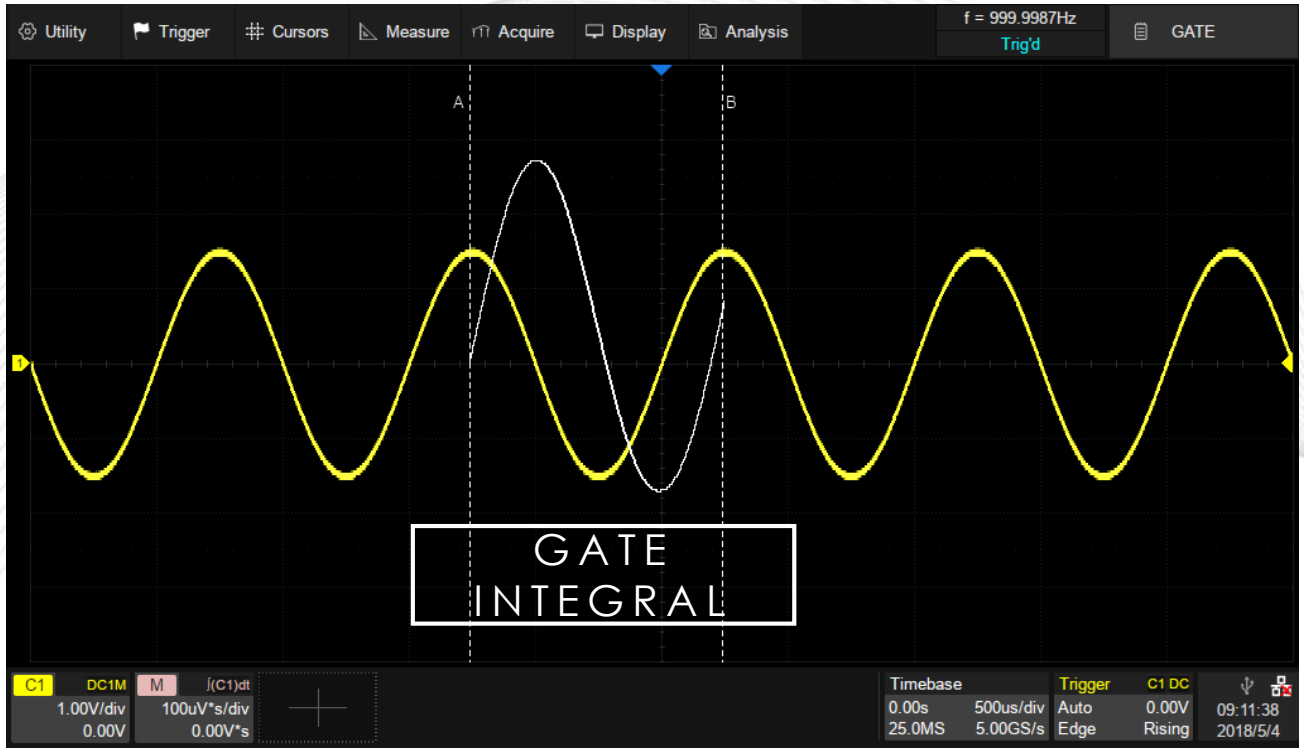
- Display 5 measurement statistics simultaneously
- 39 automatic measurements
- Gate measurement by cursors supported
- Measure on analog and digital channels, zoom, math, and Ref

Jitter Measurement



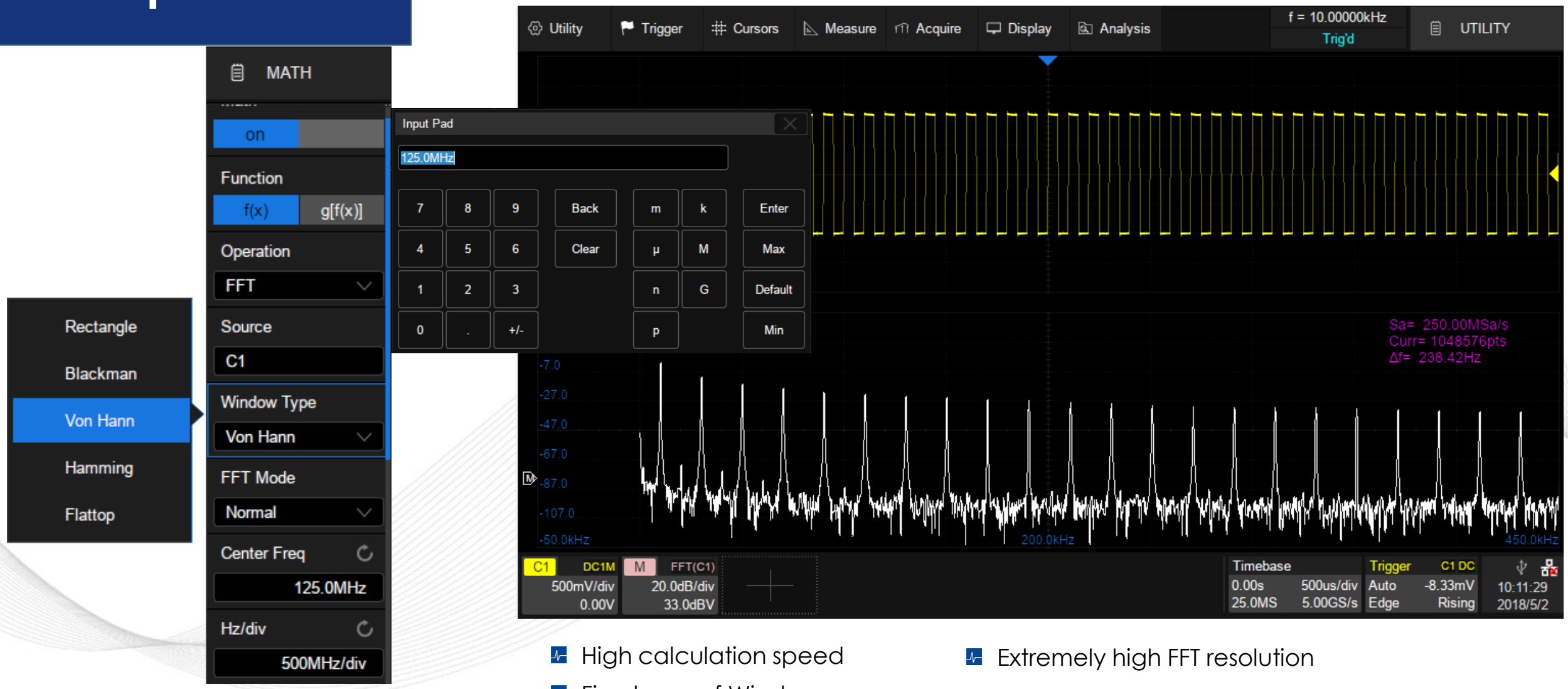
- Measure the jitter of a 10.001 MHz signal generated by DDS technology.
- Simple steps: Trigger, Zoom, Measure

MATH



- View a differential signal without differential probe
- Power Calculations (P = IV onscreen)
- Integrate power to calculate energy
- Ratio of amplified signals

2Mpts FFT



- Edit Center Freq and division with pop-up keyboard easily

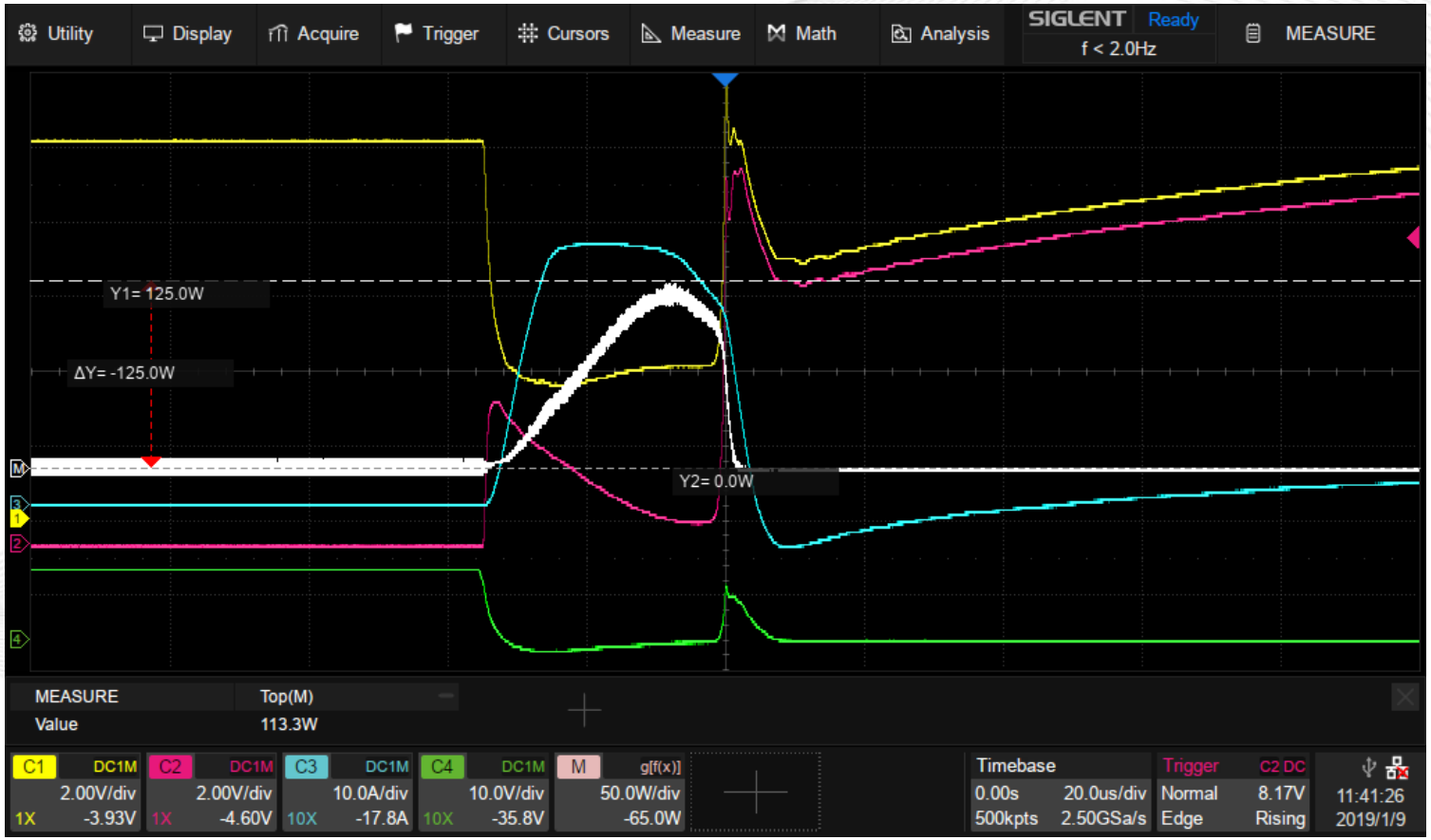
- High calculation speed
- Five types of Windows
- Normal, Max-Hold, Average FFT mode

- Extremely high FFT resolution

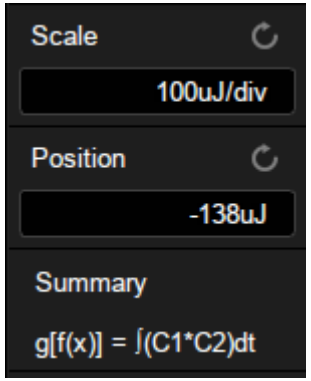
  The frequency resolution depends on the sampling rate and the number of FFT points (**fs/N**).

MATH on MATH

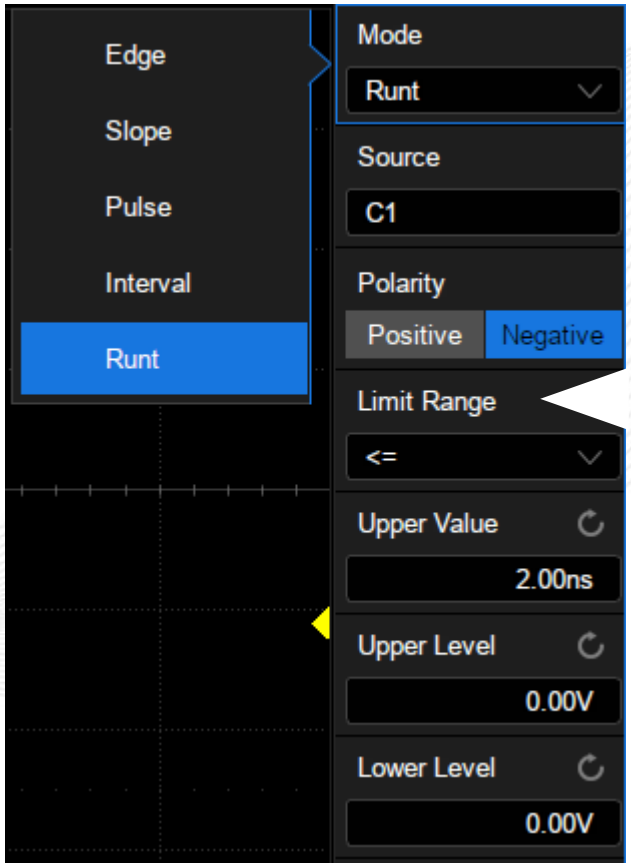
- Measure the instant power on a MOSFET without a differential probe
- $P = V_{DS} * I_D$
- CH1 = V_D, CH2 = V_S, CH3 = I_D, CH4 = V_G, P = (CH1 – CH2) * CH3



- Use a differential probe to measure V_{DS} then perform an integral on power to calculate the energy generated when MOSFET is powered on



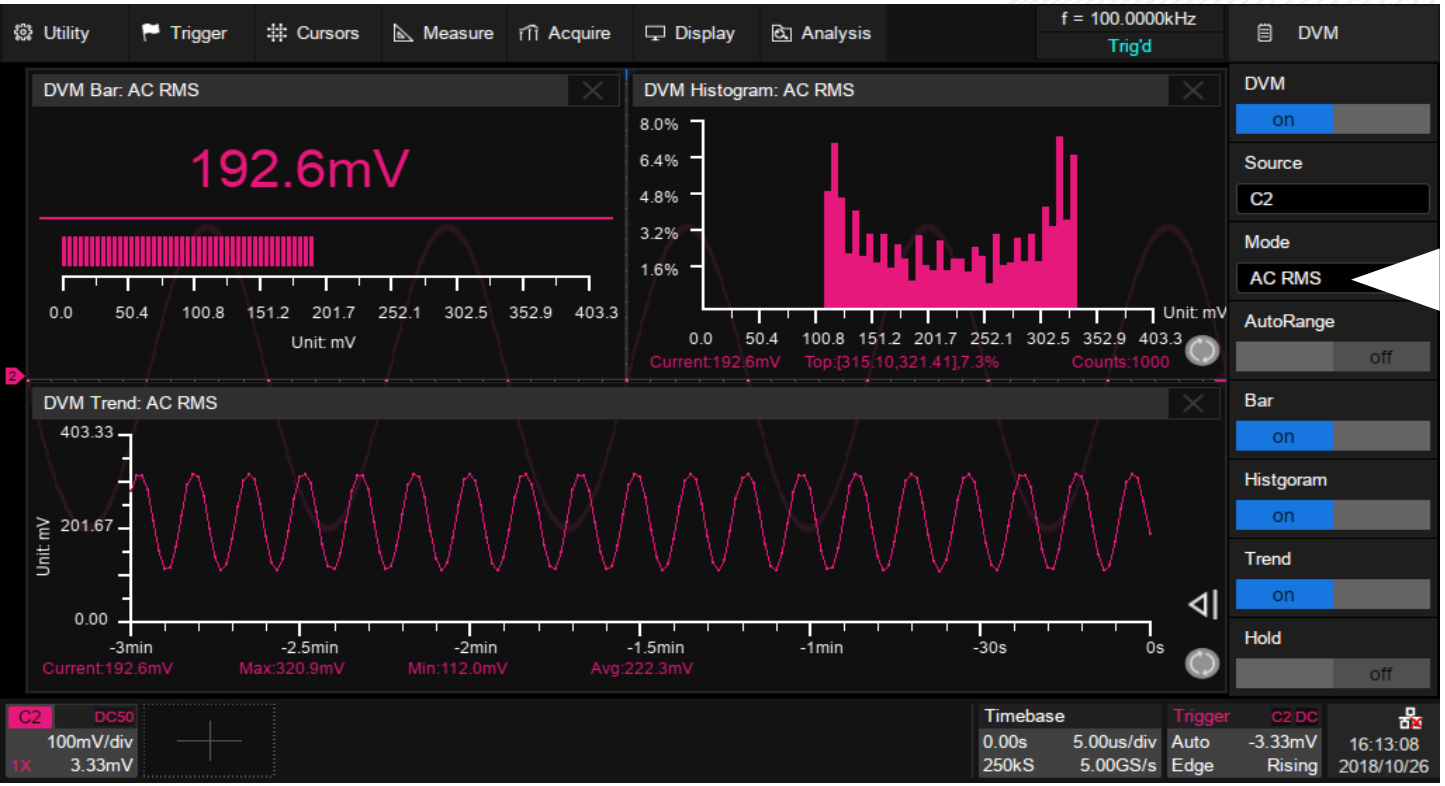
Search and Navigate



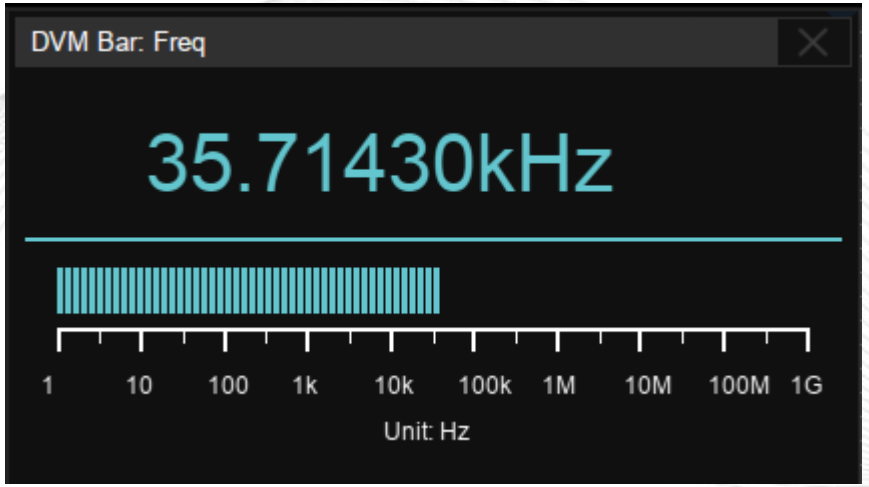
- Set up search criteria
- One Key Navigate – Elements that match search are marked with a white arrow for easy identification.
- Find and mark events you are interested within one second

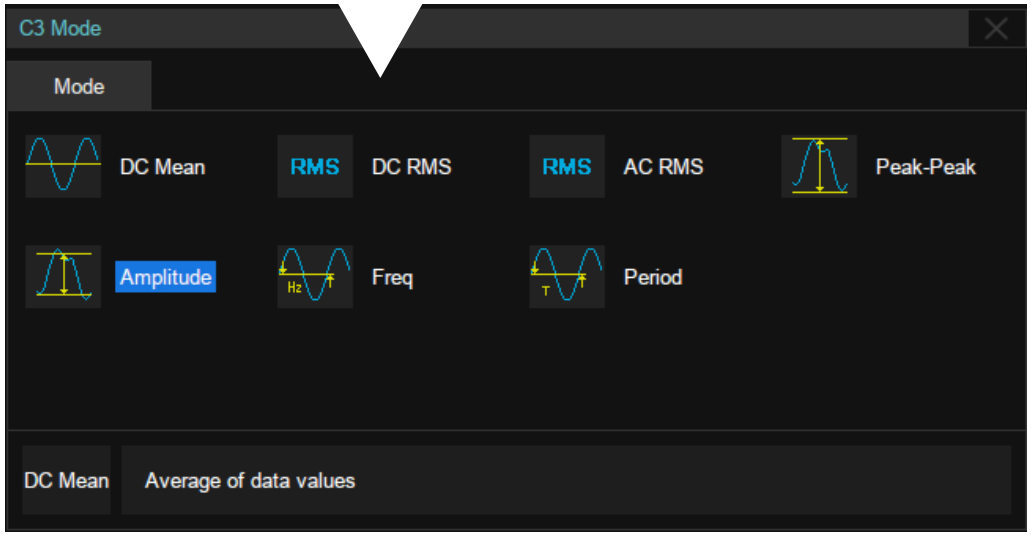
DVM & Frequency Counter

- Built-in standard 4-digit digital voltmeter
- Support Auto Range, Bar, Trend, Histogram
- The same probe as the oscilloscope channels
- DVM measurements and scope acquisition are independent



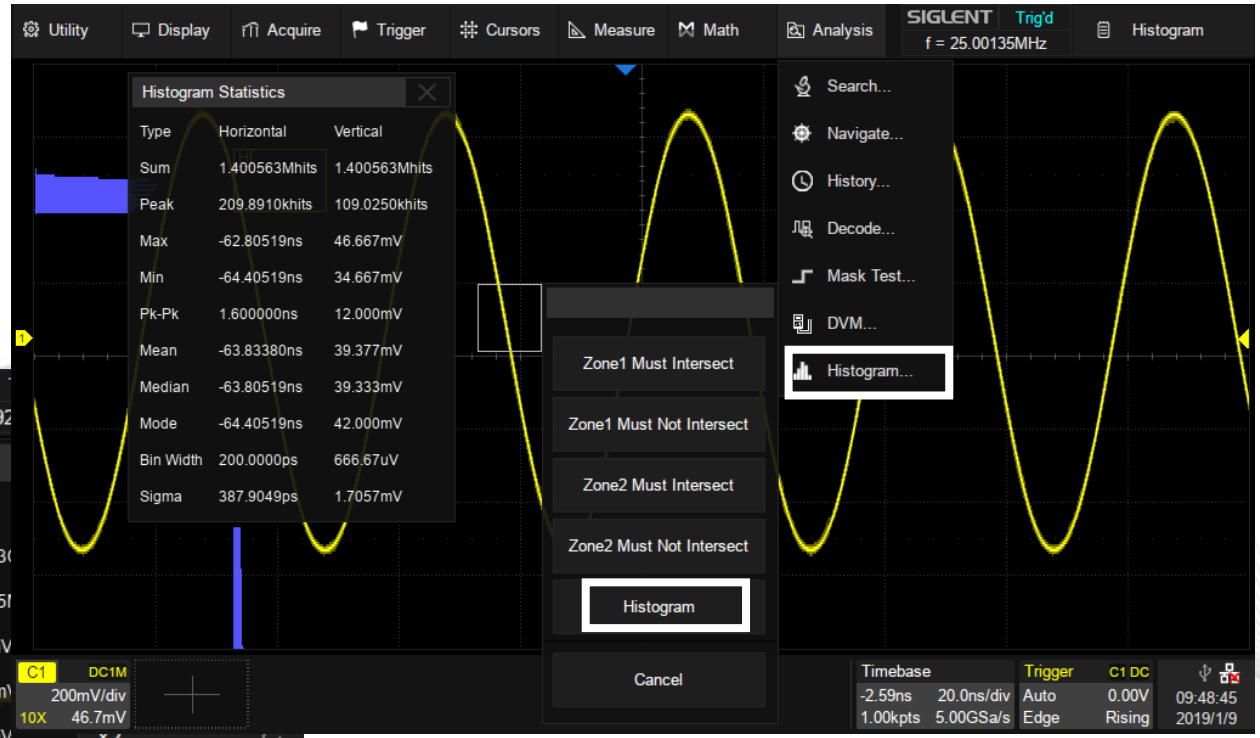
- 7-digit frequency counter with bandwidth up to 1 GHz, useful in many high frequency applications





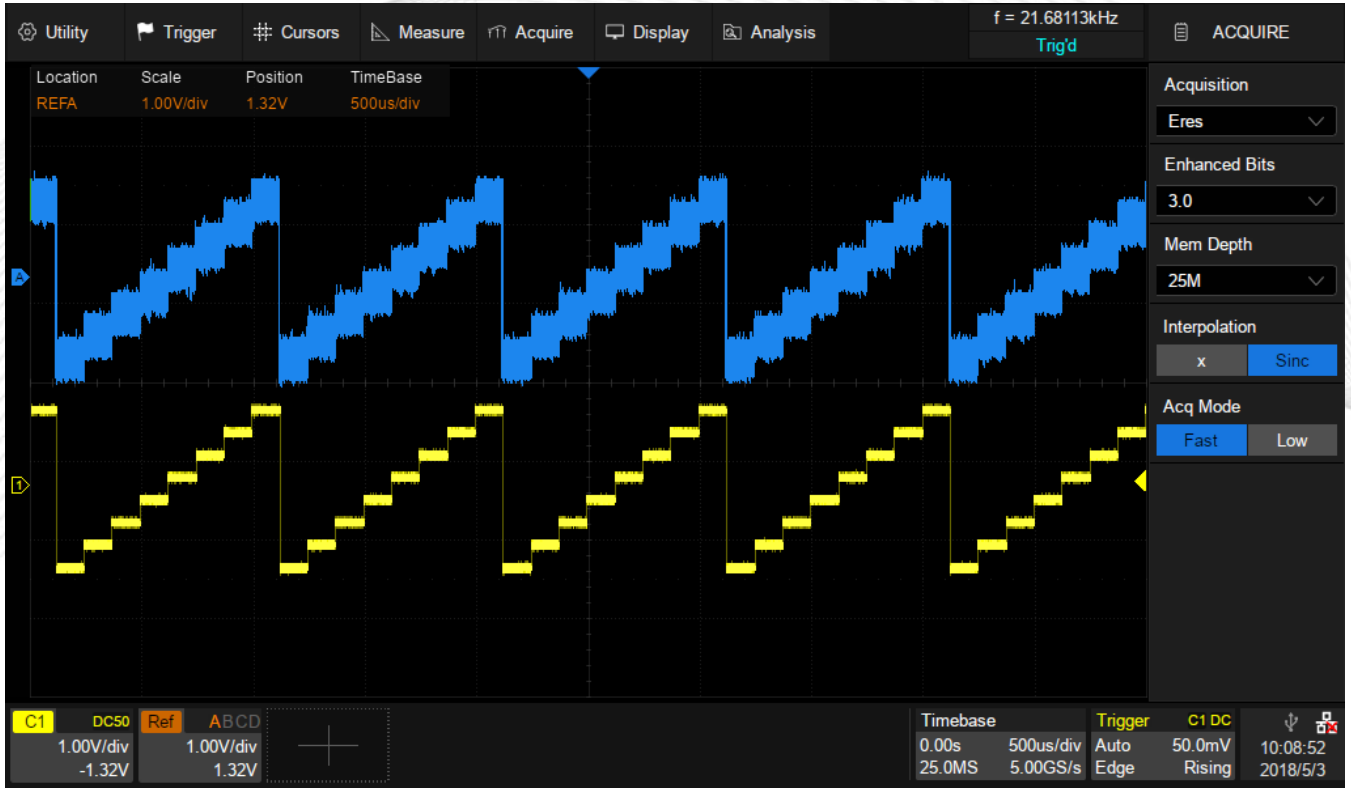
Waveform Histogram

- Draw a box to locate area of interest
- See the vertical and horizontal signal value changes



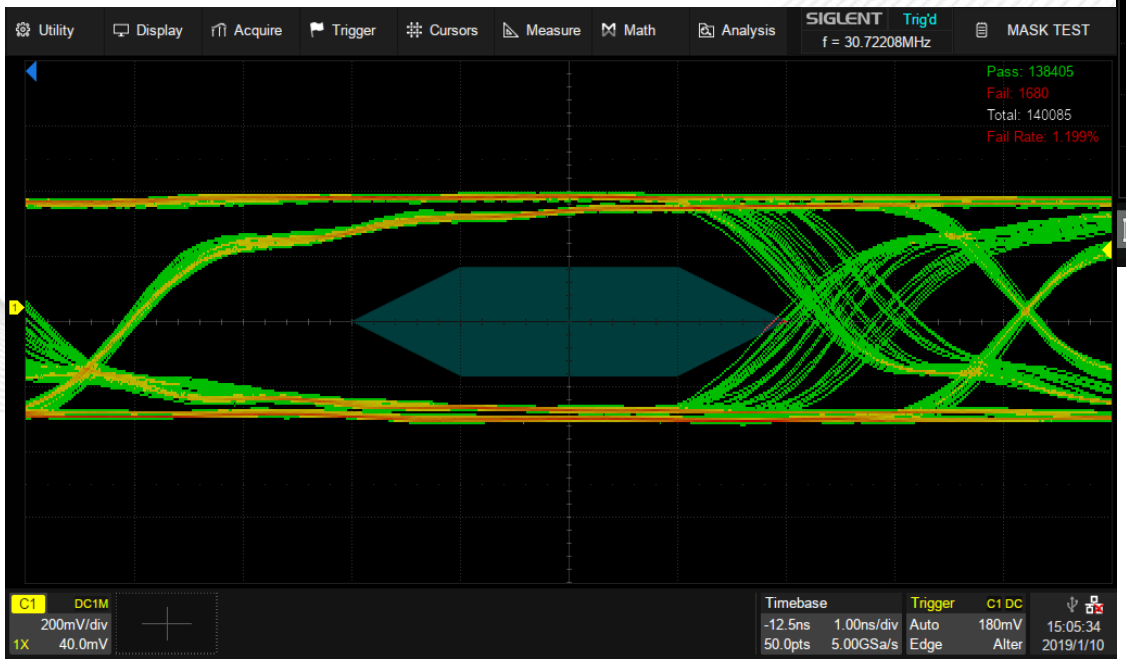
ERES Mode

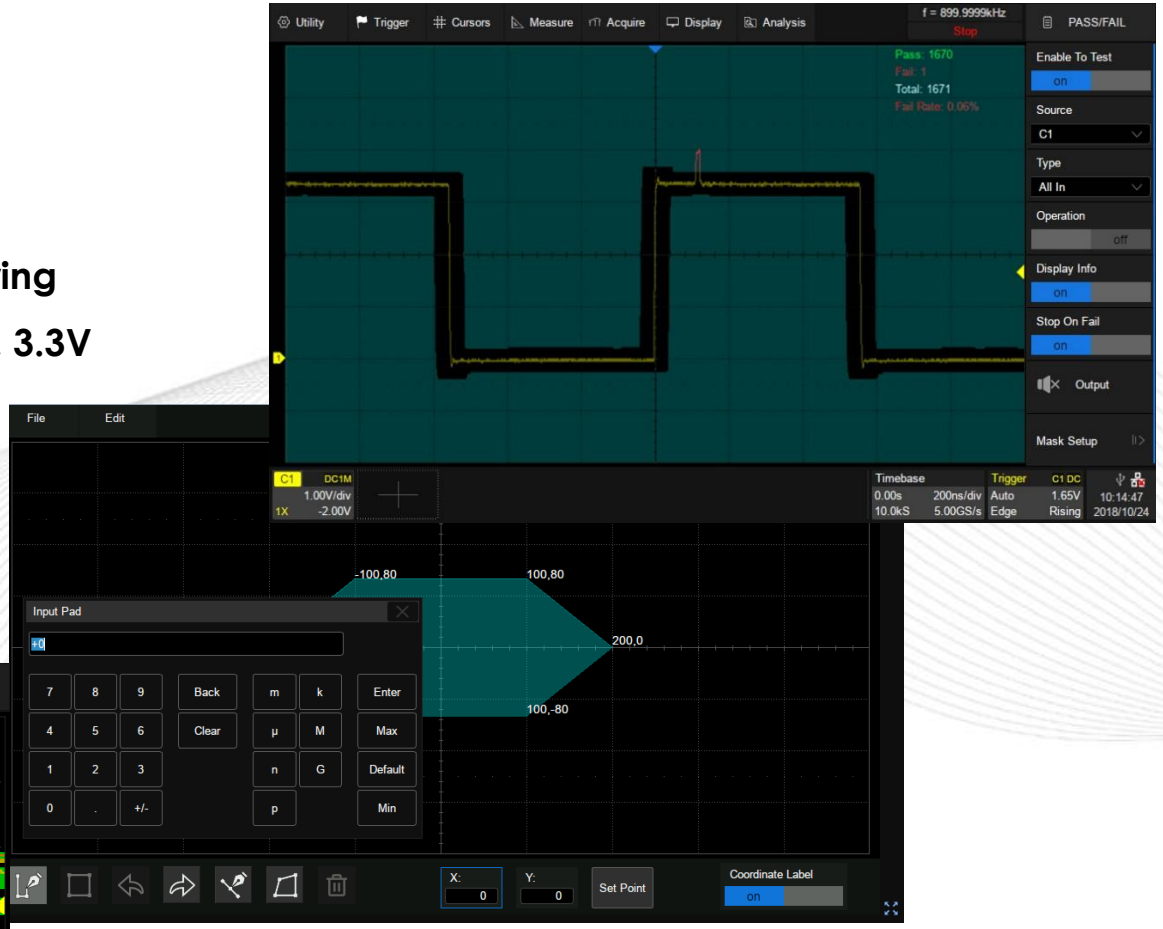
- ERES Mode
  - Enhance SNR by decreasing BW of noise via digital filter
  - Improve ENOB (Effective number of bits) by 3 Bit at most. Means enhancement of vertical resolution
  - Independent on signal period and stability of trigger point



MASK TEST

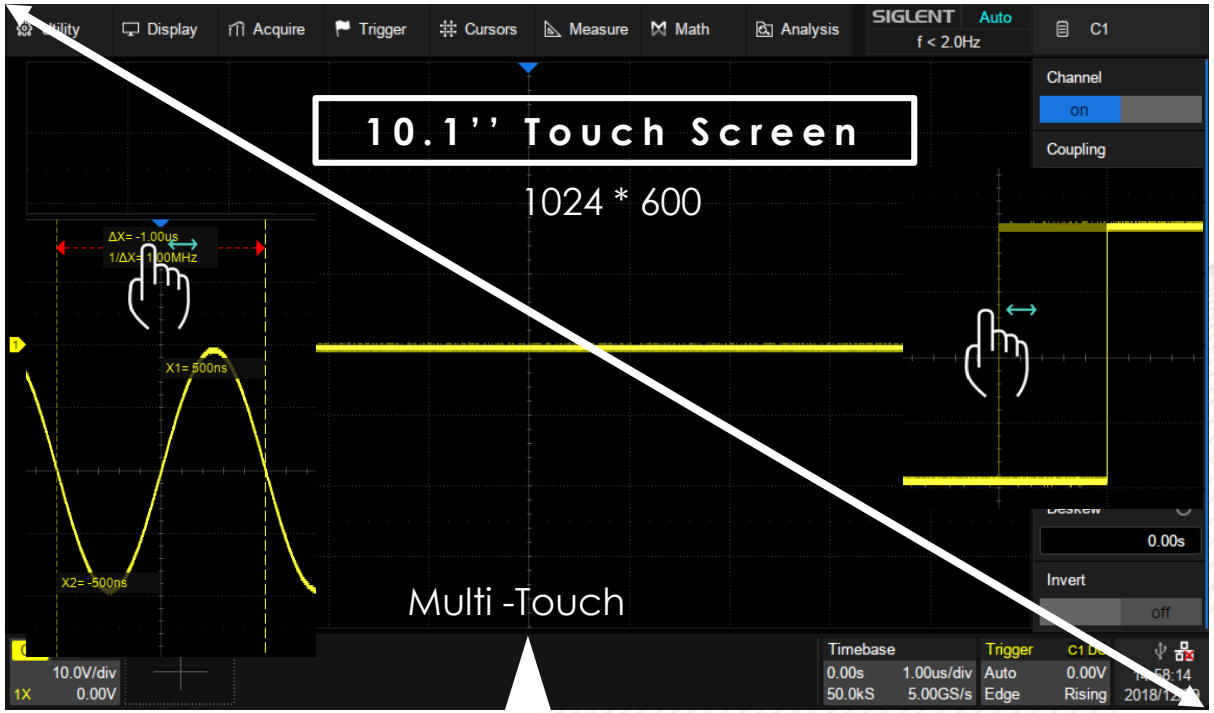
- High speed Pass/Fail test
  - Customize template, specified standards in manufacturing
  - Automatic test environment: stop acquiring, beep alert, 3.3V TTL output as external source (Pass/Fail out)
  - Implemented by hardware, test rate up to 110,000 times/s

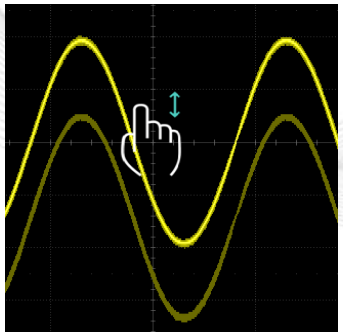


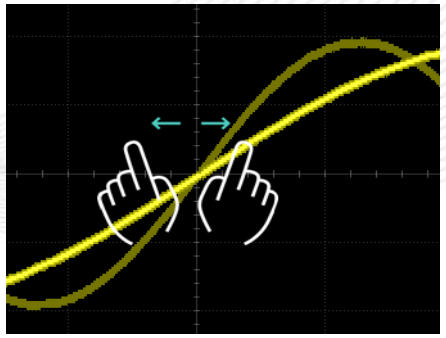


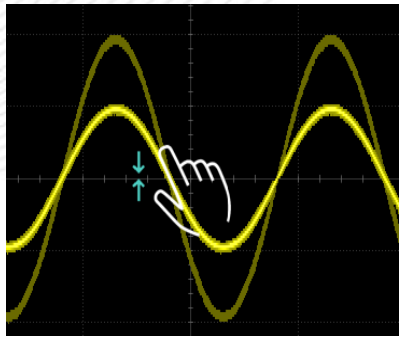
- Functional MASK EDITOR with touch screen
  - Create MASK point-by-point
  - Input coordinates by touch screen
  - Draw polygon on screen
  - Easy to save and load mask files

Ease-Of-Use









10 kinds of one button quick access

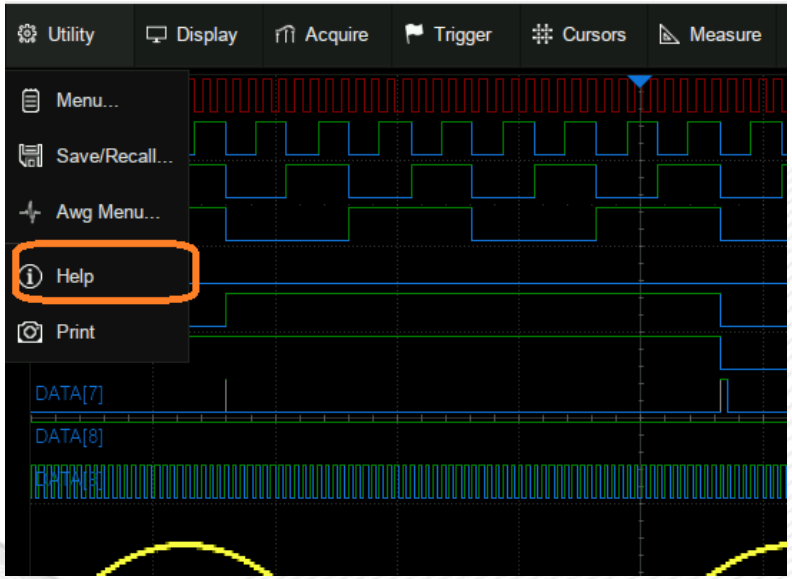
Measure	Navigate
Cursors	Clear
Display	History
Print	Auto
Search	Default

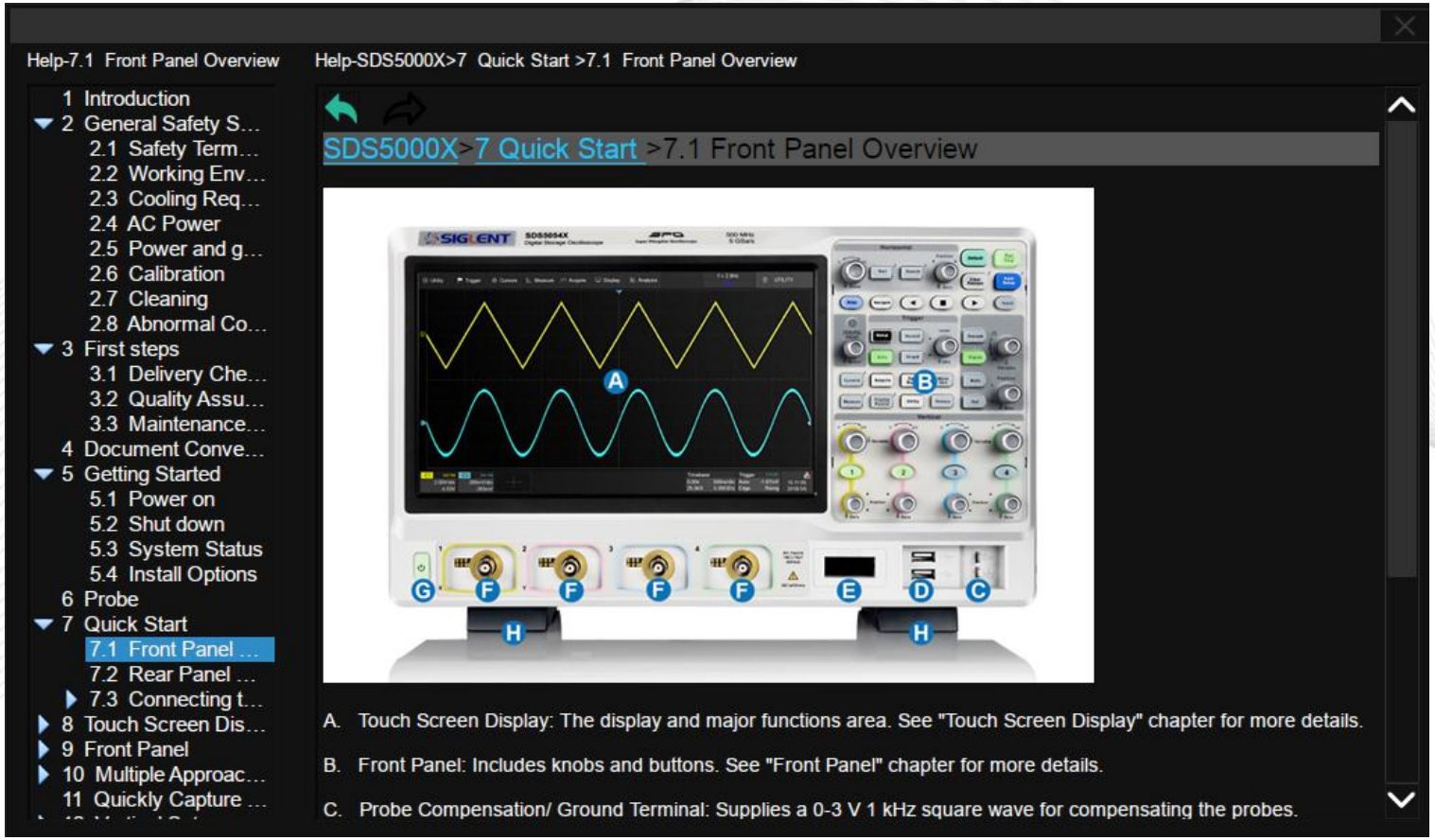
Four ways to control scope:
Touch screen like your smart phone
Front panel buttons and knobs for traditional users
USB Keyboard and Mouse support
Web server for remote control

Focus on your design, but not instruments
Increase work efficiency and productivity

Ease-Of-Use

- Deep on-board Help for quick access to information:

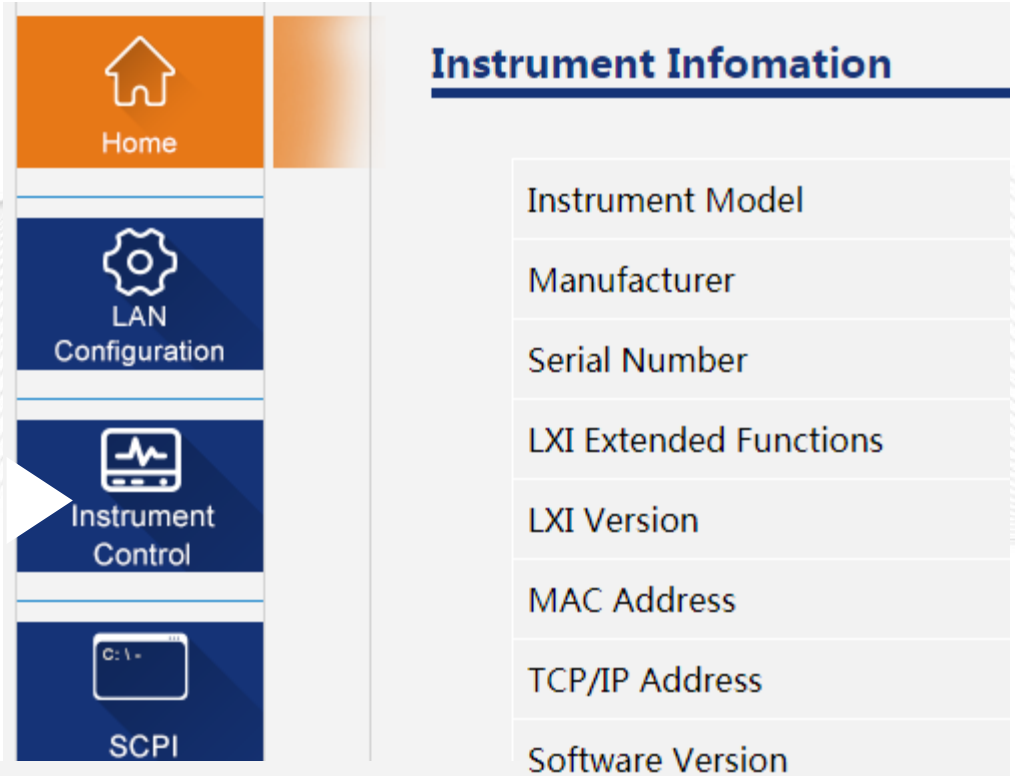


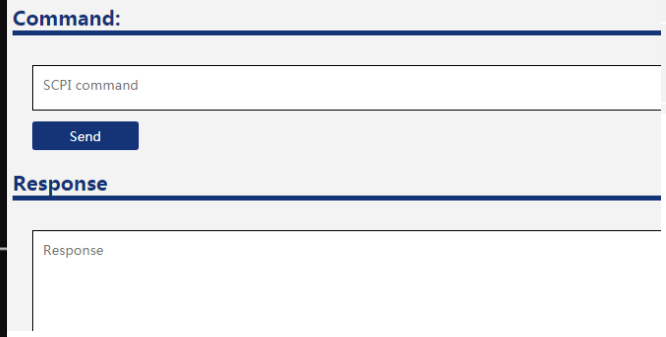


Web Server

- Remote control scope without software
- Save time to export measurement data to PC
- Monitor and control SDS5000X from anywhere via the internet
- Control scope via mouse in real time
- Take screen shot , save data and FW upgrade

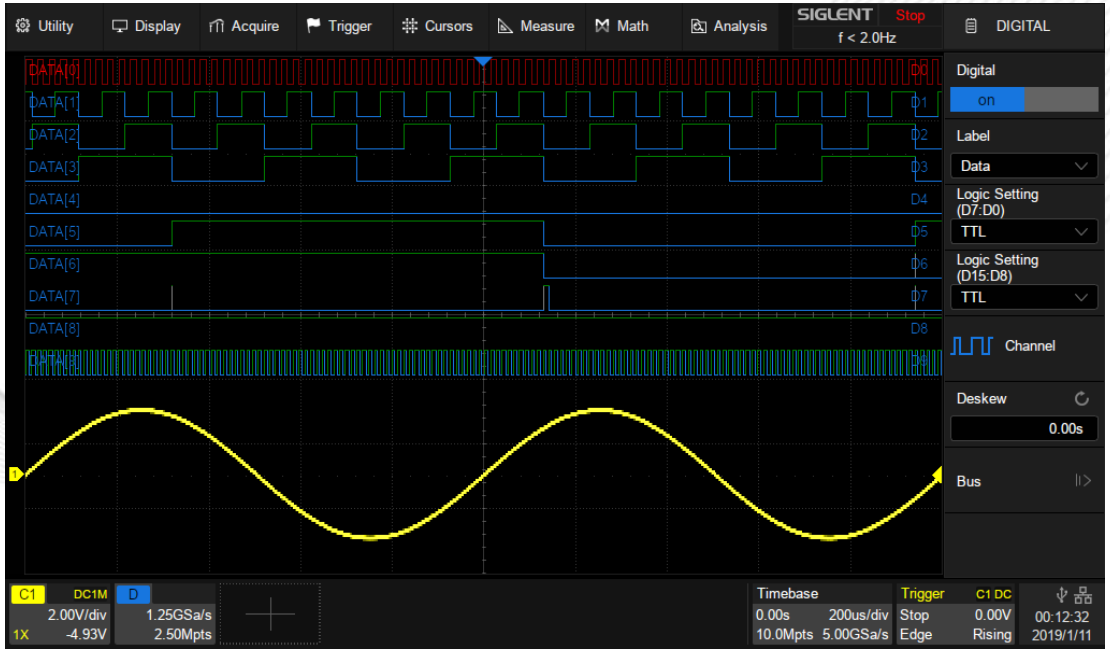
- Insert IP address of SDS5000X into browser
- Go to Home page see the SDS5000X info





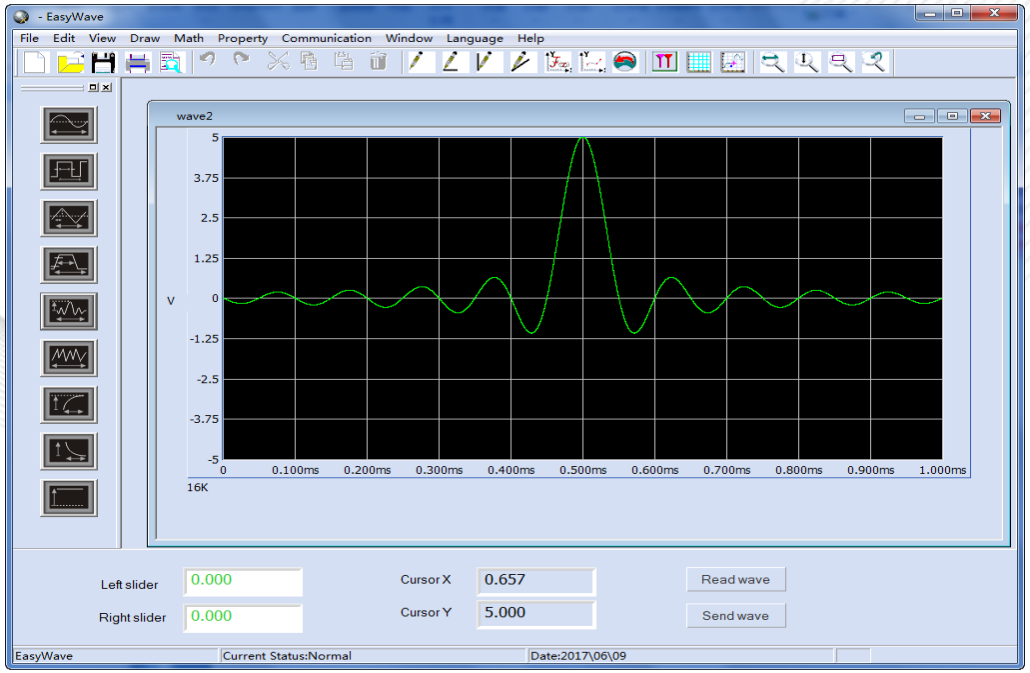
16 Digital Channels / MSO (Option)

- View digital and analog channels on one timebase
- Full trigger and decoding on all analog and digital channels
- 16 channels; maximum waveform capture rate up to 1.25GSa/s; record length up to 62.5 Mpts
- User defined label names, channel groups, and more



25 MHz Function/Arbitrary Waveform Generator (Option)

- Connect via USB Host
- Stimulus output of Sine, Square, Ramp, Pulse, Noise, DC and 45 built-in waveforms to DUT
- Edit arbitrary waveforms via Easy Wave PC software
- Store waveforms from analog channels then output



Model Selection

SDS5000X Models	SDS5034X SDS5032X	SDS5054X SDS5052X	SDS5104X SDS5102X
Bandwidth	350 MHz	500 MHz	1 GHz
Rise time (typical) @50 Ω	1.0 ns	0.7 ns	0.4 ns
Analog Channels	2/4 CH + EXT		
Sample Rate (Max.)	5G Sa/s (single-channel),2.5G Sa/s (dual-channel)		
Record Length (Max.)	250 Mpts (single-channel),125 Mpts (dual-channel)		
Waveform Capture Rate (Max.)	110,000 wfm/s (normal mode),480,000 wfm/s (sequence mode)		
Trigger Types	Edge, Slope, Pulse, Window, Runt, Interval, Dropout, Pattern, Qualified, Video, Zone		
Serial Trigger and Decode	I2C, SPI, UART, CAN, LIN, CAN FD, FlexRay, MIL 1553B, I2S		
I/O	USB Host, USB Device, LAN, Pass/Fail, Trigger Out, 10 MHz In,10 MHz Out, VGA Output		
Probe (standard)	SP2035A: 350 MHz or SP3050A: 500 MHz 1 probe supplied for each channel		
Display	10.1" TFT-LCD with capacitive touch screen(1024*600)		

The reason to Choose SDS5000X

- Touch for a solution
- Flat frequency response curve
- High waveform capture: Quickly identify problems
- Color display: Reveal dynamic signal behavior
- Large memory: Capture seconds of data and still have resolution to see nanosecond scale details
- Digital trigger: Higher trigger sensitivity, lower trigger jitter
- Hardware intelligent trigger: Faster, less jitter
- Zone trigger: Draw a box to locate interested signals
- Multiple serial protocols trigger and decode
- Extremely low back ground noise
- Standard Sequence, History, Search, Navigate
- Measurement with Histogram; Jitter measurement
- Math on Math, 2 Mpts FFT
- Standard DVM & Frequency Counter
- Eres Mode: Improve resolution up to 11 bits
- Mask test and Mask creator with touch screen
- Quick access Help
- Web control
- 16 digital channels
- 25 MHz function generator

Ordering information

Standard Accessories
USB cable*1
Quick start*1
Passive probe*2 (2-ch model); *4(4-ch model) SP2035A: 350 MHz or SP3050A: 500 MHz
Certificate of calibration*1
Power cord*1

Optional Accessories	Description
SDS-5000X-BW05 SDS-5000X-BW10	350 MHz to 500 MHz bandwidth upgrade 500 MHz to 1 GHz bandwidth upgrade
SDS-5000X-FG	Waveform generator software
SAG1021	25 MHz USB function/arbitrary waveform generator
SDS-5000X-16LA	16 digital channels (software)
SPL2016	16-channel logic probe
STB3	STB3 demo signal source
SAP1000	1 GHz active probe
HPB4010	High voltage probe
CP4020/CP4050/CP4070/ CP4070A/ CP5030/ CP5030A/CP5150/CP5500	Current probe
DPB4080/DPB5150/ DPB5150A/ DPB5700/ DPB5700A	High voltage differential probe
SDS-5000X-I2S	I2S trigger & decode
SDS-5000X-CANFD	CAN FD trigger & decode
SDS-5000X-FlexRay	FlexRay trigger & decode
SDS-5000X-1553B	MIL-STD-1553B trigger & decode

Thank You

SIGLENT—The Best Value in Electronic Test & Measurement

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