TravelScope series

Acquistion

Mode	Sample, Average, Envelope, Peak detect, High resolution
Sampling	• **TS2212F/TS2212B:** 8 bits : 1 GS/s @ 1 Ch; 500 MS/s @ 2 Ch • **TS2212H:** 8 bits : 1 GS/s @ 1 Ch; 500 MS/s @ 2 Ch 12 bits : 500 MS/s @ 1 Ch; 250 MS/s @ 2 Ch 14/15 bits : 100 MS/s @ 2 Ch 16 bits : 100 MS/s @ 1 Ch
Record length	• **TS2212F/TS2212B:** 8 bits : 128MS/ch @1 Ch; 64MS/ch @2 Ch • **TS2212H:** 8 bits : 128MS/ch @1 Ch; 64MS/ch @2 Ch 12/14/15/16 bits : 32MS/ch

Input

Input channels	2 (Ch1, Ch2)
Input coupling	AC/DC
Input impedance	1 MΩ ‖ 18 pF
Overvoltage protection	± 100 V (DC+AC peak)
Ch-Ch crosstalk	≧ 100 : 1
Ch-Ch skew	100 ps between two channels with the same scale & coupling settings

Vertical

Bandwidth	200 MHz @ 1-channel; 100 MHz @ 2-channels
Rise Time	1.75 ns @ 200 MHz; 3.5 ns @ 100 MHz
Resolution	8 bits (TS2212F/TS2212B) 12, 14, 15,16 bits (TS2212H)
Input Sensitivity	2 mV/div to 10 V/div (Full Scale: ±4 div/screen, ±1 div beyond screen)
Position range	±4 divisions
Offset range	±150 V @ 2, 5, 10 V/div; ±1.5 V @ 0.2, 0.5, 1 V/div; ±1.5 V @ 2, 5, 10, 20, 50, 100 mV/div
DC accuracy	±3% of full-scale
Bandwidth limit	20 MHz, 100 MHz or Full

Horizontal

Time scale	2 ns/div to 100 s/div (10 div/screen)
Time resolution	40 ps
Time accuracy	±10 ppm
Delay range	Pre-trigger: 0 to 100% of 1 screen; Post-trigger up to 50 sec.

Trigger

Trigger mode	Auto, Normal, Single, Untriggered-Roll (Max S/R up to 250KS/s, maximum speed is PC-dependent)
Source	Ch1, Ch2, Ext. (TTL only)
Coupling	DC, LF reject (50kHz), HF reject (50kHz), Noise reject
Trigger range	±4 div from window center
Vertical sensitivity	1 div or 5 mV @ <10 mV/div; 0.6 div @ ≧ 10 mV/div
Holdoff time	~60 ns to 10 sec.
Trigger type	Edge, Video/TV, Pulse Width
Basic trigger	Rising, Falling, Alternate, Either

Trigger Group I

Edge	A-trigger
Width	Range from 1 ns to 50 sec @ 1-channel Range from 2 ns to 50 sec @ 2-channel
Video/TV	NTSC, PAL, SECAM, Field, Scan Line

Trigger Group II (TS2212B/TS2212H Only)

B-Trigger	Event, Timing
Logic	State, Pattern (AND, OR, NAND, NOR)
Runt	Positive/Negative/Runt+Pulse Width Range from 8 ns to 50 sec
Timeout	Positive/Negative/Any Range from 8 ns to 50 sec

Bus Trigger/ Decode (TS2212B/TS2212H Only)

Serial Bus	ARINC 429, CAN/CAN-FD, I²C, LIN, SPI (2-Wire), MIL-STD-1553, ProfiBus, UART, USB1.1, ...

Measurement/Processing

Special Function	Autoset, Logger
Measurement	Frequency, Period, Max, Min, High, Low, Vpp, Amplitude, Vrms, Mid, +Duty, -Duty, +Width, -Width, Rise Delay, Fall Delay, +Overshoot, -Overshoot, Mean, Cycle Vrms, Cycle Mean, Phase
Cursor	Time difference, Voltage difference
Math	+, -, x, ÷, XY, lAl, $\sqrt{A}$, Log(A), Ln(A), $\int Adt$, e^A
FFT	Rectangular, Blackman, Hann, Hamming, Harris, Triangular, Cosine, Lanczos, Gaussian. (Vertical Scale: dBm RMS, dbV RMS, Linear RMS)
Export Data	WORD, EXCEL, CSV, TEXT, HTML, MATLAB, Clipboard, Hardcopy, Preview

I/O port

Trig-In	TTL 3.3 V level (Rising/Falling)
Trigger pulse approval	> 8 ns
Trig-Out	TTL 3.3 V
Ref. Clock Input	10MHz, Vpp=3.3 to 5V

Function Generator

Output channels	2 (Gen.1, Gen.2)
Output impedance	600 Ω
Frequency	DC to 1 MHz
Amplitude	0 V to 2.5 V (to 1 MΩ load) ±50mV
Offset	Fixed at 0 V @ Dual channel mode -1.25 V to 1.25 V @ Single channel mode (Gen 2 only)
FG mode	Sine, Square, Pulse, Triangle, Ramp(Sawtooth), DC
Modulation	AM, FM, PM, ASK, FSK, PSK
Others	Sweep, Burst

Stack

Max. channels expand	12 ch (6x TravelScopes, 1 Master & 5 Slaves)
Trigger source	All channels available
Skew between devices	Skew between Master & Slave ±1ns @ 1-channel Skew between Master & Slave ±2ns @ 2-channel

Packing list

Item	Quantity
1. TravelScope device	1
2. Stack cable	1
3. USB 2.0 Cable	1
4. 250 MHz Probe & Accessories pack	2
5. Soft case	1
6. Installation CD	1

2018.11

Acute®

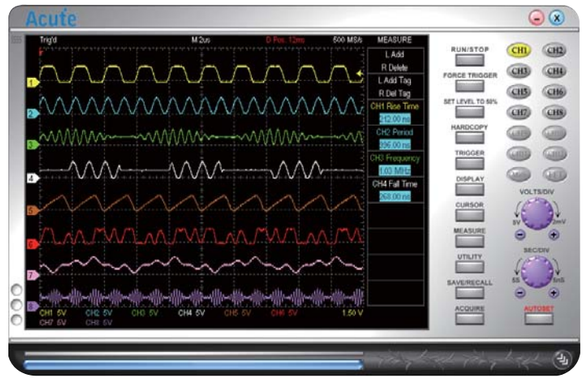
TravelScope DSO

135 x 80 x 26 mm³

- PC-based, USB2.0 interface / powered
- 2 channels (stackable to 12 channels)
- 1 GS/s sampling, 200 MHz bandwidth
- Embedded 2-channel FG
- Data Logger (HD storage)
- Input Sensitivity : 2 mV/div
- Trigger Group I : Edge, External, Width, Video / TV
- Trigger Group II : A-B, Delay, Pattern, Runt, Setup / Hold, State, Timeout, Transition, Window,...
- Bus Trigger (Decode) : ARINC 429, CAN/CAN-FD, I²C, LIN, MIL-STD-1553, ProfiBus, SPI (2-Wire), UART, USB1.1, ...
- Built-in 5-digit voltmeter(DVM) and 5-digit frequency counter
- Export data to WORD, EXCEL, TEXT, HTML, MATLAB etc.

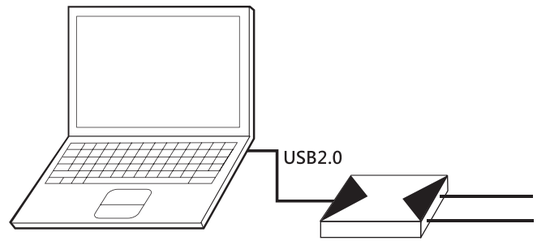
Model	Record Length	Resolution	Trigger
TS2212F	128MS/ch	8 bits	Group I
TS2212B	128MS/ch	8 bits	Group I, II, Bus
TS2212H	128MS/ch	16 bits	Group I, II, Bus

Software Window



System Requirements

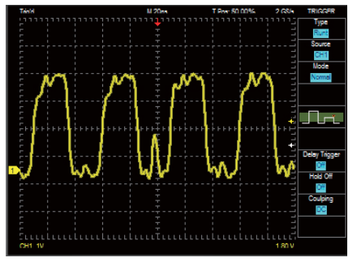
- USB 2.0 port
- XP, Vista, Win 7, Win 8, Win 10 (32 / 64 bits)



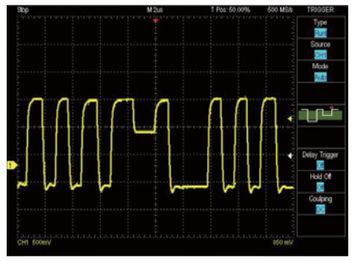
Acute®
PC-based T&M Instruments
Acute Technology Inc.
Tel: 886-2-2999-3275 Fax: 886-2-2999-3276 E-mail: service@acute.com.tw http://www.acute.com.tw

Multiple Trigger Functions

- **Edge Trigger**：Trigger on a rising/falling/either/alternate edge.
- **Pattern Trigger**：Trigger when logic inputs cause the selected function goes true.
- **Trigger Hold Off**：Holdoff time adjustable up to 10s.
- **Runt Trigger**：Use 2 voltage thresholds and pulse width to trigger on either alternate/ positive/negative runt signals.

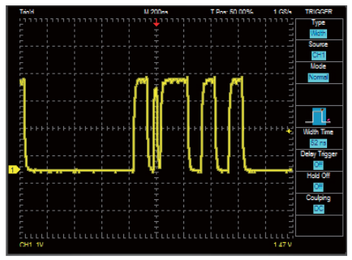


Positive Runt

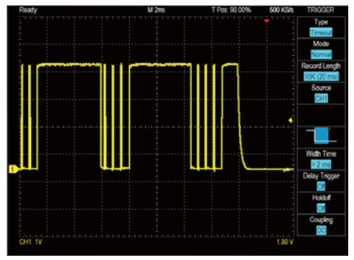


Negative Runt

- **Pulse Width Trigger**
  Pulse width range from 8ns to 50s.

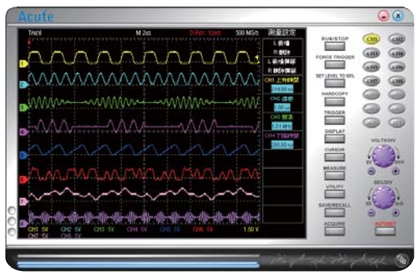


- **Timeout Trigger**
  Trigger when no pulse is detected within a specified time, range from 2ns to 50s.

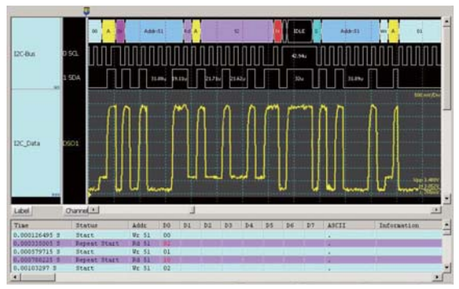


Features

- **Multiple Devices Stack Mode**
  Support DSO stack mode, up to 6 devices (12 channels) can be stacked together in the same time.

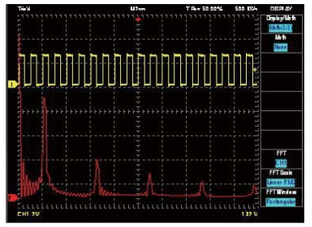


- **Stack with the Acute Logic Analyzer to form an MSO**：
  Use the I²C trigger and the Schmitt trigger functions offered by the TravelLogic, TravelBus and LA3000 Logic Analyzer series to trigger on the target I²C command or data and trigger/synchronize the DSO to also capture the I²C signal to display both the digital and analog waveforms on the same time phase. This shall help engineers to see the design problems more clearly.



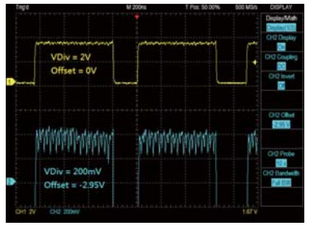
Spectrum Analysis

- **Spectrum analysis (Fast Fourier transform, FFT)**
  Apply FFT to the selected channel.

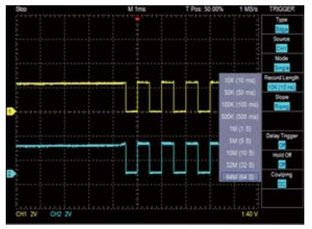


Other Functions

- **Vertical Offset**
  Right-press the mouse to offset the voltage vertically with the resolution from 2mV/Div to 10V/Div for both channels. The 16-bits resolution TS2212H DSO provides more noise details for this vertical offset function.

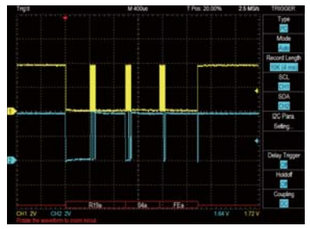


- **64M Sample Points Record Length**
  Record length is adjustable up to 64M sample points for 2 channels or 128M sample points for 1 channel.

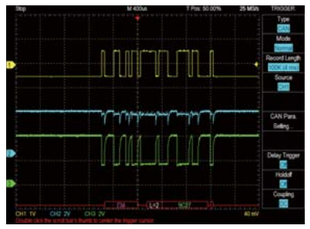


- **Trigger Coupling Mode**
  Provide DC Coupling, Low Frequency (LF) Reject, High Frequency (HF) Reject and Noise Reject function:
  LF Reject: Apply 50 kHz high pass filter to the signal before entering the Trigger circuit.
  HF Reject: Apply 50 kHz low pass filter to the signal before entering the Trigger circuit.
  Noise Reject: Lower the Trigger sensitivity to avoid false triggering.

- **Protocol Decode And Trigger Function**
  Provides ARINC 429, CAN/CAN-FD, I²C, LIN, MIL-STD-1553, ProfiBus, SPI (2-Wire), UART, USB1.1,... protocol decode and trigger function, which is able to trigger and decode on the specified Command/Address/Data..

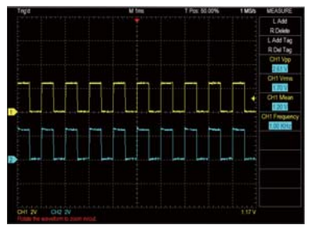


Decode the I²C waveforms

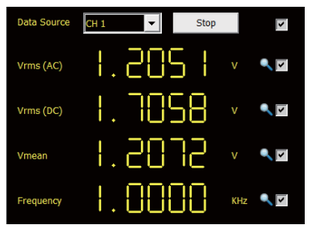


Decode the differential CAN signals with a differential probe.
(CH1: Differential Probe, CH2: CAN H, CH3: CAN L)
※ Supports CAN-FD, CAN2.0

- **Digital Voltmeter (DVM) and Frequency Counter**
  Provides voltage root-mean-square, voltage average and frequency counter function for the selected channel.



Measure 1 KHz, 2.5 Vpp square waveforms by the measurement function.



Measure 1 KHz, 2.5 Vpp square waveforms by the DVM function.