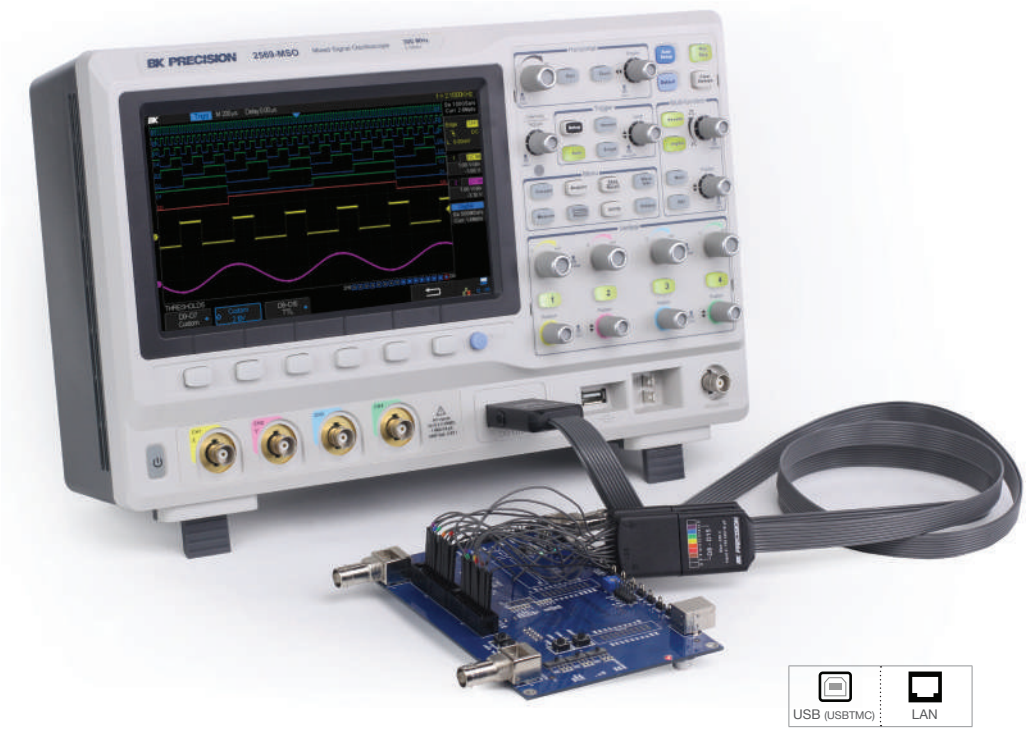
Digital Storage and Mixed Signal Oscilloscopes

2560 Series



The 2560 Digital Storage and Mixed Signal Oscilloscope (MSO) Series delivers advanced features and debug capabilities for a wide range of applications. With up to 300 MHz bandwidth in a 4-channel configuration, each model offers a maximum sample rate of 2 GSa/s, and a maximum memory depth of 140 Mpts. In addition, these oscilloscopes provide an 8" color display with 256 levels of color grading combined with a high waveform update rate up to 140,000 wfms/sec, which allows the instruments to capture infrequent glitches with excellent signal fidelity. The logic analyzer and decode software provides 16 additional digital channels and serial bus decoding for I^2C, SPI, UART/RS232, CAN, and LIN protocols.

Maximize productivity using extensive features such as digital filtering, waveform recording, pass/fail limit testing, and automatic measurements. The optional 25 MHz function/arbitrary waveform generator (AWG) provides stimulus output of 4 arbitrary waveforms, sine, square, ramp, pulse, DC, noise, cardiac, Gaussian pulse, and exponential rise/fall waveforms to the device under test.

The 2560 Series oscilloscopes are ideal for applications in design, education, service, and repair. This instrument offers a comprehensive set of tools to capture signal anomalies, decode serial bus protocols, and help speed up debug and analysis. The MSO, AWG, and decoding functionalities are available for upgrade in the field with the purchase of a license key.

Features & Benefits

- Bandwidth up to 300 MHz
- 2 GSa/s maximum sample rate
- 140 Mpts maximum record length
- 16 digital channels with logic analyzer (MSO upgrade)
- Serial bus decoding supporting I^2C, SPI, UART/RS232, CAN, and LIN protocols (Decode upgrade)
- 25 MHz Function and Arbitrary Waveform Generator (AWG upgrade)
- Large 8" widescreen display with 256-level color gradient
- 140,000 wfms/s waveform capture rate
- Compact footprint and lightweight
- High speed hardware-based pass/fail testing function and masking
- Segmented acquisition history waveform record function (record length up to 80,000 frames)
- Trigger types: Edge, Slope, Pulse, Video, Window, Runt, Interval, Dropout, Pattern, Serial
- FFT including seven other math functions: Addition, Subtraction, Multiplication, Division, Integration, Differential, and Square Root
- 36 automatic measurements supporting statistics, gating, math, history and reference measurements
- Multi-language user interface and built-in context sensitive help
- Software provided for remote PC control
- Front panel USB port for saving and recalling waveforms, setups, and screenshots
- Standard LAN and USBTMC-compliant USB device port
- Selectable 50 Ω and 1 MΩ input coupling

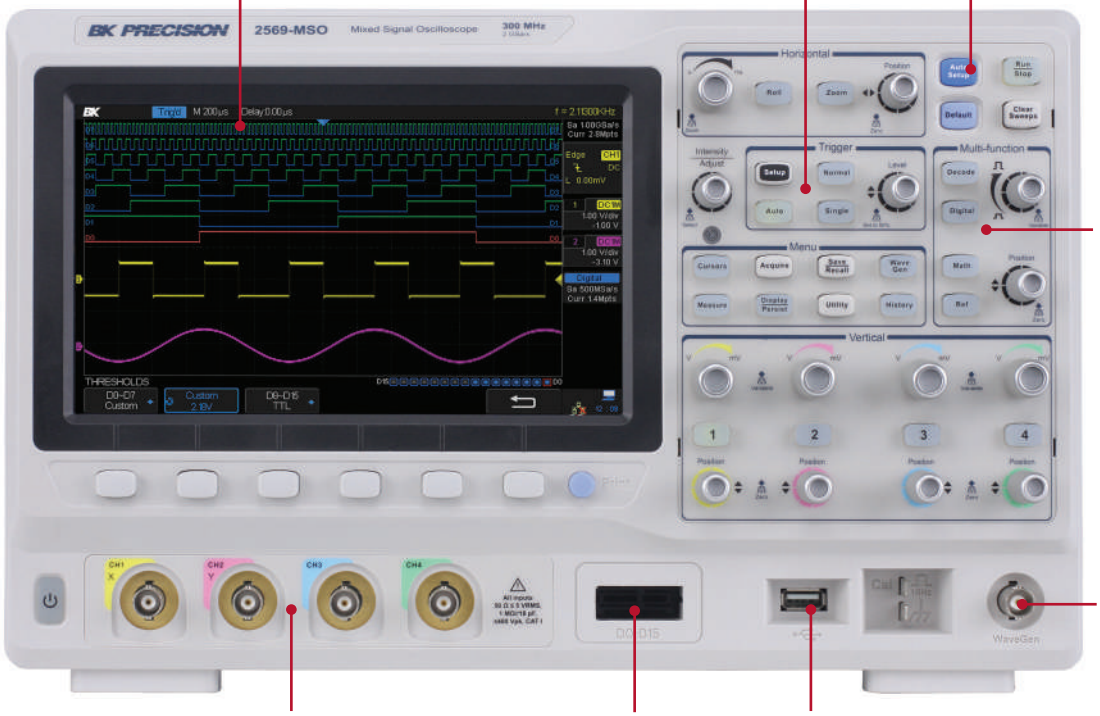
DSO Model	2563	2565	2566	2567	2568	2569
MSO Model	2563-MSO	2565-MSO	2566-MSO	2567-MSO	2568-MSO	2569-MSO
Bandwidth	70 MHz	100 MHz	200 MHz	200 MHz	300 MHz	300 MHz
Channels	4	4	2	4	2	4

Front panel

8-inch TFT-LCD display
8-inch high resolution TFT-LCD display lets you see more details in your signal.

Advanced triggering
Isolate the signal with advanced triggering including Edge, Slope, Pulse, Video, Window, Interval, DropOut, Runt, and Pattern trigger types.

Auto setup
Vertical, horizontal, and trigger controls are automatically adjusted for fast signal display.



Serial Decoding
Decode and analyze I²C, SPI, UART/RS232, CAN, and LIN protocols and display results in binary, decimal, hex, or ASCII in real-time. Enabled with decode upgrade or try 30 times for free with each unit.

Arbitrary Waveform Generator Output
The 25 MHz waveform generator is enabled with the generator upgrade or try 30 times for free with each unit.

Intuitive channel operation
All channels in the 2560 Series are clearly indicated by their own color, labeled on the input, knobs, and display.

16-Channel Digital Ports
Connect a logic analyzer probe to access 16 digital channels enabled with MSO upgrade or try 30 times for free with each unit.

USB host port
Connect your USB flash drive to conveniently store and recall waveform data, setups, and screenshots.

Rear panel

External trigger

Pass/Fail or Trig Out Output

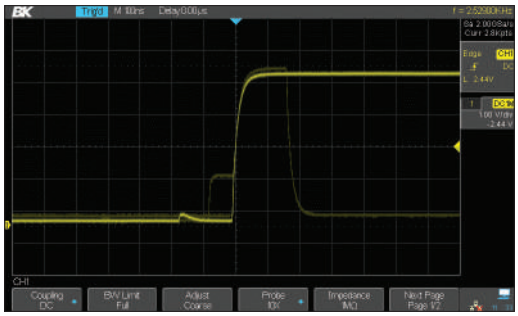
LAN and USB ports enable remote control from a PC.

Kensington security slot
Helps to secure your oscilloscope and prevent theft.

AC line input and input fuse holder

The tools you need

Fast 140,000 wfms/s Waveform Capture Rate

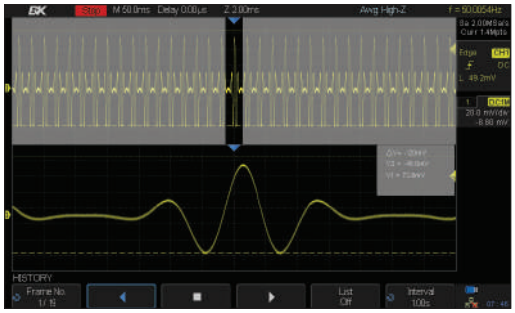


The 140,000 wfms/s update rate in normal mode helps detect infrequent anomalies and glitches.

Hardware Pass/Fail and Masking

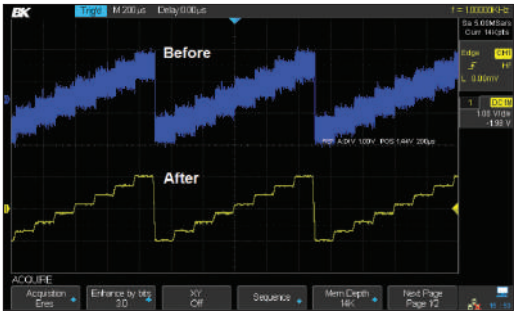
The 2560 Series' high speed hardware based pass/fail limit function can perform up to 140,000 pass/fail tests per second.

Record Length up to 140 Mpts



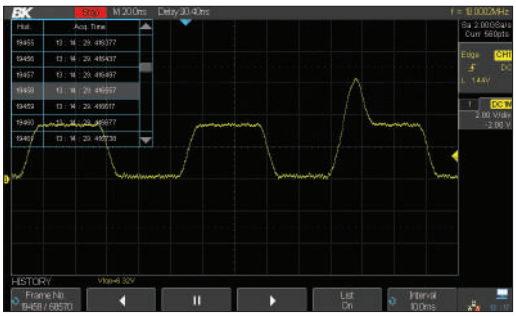
The hardware-based Zoom function used with the record lengths of 140 Mpts enables users to capture more of their signal and quickly zoom into the event of interest.

Enhanced Resolution Mode



Enhanced Resolution (Eres) mode minimizes signal noise to reveal hidden detail when the signal is difficult to trigger and averaging methods are confined.

Waveform History and Recording

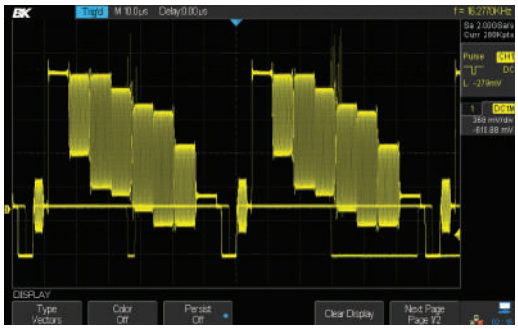


Quickly scroll through millions of points with History Mode's playback functionality to find difficult to capture events. Eliminate unnecessary idle signals and dead-time by selectively capturing up to 80,000 segments.

PC Connectivity

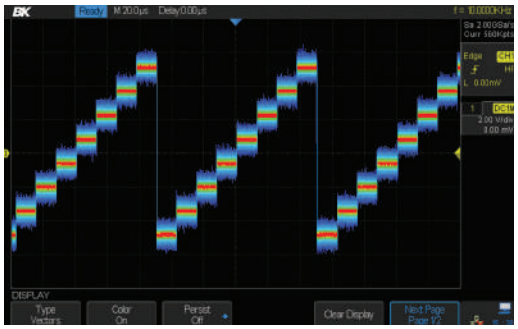
PC software is provided (free download at www.bkprecision.com) for seamless integration between the oscilloscope and PC. Capture and transfer waveforms, screen images, setups and measurement results to a Windows PC via the USB device port on the back of the instrument. A USB host port on the front allows for quick and easy screen saving.

256-level intensity grading and color temperature display



256-level intensity grading

Discover and visualize more details of your signal for better analysis of its behavior.

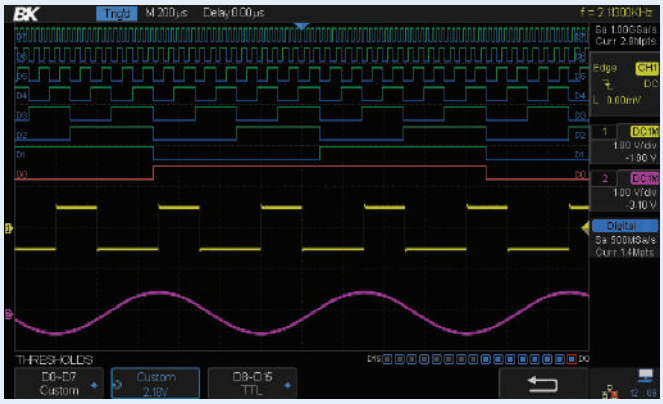


Color temperature display

The tools you need

Included in all MSO models

MSO license - LA2560

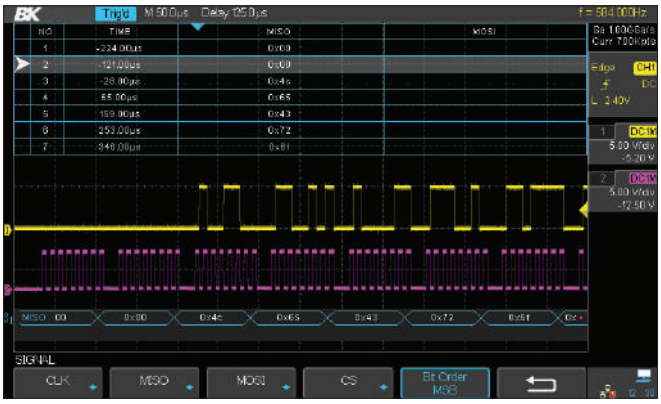


The I6 integrated digital channels are displayed along-side analog channels allowing users to view up to 20 time-correlated channels with shared triggering and acquisition on one screen. The LA2560 license enables the I6 digital channels of the 2560 Series and is included with MSO models.

16 channel logic probe - LP2560

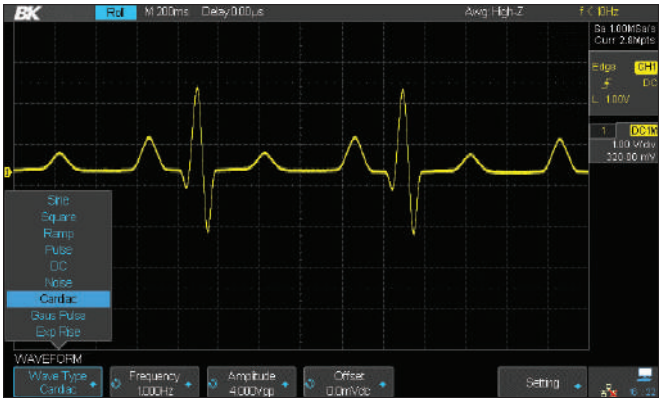
The I6-channel color-coded logic probe consists of two eight-channel pods. To make contact with the DUT, the probe connects directly to square pins or clips to test points using the included grabbers. With an input capacitance of only I8 pF and I00 kΩ input impedance, the probe protects the integrity of your signal. The probe is included with MSO models.

Decode license - DC2560



Select up to 2 serial bus protocols I2C, SPI, UART/RS232, CAN, and LIN and decode concurrently from analog and MSO channels. Decode information in real-time and display in binary, decimal, hex, or ASCII.

AWG license - FG2560



Take advantage of the generator's I0 built-in waveforms or generate up to 4 of your own arbitrary waveforms via waveform editing software.

Buy now, upgrade later

Install the MSO and decode licenses at any time or try before you buy with the 30 trial license on each model. Any DSO model in the 2560 Series can be upgraded to an MSO. Installation is quick and easily done within the oscilloscope menu. To purchase a license key, please fill out the license request form or visit the 2560 Series accessories page.

Available Upgrades		
	2560 Series DSO Model	2560 Series MSO Model
I6-channel digital logic probe (LP2560)	Optional	Standard
Logic analyzer license (LA2560)	Optional	Standard
Bus decode and analysis license (DC2560)	Optional	Optional
25 MHz waveform generator license (FG2560)	Optional	Optional

Specifications

Note: All specifications apply to the unit after a temperature stabilization time of 30 minutes over an ambient temperature range of 23 °C ± 5 °C.

Series	2560
Performance Characteristics	
Bandwidth	300 MHz (2568/ 2569) 200 MHz (2566/ 2567) 100 MHz (2565) 70 MHz (2563)
Typical Rise Time	< 1.2 ns (2568/ 2569), < 1.8 ns (2566/ 2567), < 3.5 ns (2565), < 5.0 ns (2563)
Sample Rate	2 GSa/s (single channel), 1 MSa/s (dual channel)
Input Channels	4 Analog Channels: 2563, 2565, 2567, 2569 2 Analog Channels: 2566, 2568 Digital: 16 (-MSO models or with LA2560 upgrade)
Memory Depth	140 Mpts (single channel), 70 Mpts (dual channel)
Waveform Update Rate	140,000 wfms/s
Hardware Bandwidth Limits	20 MHz
Input Coupling	DC, AC, GND
Input Impedance	1 MΩ ± 2% ll (22 pF ±3 pF) 50 Ω ± 2%
Ch to Ch Isolation	DC - Max BW > 35 dB
Acquisition System	
Peak Detect	1 ns
Average	4, 16, 32, 64, 128, 256, 512, 1024
Enhanced Resolution (Eres)	0.5, 1, 1.5, 2, 2.5, 3 bits selectable
Interpolation	Sin(x)/x, Linear
Vertical System	
Vertical Resolution	8 bits
Vertical Sensitivity	500 µV/div to 10 V/div (1-2-5)
Maximum Input Voltage	1 MΩ: < 400 Vpk; 50 Ω: < 5 Vrms
DC Gain Accuracy	±3%: 5 mV/div to 10 V/div; ±4%: < 2 mV/div
Horizontal System	
Time Base Range	2.0 ns/div to 50 s/div
Time Base Accuracy	±25 ppm
Ch to Ch Deskew Range	<100 ps
Trigger System	
Modes	Auto, Normal, Single
Coupling	DC, AC, LF Reject, HF Reject, Noise Reject Ch1-Ch4
Trigger Level	Internal: ±4.5 div from center
	External: EXT: ±0.6 V EXT/5: ±3 V
Hold-Off Range	100 ns to 1.5 s
Types	Edge, Slope, Pulse, Video, Window, Interval, Dropout, Runt, Pattern
Serial Trigger	I^2C, SPI, UART/RS232, CAN, LIN

Cursors	
Mode	Manual, Track
Measurements	ΔT, 1/ΔT, X2, X1, ΔV, Y2, Y1
Waveform Math	
Math Operation	Add, Subtract, Multiply, Divide, FFT, Derivative, Integral, Square Root
FFT	Windows: Rectangle, Blackman, Hanning, Hamming, Flattop
Waveform Measurements	
Voltage	Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Mean, Cmean, Stdev, Cstd, Vrms, Crms, FOV, FPRE, ROV, RPRE, Level@Trigger
Time	+SR, -SR, Period, Freq, +Width, -Width, Rise, Fall, BWidth, +Duty, -Duty, Time@Mid
Delay	Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFF, Skew
Statistics	Current, Mean, Min, Max, Stdev, Count
Gating	Time domain
I/O Interface	
Standard	USB Host, USB Device, LAN, Pass/Fail, Trigger Out
Pass/Fail	3.3 V TTL Output
Display System	
Display	8" Color TFT-LCD, 800 x 480 Resolution
Wave Display Mode	Vectors, Dots
Persistence	Off, Infinite, 1 sec, 5 sec, 10 sec, 30 sec
Intensity Grading	256 Levels
Language	English, French, Japanese, Korean, German, Russian, Italian, Portuguese, Simplified Chinese, Traditional Chinese
Environmental and Safety	
Temperature	Operating: 10 °C to +40 °C Storage: -20 °C to +60 °C
Humidity	Operating: 85% RH, 40 °C, 24 hours Storage: 85% RH, 65 °C, 24 hours
Altitude	Operating: 3,000 m Storage: 15,266 m
General	
Power Requirements	100 to 240 VAC, CAT II, 50 VA Max, 45 Hz to 440 Hz
Dimensions (W x H x D)	13.8" x 5" x 8.8" (352 x 128 x 224 mm)
Weight	(4-ch) 7.9 lbs (3.6 kg) (2-ch) 7.5 lbs (3.4 kg)
	Three-Year Warranty
Included Accessories	Passive probes (one per channel), power cord, certificate of calibration, USB (Type A to B) communication cable
Optional Accessories	16-channel digital logic probe (LP2560)

Specifications

Trigger System	
Edge Trigger	
Slope	Rising, Falling, Rising & Falling
Source	CHI to CH4/EXT/(EXT/5)/AC Line
Slope Trigger	
Slope	Rising, Falling
Limit Range	<, >, < >, > <
Time Range	2 ns to 4.2 s
Resolution	I ns
Pulse Width Trigger	
Polarity	+wid, -wid
Limit Range	<, >, < >, > <
Pulse Width Range	2 ns to 4.2 s
Resolution	I ns
Video Trigger	
Signal Standard	NTSC, PAL, 720p/50, 720p/60, I080p/50, I080p/60, I080i/50, I080i/60, Custom
Sync	Any, Select
Trigger Condition	Line, Field
Window Trigger	
Window Type	Absolute, Relative
Interval Trigger	
Slope	Rising, Falling
Limit Range	<, >, < >, > <
Time Range	2 ns to 4.2 s
Resolution	I ns
Dropout Trigger	
Timeout	Type Edge, State
Slope	Rising, Falling
Time Range	2 ns to 4.2 s
Resolution	I ns
Runt Trigger	
Polarity	+wid, -wid
Limit Range	<, >, < >, > <
Time Range	2 ns to 4.2 s
Resolution	I ns
Pattern Trigger	
Pattern Setting	Invalid, Low, High
Logic	AND, OR, NAND, NOR
Limit Range	<, >, < >, > <
Time Range	2 ns to 4.2 s
Resolution	I ns

Serial Trigger	
I²C Trigger	
Condition	Start, Stop, Restart, No Ack, EEPROM, Address & Data, Data Length
Source (SDA/SCL)	CHI to CH4
Data format	Binary, Decimal, Hex, ASCII
Limit Range	EEPROM: =, >, <
Data Length	EEPROM: I byte Address & Data: I to 2byte Data Length: I to I2byte
SPI Trigger	
Condition	Data
Source (CS/CLK/Data)	CHI to CH4
Data format	Binary, Decimal, Hex, ASCII
Data Length	4 to 96 bit
Bit Value	0, I, X
Bit Order	LSB, MSB
UART/RS232 Trigger	
Condition	Start, Stop, Data, Parity Error
Source (RX/TX)	CHI to CH4
Data format	Binary, Decimal, Hex, ASCII
Limit Range	=, >, <
Data Length	I byte
Data Width	5 bit, 6 bit, 7 bit, 8 bit
Parity Check	None, Odd, Even
Stop Bit	I bit, I.5 bit, 2 bit
Idle Level	High, Low
Baud Rate (Selectable)	600/I200/2400/4800/9600/I9200/38400/57600/II5200 bit/s
Baud Rate (Custom)	300 bit/s to 334000 bit/s
CAN Trigger	
Type	All, Remote, ID, ID + Data, Error
Source	CHI to CH4
ID	STD (IIbit), EXT(29bit)
Data format	Binary, Decimal, Hex, ASCII
Data Length	I to 2 byte
Baud Rate (Selectable)	5k/I0k/20k/50k/I00k/I25k/250k/500k/800k/IM bit/s
Baud Rate (Custom)	5 kbit/s to I Mbit/s
LIN Trigger	
Type	Break, Frame ID, ID+Data, Error
Source	CHI to CH4
ID	I byte
Data format	Binary, Decimal, Hex, ASCII
Data Length	I to 2 byte
Baud Rate (Selectable)	600/I200/2400/4800/9600/I9200 bit/s
Baud Rate (Custom)	300 bit/s to 20 kbit/s

Specifications

Function/Arbitrary Waveform Generator (FG2560)	
Waveforms	Sine, Square, Ramp, Pulse, DC, Noise, Cardiac, Gaus Pulse, Exp Rise
Arbitrary	4 Slots for Arbitrary Waveforms
Maximum Output Frequency	25 MHz
Sample Rate	125 MSa/s
Frequency Resolution	1 µHz
Frequency Accuracy	±50 ppm
Vertical Resolution	14 bits
Amplitude Range	-1.5 to +1.5 V @ 50 Ω; -3 to +3 V @ 1 MΩ
Output Impedance	50 Ω ±2%
Protection	Short-Circuit Protection
Sine Characteristics	
Frequency	1 µHz to 25 MHz
Offset Accuracy (100 kHz)	±(0.3 dB x Offset Setting Value + 1 mVpp)
Amplitude flatness	±0.3 dB (100 kHz, 5 Vpp)
Spurious (non harmonics)	DC to 1 MHz: -60 dBc 1 MHz to 5 MHz: -55 dBc 5 MHz to 25 MHz: -50 dBc
Harmonic distortion	DC to 5 MHz: -50 dBc 5 MHz to 25 MHz: -45 dBc
Square/Pulse Characteristics	
Frequency	1 µHz to 10 MHz
Duty Cycle	20% to 80%
Rise/Fall Time	< 24 ns (10% to 90%)
Overshoot (1 kHz, 1 Vpp Typical)	< 3%
Pulse Width	> 50 ns
Jitter	< 500 ps + 10 ppm
Ramp Characteristics	
Frequency	1 µHz to 300 kHz
Linearity (Typical)	< 0.1% of Pk-Pk (Typical, 1 kHz, 1 Vpp, 100% Symmetry)
Symmetry	0% to 100% (Adjustable)
DC Characteristics	
Offset Range	±1.5 V (50 Ω) ±3 V (High-Z)
Accuracy	±(|offset|*1%+3 mV)
Noise Characteristics	
Bandwidth	> 25 MHz (-3 dB)
Arbitrary Wave Characteristics	
Frequency	1 µHz to 5 MHz
Wave Length	16 kpts
Sample Rate	125 MSa/s

Serial Decoder (DC2560)	
Threshold	-4.5 to 4.5 div
Recorded List	1 to 7 Lines
I2C Decoder	
Signal	SCL, SDA
Address	7 bit, 10 bit
SPI Decoder	
Signal	CLK, MISO, MOSI, CS
Edge Select	Rising, Falling
Idle Level	Low, High
Bit Order	MSB, LSB
UART / RS232 Decoder	
Signal	RX, TX
Data Width	5, 6, 7, 8 bit
Parity Check	None, Odd, Even
Stop Bit	1, 1.5, 2 bit
Idle Level	Low, High
CAN Decoder	
Signal	CAN_H, CAN_L
Source	CAN_H, CAN_L, CAN_H-CAN_L
LIN Decoder	
Supported Specification	Ver1.3, Ver2.0

MSO Digital Channels (LA2560/LP2560)	
Digital Channels	16
Sample Rate	500 MSa/s
Memory Depth	14 Mpts/Ch
Maximum Input Voltage	± 20 Vpeak
Threshold Accuracy	± (3% of threshold setting + 150 mV)
Input Dynamic Range	± 10 V
Minimum Input Voltage Swing	800 mVpp
Input Impedance	100 kΩ ‖ 18 pF
Maximum Input Frequency	60 MHz
Minimum Detectable Pulse Width	8.3 ns
Ch to Ch Skew	± (1 digital sample interval)
User Defined Threshold Range	± 3 V in 10 mV steps
Threshold Selections	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, Custom (-3 to +3 V)