

DSO4000 Series Digital Storage Oscilloscope Datasheet



The document applies to the digital storage oscilloscopes of the following models:

Model	Channels	Bandwidth	Sample Rate	AFG
DSO4084	4	80MHz	1GS/s	-
DSO4104	4	100MHz	1GS/s	-
DSO4204	4	200MHz	1GS/s	-
DSO4254	4	250MHz	1GS/s	-
DSO4084A	4	80MHz	1GS/s	Yes
DSO4104A	4	100MHz	1GS/s	Yes
DSO4204A	4	200MHz	1GS/s	Yes
DSO4254A	4	250MHz	1GS/s	Yes

Standard Accessories of DSO4000 Digital Storage Oscilloscope

Item	Name	Qty
1	Main Machine	1 Set
2	Power Cord	1 pcs
3	Oscilloscope Probe Kit (1.5m), (1:1, 10:1), (Passive)	4 pcs
4	CD (Manual/ PC software)	1 pcs
5	USB cable	1 pcs
6	BNC to BNC cable (only for DSO4000A models)	1 pcs

Preface

Thanks for choosing DSO4000 Digital Storage Oscilloscope produced by Saluki Technology Inc.

Document No.

DSO4000-02-01

Version

Rev01 2017.04

Saluki Technology

Document Authorization

The information contained in this document is subject to change without notice. The power to interpret the contents of and terms used in this document rests with Saluki.

Saluki Tech owns the copyright of this document which should not be modified or tampered by any organization or individual, or reproduced or transmitted for the purpose of making profit without its prior permission, otherwise Saluki will reserve the right to investigate and affix legal liability of infringement.

Product Quality Assurance

The warranty period of the product is 36 months from the date of delivery.

Product Quality Certificate

The product meets the indicator requirements of the document at the time of delivery. Calibration and measurement are completed by the measuring organization with qualifications specified by the state, and relevant data are provided for reference.

Quality/Environment Management

Research, development, manufacturing and testing of the product comply with the requirements of the quality and environmental management system.

Contacts

Service Tel: 886.909 602 109
Website: www.salukitec.com
Email: sales@salukitec.com
Address: No. 367 Fuxing N Road, Taipei 105, Taiwan (R.O.C.)

Content

1	Overview.....	6
2	Specifications.....	7
2.1	Horizontal.....	7
2.2	Vertical.....	7
2.3	Tigger.....	8
2.4	Acquisition.....	11
2.5	Input.....	11
2.6	Measurement.....	11
2.7	General.....	11
2.8	Arbitrary Waveform Generator Mode.....	12
3	Compliant.....	13
3.1	CE.....	13
3.2	RoHS.....	13
3.3	ISO.....	13

1 Overview

DSO4000/A Series oscilloscopes cover the bandwidths from 80MHz to 200MHz, and provide the real-time sampling rate up to 1GSa/s. In addition, they have 7 inch color TFT LCD as well as WINDOWS-style interfaces and menus for easy operation.

What's more, the plenty menu information and the easy-to-operate buttons allow you to gain information as much as possible in measurement; the multifunctional knobs and the powerful shortcut keys help you save a lot of time in operation; the Auto Scale function lets you detect sine and square waves automatically; By using the three methods the oscilloscope provides (context-sensitive, hyperlinks, and an index), you may master all operations on the device in quite a short time so as to greatly improve your efficiency in production and development.

Definitions

Instrument specifications listed in this datasheet applies to all different configurations DSO4000 series oscilloscope unless model numbers are clearly noted.

Specification (Spec.)

Specifications describe the performance of parameters within the warranty of the instrument. Product specifications applies under the following conditions:

- Environmental temperature of 25°C ($\pm 5^\circ\text{C}$) with less than 1°C deviation from the calibration temperature
- Specifications include measurement uncertainties

Data in this document are Spec. unless otherwise noted.

Typical (typ.)

Typical data is not guaranteed by instrument warranty. It describes additional product performance information that 80 percent of the units' exhibit. Typical data only valid at 25°C. Typical performance does not include measurement uncertainty.

Nominal(nom.)

Nominal values indicate expected performance, or describe product performance that is useful in the application of the product, but are not covered by the product warranty.

2 Specifications

2.1 Horizontal

Sample Rate Range	1GS/s		
Waveform Interpolation	(sin x)/x		
Record Length	Maximum 64K samples per single-channel; maximum 32K samples per dual-channel (4K, 32K optional)		
SEC/DIV Range	DSO4084 & DSO4104	DSO4204 & DSO4254	
	2ns/div to 100s/div, in a 1, 2, 5 sequence	2ns/div to 100s/div, in a 1, 2, 5 sequence	
Sample Rate and Delay Time Accuracy	±50ppm		
Delta Time Measurement Accuracy (Full Bandwidth)	Single-shot, Normal mode ± (1 sample interval + 100ppm × reading + 0.6ns)		
	>16 averages ± (1 sample interval + 100ppm × reading + 0.4ns)		
	Sample interval = s/div ÷ 200		

2.2 Vertical

A/D Converter	8-bit resolution, each channel sampled simultaneously			
VOLTS/DIV Range	500µV/div to 10V/div at input BNC			
Position Range	500µV/div to 20mV/div, ±400mV 50mV/div to 200mV/div, ±2V 500mV/div to 2V/div, ±40V 5V/div to 10V/div, ±50V			
Selectable Analog Bandwidth Limit, typical	20MHz (6MHz when using a 1X probe)			
Low Frequency Response (-3db)	≤10Hz at BNC			
Rise Time at BNC, typical	DSO4084	DSO4104	DSO4204	DSO4254
	≤4.4ns	<3.5ns	≤1.8ns	<1.4ns
DC Gain Accuracy	±3% for Normal or Average acquisition mode, 10V/div to 10mV/div ±4% for Normal or Average acquisition mode, 5mV/div to 500µV/div			

2.3 Tigger

Mode	Auto, Normal	
Level	CH1 - CH4	±4 divisions from center of screen
	EXT	0 - 3.3V
Holdoff Range	20ns - 10s	
Trigger Level Accuracy	CH1 - CH4	0.2div × volts/div within ±4 divisions from center of screen
	EXT	± (6% of setting + 40mV)
Edge Trigger		
Slope	Rising, Falling, Rising&Falling	
Source	CH1-CH4/EXT	
Pulse Width		
Polarity	Positive, Negative	
Condition(When)	<, >, !=, =	
Source	CH1~CH4	
Width Range	8ns - 10s	
Resolution	8ns	
Video Trigger		
Signal Standard	NTSC, PAL	
Source	CH1 - CH4	
Sync	ScanLine, LinrNum, OddField, EvenField and AllField	
Slope Trigger		
Slope	Rising, Falling	
Condition(When)	<, >, !=, =	
Source	CH1 ~ CH4	
Time Range	8ns - 10s	
Resolution	8ns	
Overtime Trigger		
Source	CH1 - CH4	

Polarity	Positive, Negative
Time Range	8ns - 10s
Resolution	8ns
Window Trigger	
Source	CH1 - CH4
Pattern Trigger	
Pattern	0: Lower level; 1: High level;
Level	CH1 - CH4
Interval Trigger	
Slope	Rising, Falling
Condition(When)	<, >, !=, =
Source	CH1 - CH4
Time Range	8ns - 10s
Resolution	8ns
Under Amp	
Polarity	Positive, Negative
Condition(When)	<, >, !=, =
Source	CH1~CH4
Time Range	8ns ~ 10s
Resolution	8ns
UART Trigger	
Condition(When)	Start, Stop, Data, Parity Error, COM Error
Source (RX/TX)	CH1 - CH4
Data format	Hex
Condition(When)	<, >, !=, =
Data Length	1 byte
Data Bits Width	5 bit, 6 bit, 7 bit, 8 bit
Parity Check	None, Odd, Even

Idle Level	High, Low
Baud Rate(Selectable)	110/300/600/1200/2400/4800/9600/14400/19200/38400/57600/115200/230400/380400/460400 bit/s
Baud Rate (Custom)	300bit/s - 334000bit/s
LIN Trigger	
Condition(When)	Interval Field, Sync Field, Id field, Sync Id Error, Identifier, Id and Data
Source	CH1 - CH4
Data format	Hex
Baud Rate (Selectable)	110/300/600/1200/2400/4800/9600/14400/19200/38400/57600/115200/230400/380400/460400 bit/s
Baud Rate (Custom)	300bit/s - 334000bit/s
CAN Trigger	
Condition(When)	Start Bit, Remote Frame, Data Frame Id, Frame Id, Data Frame Id A, Error Frame, All Error, Ack Error, Overload Fram
Source	CH1 - CH4
Data format	Hex
Baud Rate (Selectable)	10000, 20000, 33300, 500000, 62500, 83300, 100000, 125000, 250000, 500000, 800000, 1000000
Baud Rate (Custom)	5kbit/s - 1Mbit/s
SPI Trigger	
Condition	Data
Source (CS/CLK/Data)	CH1 - CH4
Data format	Hex
Data Length	4, 8, 16, 24, 32
IIC Trigger	
Source (SDA/SCL)	CH1 - CH4
Data format	Hex
Data Index	0 - 7
When(Condition)	Start, Stop, No Ack, Address, Data, Restart

2.4 Acquisition

Acquisition Modes	Normal, Peak Detect, Average and HR	
Acquisition Rate, typical	Up to 2000 waveforms per second per channel (Normal acquisition mode, no measurement)	
Single Sequence	Acquisition Mode	Acquisition Stop Time
	Normal, Peak Detect	Upon single acquisition on all channels simultaneously
	Average	After N acquisitions on all channels simultaneously, N can be set to 4, 8, 16, 32, 64 or 128

2.5 Input

Input Coupling	DC, AC or GND
Input Impedance, DC coupled	$1M\Omega \pm 2\%$ in parallel with $20pF \pm 3pF$
Probe Attenuation	1X, 10X
Supported Probe Attenuation Factors	1X, 10X, 100X, 1000X
Overvoltage Category	300V CAT II
Maximum Input Voltage	$300V_{RMS}$ (10X)

2.6 Measurement

Cursors	Voltage difference between cursors: ΔV Time difference between cursors: ΔT Reciprocal of ΔT in Hertz ($1/\Delta T$)
Automatic Measurements	Frequency, Period, Average, Pk-Pk, RMS, PeriodRms, Min, Max, RiseTime, FallTime, + Width, - Width, + Duty, - Duty, Vbase, Vtop, Vmid, Vamp, Overshoot, Preshoot, PeriodAvg, FOVShoot, RPREShoot, BWidth, FRR, FFF, FRF, FFR, LRR, LRF, LFR and LFF

2.7 General

Display	
Display Type	7 inch 64K color TFT (diagonal liquid crystal)
Display Resolution	800 horizontal by 480 vertical pixels
Display Contrast	Adjustable

Probe Compensator Output		
Output Voltage, typical	About 2Vpp into $\geq 1M\Omega$ load	
Frequency, typical	1kHz	
Power Supply		
Supply Voltage	100-120VAC _{RMS} ($\pm 10\%$), 45Hz to 440Hz, CAT II 120-240VAC _{RMS} ($\pm 10\%$), 45Hz to 66Hz, CAT II	
Power Consumption	<30W	
Fuse	T, 3.15A, 250V, 5x20mm	
Environmental		
Operating Temperature	0 to 50 °C (32 to 122 °F)	
Operation Humidity	$\leq 90\%$ relative humidity	
Storage Temperature	-40 to +71 °C (-40 to 159.8 °F)	
Storage Humidity	$\leq 60\%$ relative humidity	
Cooling Method	Convection	
Altitude	Operating and Nonoperating	3,000m (10,000 feet)
	Random Vibration	0.31g _{RMS} from 50Hz to 500Hz, 10 minutes on each axis
	Nonoperating	2.46g _{RMS} from 5Hz to 500Hz, 10 minutes on each axis
Mechanical Shock	Operating	50g, 11ms, half sine
Mechanical		
Dimension	318 x 110 x 150mm(L x W x H)	
Weight	2900g	

2.8 Arbitrary Waveform Generator Mode

Waveform Frequency	Sine:	0.1Hz - 25MHz
	Square:	0.1Hz - 10MHz
	Ramp:	0.1Hz - 1MHz
	EXP:	0.1Hz - 5MHz
Amplitude	5mV - 3.5Vp-p (50 Ω)	

	10mV - 7Vp-p (High impedance)
DAC	2K - 200MHz adjustable
Frequency Resolution	0.10%
Channel	1CH waveform output
Waveform Depth	4KSa
Vertical Resolution	12 bit
Frequency Stability	<30ppm
Output Impedance	50 Ω

3 Compliant

3.1 CE



Complies with the requirements of the **EMC directive 2014/08/EC**.

Test Standards:

- EN 61326-1:2006
- EN 61000-3-2:2006 + A1:2009 + A2:2009
- EN 61000-3-3:2008

3.2 RoHS



Complies with the requirements of the **RoHS directive 2011/65/EU**.

Test Standards:

- EN 50581:2012

3.3 ISO



- Manufacturing

This instrument is manufactured in an ISO-9001 registered facility

-END OF DOCUMENT-