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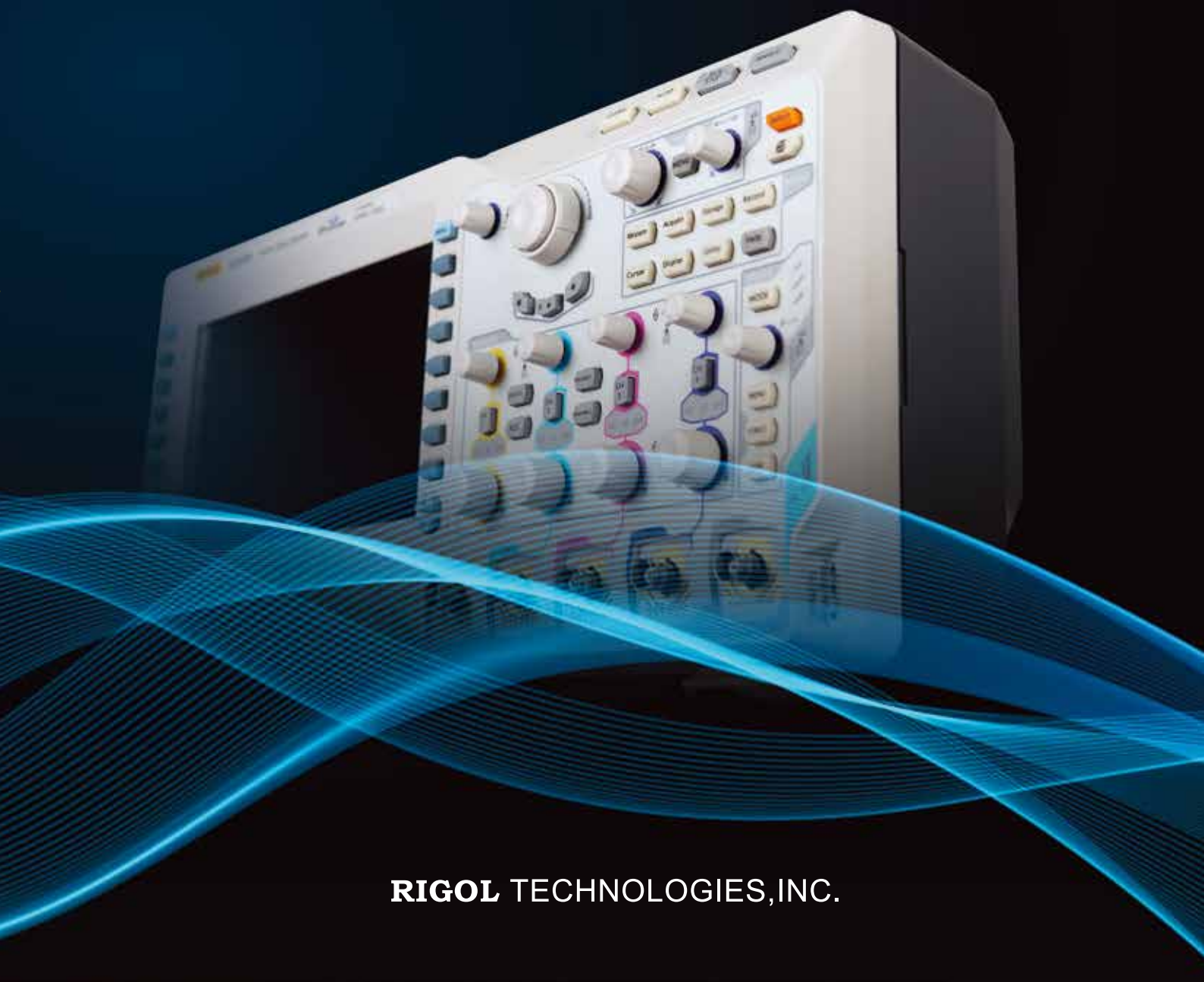
Test & Measurement

RIGOL Innovation or nothing

Product Catalog



RIGOL TECHNOLOGIES,INC.

Contents

Digital Oscilloscope

Digital oscilloscope, an essential electronic equipment for R&D, manufacture and maintenance, is used by electronic engineers to observe various kinds of analog and digital signals.

RIGOL is a leading manufacturer and supplier of digital oscilloscope in China and has made many breakthroughs in the domestic industry. It introduces 5 generations of oscilloscopes since its creation. DS6000 series digital oscilloscope, the first DSO in China featuring 1GHz Bandwidth, was introduced in 2009.

By adopting the innovative technique “UltraVision”, DS6000 realizes deeper memory depth, higher waveform capture rate, real time waveform record and multi-level intensity grading display as well as other functions instead of Application Specific Integrated Circuits (ASIC).

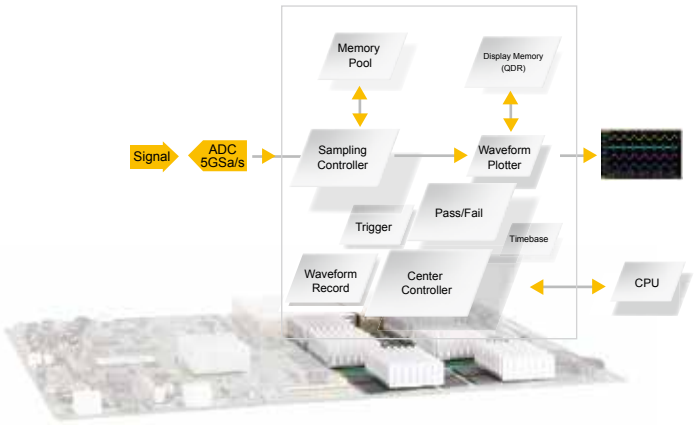
Now RIGOL has developed several series of oscilloscopes (including DS1000D/E, DS1000B, MSO/DS1000Z, MSO/DS2000A, MSO/DS4000 and DS6000) to meet different customer needs and to improve the testing efficiency.

Series	Analog Channels	Memory Depth	Max. Sample Rate	Mix-signal analysis	Serial bus analysis	Bandwidth (MHz)								
						1000	600	500	350	300	200	100	70	50
DS6000	2/4	140M	5GSa/s		○	●	●							
MSO/DS4000	2/4	140M	4GSa/s	○	○			●	●		●	●		
MSO/DS2000A	2	14M	2GSa/s	○	○					●	●	●	●	
MSO/DS1000Z	4	12M	1GSa/s	○	○							●	●	●
DS1000B	4	16K	2GSa/s								●	●	●	
DS1000D	2	1M	1GSa/s	●								●		●
DS1000E/U	2	1M	1GSa/s									●	●	●

● Standard function
○ Options

DS6000 Series Digital Oscilloscope

Innovative UltraVision technique



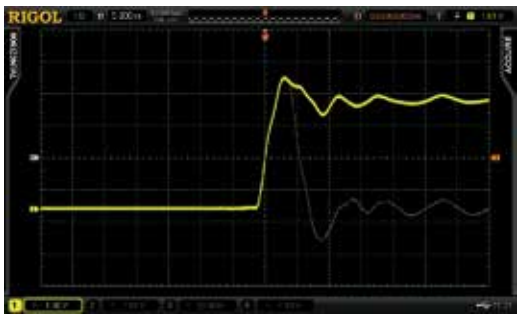
Key Features

DS6000 series digital oscilloscope provides up to 1GHz bandwidth, 5GSa/s sample rate. It has the deepest memory depth and fastest waveform capture rate of this class.

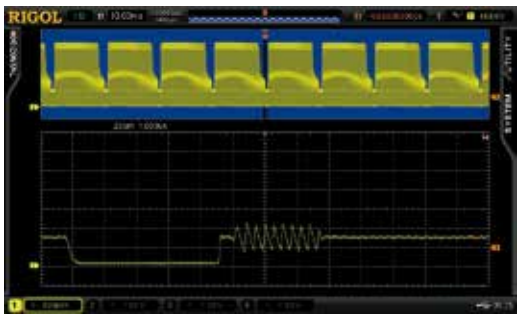
DS6000 series adopt many today's new technologies to achieve high performance, abundant features in the same class. It's designed to aim at the requirements of the largest digital oscilloscope market segment from the communications, semiconductor, computing, aerospace defense, instrumentation, research/education, industrial electronics, consumer electronics and automotive industries with its innovative technology, industry leading specifications, powerful trigger functions and broad analysis capabilities.

- Up to 1 GHz or 600MHz bandwidth
- Standard 140Mpts deep memory
- Up to 180,000 waveforms per second capture rate
- Up to 200,000 frames for waveform record and replay
- Standard serial bus trigger and optional decode
- Lithium Battery for Field Test and floating application

Up to 180k Waveforms/s Waveform capture rate



Deeper Memory; Multi-Level intensity grading display



Real time waveform Record, Replay & Analysis

Standard trigger and Optional Decoding functions for Serial Bus

Key Specifications

Model	DS6104	DS6102	DS6064	DS6062
Analog BW	1GHz		600MHz	
Channels	4	2	4	2
Max. Sample rate	5GSa/s			
Max. Memory Depth	140Mpts (std.)			
Max. Waveform Capture rate	180,000wfm/s			
Timebase Scale	DS610x：500ps to 1000s/div; DS606x：1ns to 1000s/div			
Vertical Scale	2mV/div to 5V/div (1MΩ) ; 2mV/div to 1V/div (50Ω)			
DC Gain Accuracy	±2% full scale			
Real Time waveform Record and Analysis	Max. 200,000 frames(Std.)			
Std. trigger functions	Edge, Pulse width, Slope, Video, HDTV, Pattern, RS232/UART, I2C, SPI, CAN, USB, FlexRay			
Serial Bus decoding (opt.)	RS232/UART, I2C, SPI, CAN, FlexRay			
Math functions	A+B, A-B, AxB, A/B, FFT, Advanced Math, Logic operation			
Auto Measurements	24 types			
Connectivity	USB Host, USB Device, LAN, VGA, AUX, 10MHz Input/output			
Display	10.1 inches WVGA(800×480), Multi-Level intensity grading display			

Ordering Information

	Description	Order Number
Model	DS6104 (1GHz, 5GSa/s, 140Mpts, 4-channel)	DS6104
	DS6102 (1GHz, 5GSa/s, 140Mpts, 2-channel)	DS6102
	DS6064 (600MHz, 5GSa/s, 140Mpts, 4-channel)	DS6064
	DS6062 (600MHz, 5GSa/s, 140Mpts, 2-channel)	DS6062
Standard Accessories	600MHz passive probe x 4 (for DS6104 and DS6064) 600MHz passive probe x 2 (for DS6102 and DS6062)	RP5600A
	1.5GHz passive probe x 2 (for DS6104) 1.5GHz passive probe x 1 (for DS6102)	RP6150A
	USB Cable	CB-USBA-USBB-FF-150
	Front Panel Cover	FPCS-DS6000
	Power Cord	-
	Quick Guide	-
	Resource CD (User's Guide and Application Software)	-
For probes and optional accessories please refer to "Probes Configuration Guide".		
For decoding options please refer to "Bus Analysis Guide".		

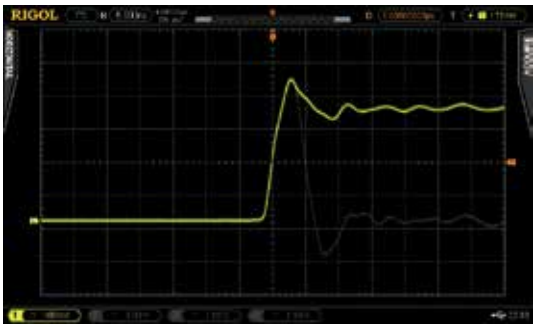
MSO/DS4000 Series Digital Oscilloscope

UltraVision

MSO/DS4000 series is high performance oscilloscope with 100MHz ~ 500MHz bandwidth and up to 4GSa/s sample rate. They also provide deep memory depth and high waveform capture rate. MSO/DS4000 Series is the new mainstream digital scope to meet the customer's applications with its innovative technology, industry leading specifications, powerful trigger functions and broad analysis capabilities.

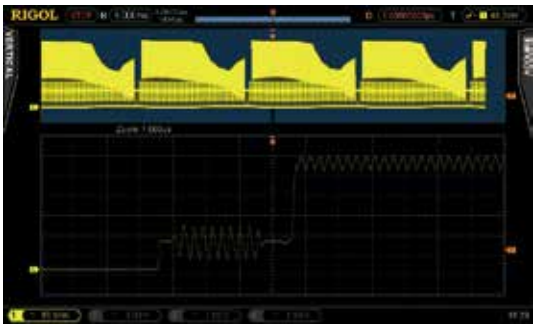
- Bandwidth 500MHz, 350MHz, 200MHz, 100MHz
- Real-time sample rate up to 4GSa/s
- Standard Memory depth: Analog channel up to 140Mpts, Digital Channel up to 28Mpts
- Real Time Waveform Record, Replay & Analysis (Std. up to 200,000 frames)
- Support serial bus trigger (Std.) and decoding (Opt.)
- 9 inch WVGA (800X480), 256-level intensity grading display

Up to 110k Waveforms/s Waveform capture rate

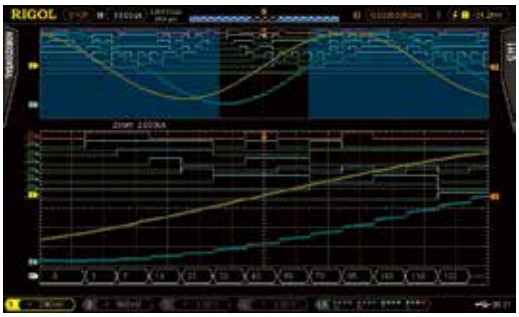


Realtime waveform record, replay, analysis function (std.)

Deeper Memory with 256-Level intensity grading display



Mixed Signal Analysis with analog and digital channels



Serial bus Triggering and Decoding (Support both Analog and Digital channels)

Serial bus triggering and decoding on digital channels

Key Specifications

Model	DS4054 MSO4504	DS4052 MSO4052	DS4034 MSO4034	DS4032 MSO4032	DS4024 MSO4024	DS4022 MSO4022	DS4014 MSO4014	DS4012 MSO4012
Analog BW	500MHz		350MHz		200MHz		100MHz	
Analog Channels	4	2	4	2	4	2	4	2
Digital Channels(MSO)	16 (support group operations)							
Max. Sample rate	Analog Channel: Max. 4GSa/s half channel, 2GSa/s per channel; Digital Channel: Max. 1GSa/s per channel							
Max. Memory Depth	Analog Channel: Std. up to 140Mpts half channel,70Mpts per channel Digital Channel: Std. up to 28Mpts per channel (only MSO)							
Max. Waveform Capture rate	DS: 110,000wfms/s; MSO: 110,000wfms/s (digital channel off); 85,000wfms/s (digital channel on)							
Timebase Scale	1ns/div to 1000s/div		2ns/div to 1000s/div				5ns/div to 1000s/div	
Input Impedance	Analog channel: (1MΩ±1%) || (14 pF±3 pF) or 50 Ω±1.5%; Digital channel: (101 kΩ±1%) || (9 pF ± 1 pF)							
Vertical Scale	1 mV/div to 5 V/div (1 MΩ); 1 mV/div to 1 V/div (50 Ω) Threshold per set of 8 channels, User-defined threshold range ±20V in 10mV step							
DC Gain Accuracy	±2% full scale							
Real Time waveform Record and Analysis	Analog channel: Up to 200,000 frames(Std.) Digital channel: Up to 64,000 frames(Std.)							
Std. trigger functions	Edge, Pulse width, Runt, Nth Edge, Slope, Video, HDTV, Pattern,RS232/UART,I2C,SPI,CAN,LIN,USB,FlexRay							
Serial Bus decoding	Standard: Parallel; Optional: RS232/UART, I2C, SPI, CAN, LIN, FlexRay (analog and digital channel)							
Math functions	Analog channel: A+B, A-B, A×B, A/B, FFT, Advanced Math, Logic operation; Digital channel: Logic operation							
Auto Measurements	Analog channel: 24 types; Digital channel: 10 types							
Connectivity	USB Host, USB Device, LAN, VGA, AUX, 10MHz input/output							
Display	9.0 inches WVGA(800X480) TFT LCD display, 256 intensity grading level							

Ordering Information

	Description	Order Number
Model	DS4012 (100 MHz, 4 GSa/s, 140 Mpts, 2-channel)	DS4012
	DS4014 (100 MHz, 4 GSa/s, 140 Mpts, 4-channel)	DS4014
	DS4022 (200 MHz, 4 GSa/s, 140 Mpts, 2-channel)	DS4022
	DS4024 (200 MHz, 4 GSa/s, 140 Mpts, 4-channel)	DS4024
	DS4032 (350 MHz, 4 GSa/s, 140 Mpts, 2-channel)	DS4032
	DS4034 (350 MHz, 4 GSa/s, 140 Mpts, 4-channel)	DS4034
	DS4052 (500 MHz, 4 GSa/s, 140 Mpts, 2-channel)	DS4052
	DS4054 (500 MHz, 4 GSa/s, 140 Mpts, 4-channel)	DS4054
	MSO4012 (100 MHz, 4 GSa/s, 140 Mpts, 2+16 channels MSO)	MSO4012
	MSO4014 (100 MHz, 4 GSa/s, 140 Mpts, 4+16 channels MSO)	MSO4014
	MSO4022 (200 MHz, 4 GSa/s, 140 Mpts, 2+16 channels MSO)	MSO4022
	MSO4024 (200 MHz, 4 GSa/s, 140 Mpts, 4+16 channels MSO)	MSO4024
	MSO4032 (350 MHz, 4 GSa/s, 140 Mpts, 2+16 channels MSO)	MSO4032
	MSO4034 (350 MHz, 4 GSa/s, 140 Mpts, 4+16 channels MSO)	MSO4034
	MSO4052 (500 MHz, 4 GSa/s, 140 Mpts, 2+16 channels MSO)	MSO4052
	MSO4054 (500 MHz, 4 GSa/s, 140 Mpts, 4+16 channels MSO)	MSO4054
Standard Accessories	2 or 4 500MHz passive probe	RP3500A
	1 Set logic analysis probe (MSO models)	RPL2316
	USB Cable	CB-USBA-USBB-FF-150
	Front Panel Cover	FPCS-DS4000
	Power Cord	-
	Quick Guide	-
	Resource CD (User's Guide and Application Software)	-
For probes and optional accessories please refer to "Probes Configuration Guide".		
For decoding options please refer to "Bus Analysis Guide".		

MSO/DS2000A Series Digital Oscilloscope

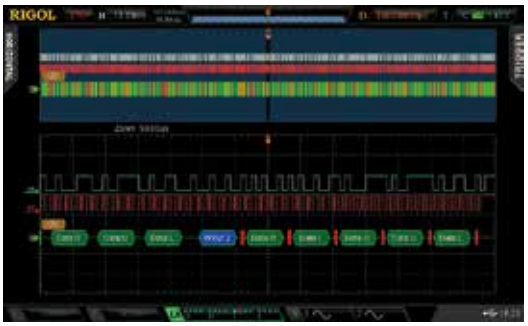
UltraVision

MSO/DS2000A Series is the new mainstream digital scope to meet the customer's applications with its innovative technology. It provides bandwidth from 70MHz to 300MHz, sample rate up to 2GSa/s, and 2+16 channels, targeting for the embedded design and test market with its industry leading specifications, powerful trigger functions and broad analysis capabilities.

- Bandwidth up to 300MHz, standard with 50Ω input
- Two analog channels and 16 digital channels (MSO)
- Lower noise floor, wider vertical range (500uV/div ~ 10V/div)
- Waveform capture rate up to 50,000 wfms/s
- Built-in 2 CH and 25MHz Waveform generator (-S model)
- A variety of trigger and serial bus decoding functions

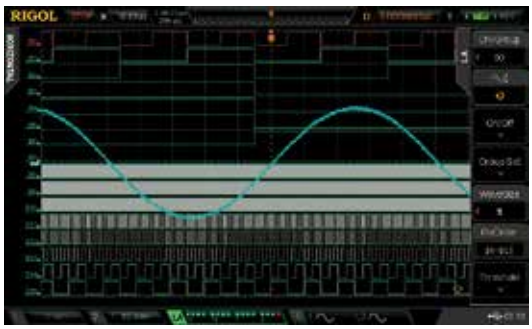
Wider Vertical range, Lower noise floor, Better for small signal capturing

Serial bus Trigger&Decoding functions

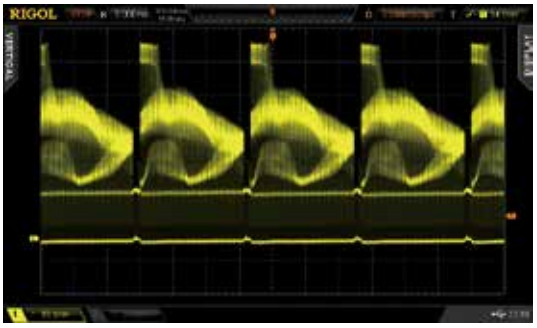


Realtime waveform record, replay, analysis function (std.)

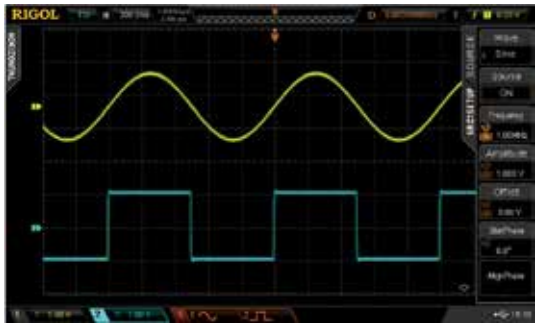
Easy to be grouped and labeled for digital channels



256 level intensity grading display



Built-in 2CH and 25MHz Source (-S model)



Key Specifications

Model	DS2302A MSO2302A	DS2302A-S MSO2302A-S	DS2202A MSO2202A	DS2202A-S MSO2202A-S	DS2102A MSO2102A	DS2102A-S MSO2102A-S	DS2072A MSO2072A	DS2072A-S MSO2072A-S
Analog BW	300MHz		200MHz		100MHz		70MHz	
Analog Channels	2							
Digital Channels	16 (only MSO)							
Sample rate	Analog Channel: Max. 2 GSa/s single channel, 1 GSa/s dual channel; Digital Channel: 1GSa/s(8 CH), 500MSa/s(16 CH)							
Memory Depth	Analog channel: 7Mpts(2 CH) / 14Mpts(1 CH) std.;28Mpts(2 CH) / 56Mpts(1 CH) opt.; Digital channel: 7Mpts(16 CH) / 14Mpts(8 CH) std.;14Mpts(16 CH) / 28Mpts(8 CH) opt.							
Waveform Capture rate	50,000wfms/s							
Timebase Scale	1ns/div to 1000s/div		2ns/div to 1000s/div		5ns/div to 1000s/div			
Input Impedance	Analog channel: (1MΩ±1%) || (16 pF±3 pF) or 50Ω±1.5%; Digital channel: (101kΩ±1%) || (8 pF±2 pF)							
Vertical Scale	Analog channel: 500 uV/div to 10 V/div(1 MΩ); 500 uV/div to 1 V/div(50 Ω); Digital channel: Threshold per set of 8 channels, User-defined threshold range ±20V in 10mV step							
DC Gain Accuracy	±2% full scale							
Waveform Record	Up to 65, 000 Frames							
Std. trigger functions	Edge, Pulse width, Runt, Slope, Video, Pattern, Setup/Hold, RS232/UART,I2C,SPI							
Opt. trigger functions	Windows, Nth Edge, HDTV, Delay, Time Out, Duration, USB, CAN							
Serial Bus decoding	Standard：Parallel Bus (only MSO) ; Optional: RS232/UART, I2C, SPI, CAN							
Math functions	A+B, A-B, A×B, A/B, FFT, Advanced Math, Logic operation							
Auto Measurements	Analog channel: 24 types; Digital channel: 10 types							
Connectivity	USB Host, USB Device, LAN (LXI) , AUX, support USB-GPIB (Opt.)							
Display	8.0 inches WVGA(800X480) LCD display, 256 intensity grading level							

Built in 2CH 25MHz Function/Arb Generator (MSO/DS2xx2A-S)

Channels	Sample Rate	Vertical Resolution	Max. Output Frequency	Amplitude Range	Waveform Length	Output Waveforms
2	200MSa/s	14bits	25MHz	20mVpp-5Vpp (High Z)	16K	Standard Waveforms: Sine, Square, Ramp, Pulse, Noise, DC
						Arbitrary Waveforms: Sinc, ExpRise, ExpFall, ECG, Gauss, Lorentz, Haversine ,User Defined

Ordering Information

	Description	Order Number
Model	DS2072A (70MHz, 2CH Scope)	DS2072A
	DS2072A-S (70MHz, 2CH Scope + 25MHz, 2CH Source)	DS2072A-S
	MSO2072A (70MHz, 2+16 CH MSO)	MSO2072A
	MSO2072A-S (70MHz, 2+16 CH MSO + 25MHz, 2CH Source)	MSO2072A-S
	DS2102A (100MHz, 2CH Scope)	DS2012A
	DS2102A-S (100MHz, 2CH Scope + 25MHz, 2CH Source)	DS2012A-S
	MSO2102A (100MHz, 2+16 CH MSO)	MSO2012A
	MSO2102A-S (100MHz, 2+16 CH MSO + 25MHz, 2CH Source)	MSO2012A-S
	DS2202A (200MHz, 2CH Scope)	DS2022A
	DS2202A-S (200MHz, 2CH Scope + 25MHz, 2CH Source)	DS2022A-S
	MSO2202A (200MHz, 2+16 CH MSO)	MSO2022A
	MSO2202A-S (200MHz, 2+16 CH MSO + 25MHz, 2CH Source)	MSO2022A-S
	DS2302A (300MHz, 2CH Scope)	DS2302A
	DS2302A-S (300MHz, 2CH Scope + 25MHz, 2CH Source)	DS2302A-S
	MSO2302A (300MHz, 2+16 CH MSO)	MSO2302A
	MSO2302A-S (300MHz, 2+16 CH MSO + 25MHz, 2CH Source)	MSO2302A-S
Standard Accessories	2 Passive Probes (350 MHz)	RP3300A
	1 Set LA probe(MSO only)	RPL2316
	USB Cable	CB-USBA-USBB-FF-150
	Power Cord, Quick Guide, Resource CD (User's Guide and Application Software)	-
Deep Memory Option	Analog channel memory Depth upgraded up to 56Mpts Digital channel(MSO) memory Depth upgraded up to 28Mpts	MEM-DS2000
Advanced Trigger Option	Windows, Nth Edge, HDTV, Delay, Time Out, Duration, USB, RS232, I2C, SPI Decoding Kit	AT-DS2000
For probes and optional accessories please refer to "Probes Configuration Guide".		
For decoding options please refer to "Bus Analysis Guide".		

MSO/DS1000Z Series Digital Oscilloscope

UltraVision

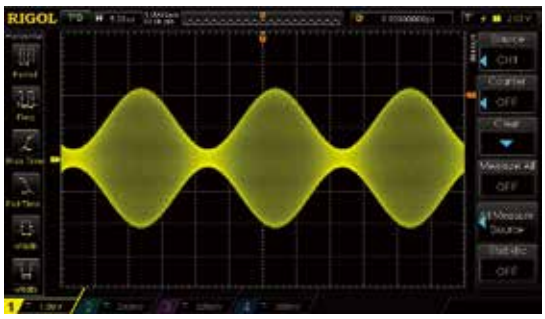
MSO/DS1000Z Series is high performance and economy general oscilloscope which provides bandwidth from 50MHz to 100MHz, up to 1GSa/s sample rate, and 4+16 channels. It is a new four channels mainstream digital scope to meet the customer's applications with RIGOL's innovative technology "UltraVision". It would be an indispensable tools for embedded design and analysis.

- Analog channel Bandwidth: 100MHz, 70MHz, 50MHz
- 4 analog channels, 16 digital channels (MSO)
- Memory depth up to 12 Mpts (standard)/24 Mpts (optional)
- Various trigger and bus decoding functions
- Built-in dual-channel 25 MHz source (-S model)
- Various interfaces: USB, LAN (LXI), AUX, GPIB (optional)

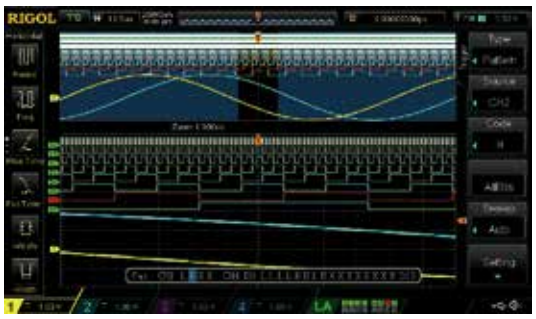
Standard wiht 4 analog channels

Optional Serial Bus trigger and decoding functions

Intensity graded color display

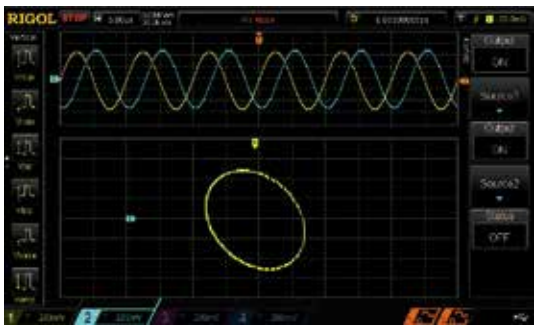


Mixed Signal Analysis with analog and digital channels



Deeper memory(Std.12Mpts,Opt.24Mpts)

Built-in dual-channel 25 MHz source (-S model)



Key Specifications

Model	DS1104Z Plus MSO1104Z	DS1104Z-S Plus MSO1104Z-S	DS1074Z Plus MSO1074Z	DS1074Z-S Plus MSO1074Z-S	DS1054Z
Analog BW	100MHz		70MHz		50MHz
Analog Channels	4				
Digital Channels(MSO)	16				--
Max. Sample rate	Analog Channel:1GSa/s (1 CH),500MSa/s(2 CH),250MSa/s (3/4 CH); Digital Channel:1GSa/s (8 CH),500MSa/s(16 CH				
Max. Memory Depth	Analog Channel: 12Mpts(1 CH), 6Mpts (2 CH), 3Mpts (3/4 CH)Std.; 24Mpts(1 CH), 12Mpts (2 CH), 6MptsV3/4 CH) Opt. Digital Channel: 12Mpts(8 CH) / 6Mpts(16 CH) Std.; 24Mpts(8 CH) / 12Mpts(16 CH) Opt.				
Max. Waveform Capture rate	30,000 wfms/s				
Timebase Scale	5 ns/div to 50 s/div				
Input Impedance	Analog Channel：(1MΩ±2%)||(13 pF±3 pF); Digital Channel：(100kΩ±1%)||(8 pF±3 pF)				
Vertical Scale	Analog Channel：1 mV/div to 10 V/div Digital Channel：Threshold per set of 8 channels, User-defined threshold range ±15V in 10mV step				
DC Gain Accuracy	<10 mV: ±4% full scale ; ≥ 10 mV: ±3% full scale				
Real Time waveform Record and Analysis	Up to 60, 000 Frames(Opt.)				
Std. trigger functions	Edge, Pulse, Slope, Video, Pattern, Duration,				
Opt. trigger functions	Runt, Window, Nth Edge, Delay, Timeout, Setup/Hold, RS232/UART、I2C、SPI				
Serial Bus decoding	Parallel (standard), RS232/UART (option), I2C (option), SPI (option)				
Math functions	A+B,A-B, A×B, A/B, FFT, AND, OR, NOT, XOR, Diff, Intg, Lg, Sqrt				
Auto Measurements	26 types				
Connectivity	USB Host (support USB-GPIB), USB Device, LAN(LXI), AUX (TrigOut/PassFail)				
Display	7.0 inch WVGA(800×480) TFT LCD display,256 intensity grading level				

MSO/DS1xx4Z-S built-in two channels, 25MHz Function/Arbitrary Waveform Generator

Channels	Max. Sample Rate	Vertical Resolution	Max. Frequency	Amplitude Output Range	Waveform Length	Output Waveforms
2	200MSa/s	14bits	25MHz	20mVpp-5Vpp (High Z)	16K	Sine, Square, Pulse, Ramp, Noise, DC

Ordering Information

	Description	Order Number
Model	DS1054Z (50 MHz, 4 analog channels)	DS1054Z
	DS1074Z Plus (70 MHz, 4 analog channels, MSO ready)	DS1074Z Plus
	DS1074Z-S Plus (70 MHz, 4 analog channels, 2-channel 25 MHz signal source, MSO ready)	DS1074Z-S Plus
	MSO1074Z (70 MHz, 4 analog channels, 16 digital channels)	MSO1074Z
	MSO1074Z-S (70 MHz, 4 analog channels, 16 digital channels, 2-channel 25 MHz signal source)	MSO1074Z-S
	DS1104Z Plus (100 MHz, 4 analog channels, MSO ready)	DS1104Z Plus
	DS1104Z-S Plus (100 MHz, 4 analog channels, 2-channel 25 MHz signal source, MSO ready)	DS1104Z-S Plus
	MSO1104Z (100 MHz, 4 analog channels, 16 digital channels)	MSO1104Z
	MSO1104Z-S (100 MHz, 4 analog channels, 16 digital channels, 2-channel 25 MHz signal source)	MSO1104Z-S
Standard Accessories	4 Passive Probes (150 MHz)	RP2200
	1 Set LA probe(MSO only)	RPL1116
	USB Cable	CB-USBA-USBB-FF-150
	Power Cord, Quick Guide	-
Deep Memory Option	Analog channel: 24 Mpts (single channel)/12 Mpts (dual-channel)/6 Mpts (three/four channel); Digital channel: 24 Mpts (8-channel)/12 Mpts (16-channel)	MEM-DS1000Z
Waveform Record Option	This option provides the waveform recording and playback function.	REC-DS1000Z
Advanced Trigger Option	RS232/UART trigger, I2C trigger, SPI trigger, Runt trigger, Window trigger, Nth edge trigger, delay trigger, timeout trigger, Setup/Hold trigger	AT-DS1000Z

For probes and optional accessories please refer to “Probes Configuration Guide”.

For decoding options please refer to “Bus Analysis Guide”.

Ask us about the New Rigol DS4000E Series! 4 Channel 100MHz, 200MHz Oscilloscopes !

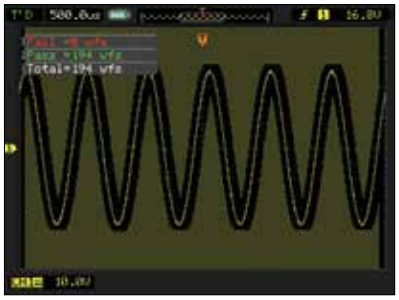
DS1000B Series Digital Oscilloscope

DS1000B series products are four-channel plus an external trigger oscilloscopes which can capture multi-channel signals at the same time to meet the industrial needs.

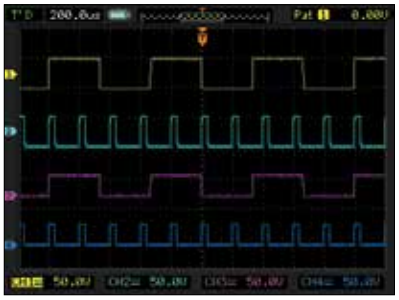
- Four analog channels
- 2GSa/s real-time sample rate
- Abundant trigger types: edge, video, pulse width, alternate and pattern trigger
- Waveform record and playback
- Standard with Pass/Fail test function
- Standard interfaces: USB Host & Device, LAN(LXI), support PictBridge

4 independent analog signals channels

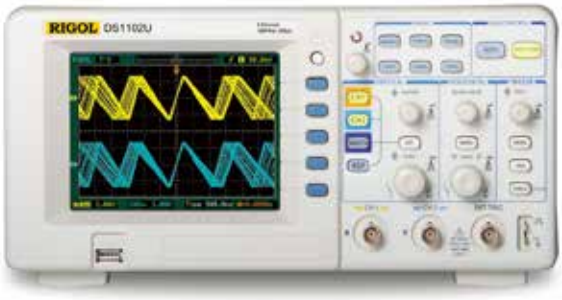
Standard with Pass/Fail test



Advanced pattern trigger



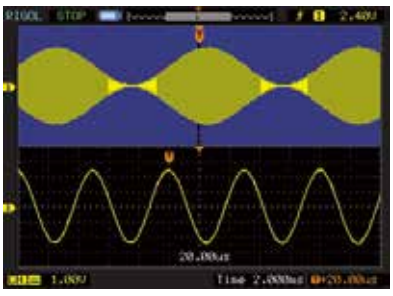
DS1000D/E/U Series Digital Oscilloscope



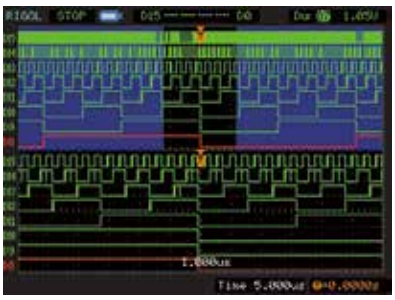
DS1000D/E/U series are the high-performance, economic digital oscilloscopes. They are widely used in the areas of education, training, production line, research and development. DS1000D series provide 2 analog channels plus 16 logic channels to meet mixed signal debug.

- 1GSa/s maximum real-time sample rate
- Up to 1Mpts Memory depth (except U series)
- Abundant trigger types: edge, pulse width, slope, video, alternate, pattern (DS1000D) and duration (DS1000D)
- Standard with Pass/Fail test
- Compact and portable

1 Mpts memory depth



Abundant trigger types



Provide digital logic analysis function (DS1000D)

Key Specifications

Model	DS1204B	DS1104B	DS1074B	DS1102E/D	DS1052E/D	DS1102U	DS1072U
Bandwidth	200MHz	100MHz	70MHz	100MHz	50MHz	100MHz	70MHz
Channels	4 + EXT			2 + EXT (DS1000D plus 16 digital channels)			
Real-time Sample Rate	2GSa/s (half channel), 1GSa/s (each channel)			1GSa/s single channel, 500MSa/s dual- channel			500MSa/s
Memory Depth	16kpts (half channel), 8kpts (each channel)			Max. 1Mpts		Max. 16kpts	512kpts
Timebase Range	1ns/div-50s/div	2ns/div-50s/div	5ns/div-50s/div	2ns/div-50s/div	5ns/div-50s/div		
Input Impedance	1MΩ‖18pF			1MΩ‖15pF			
Vertical Scale	2mV/div-10V/div						
Rise Time	<1.75ns	<3.5ns	<5ns	<3.5ns	<7ns	<3.5ns	<5.8ns
Trigger Types	edge, pulse width, slope, video, alternate			edge, pulse width, slope, video, alternate, pattern (DS1000D) and duration (DS1000D)			

Logic analysis specification for DS1xx2D Mix-signal oscilloscope

Channels	Sample Rate	Memory Depth	Trigger Types	Threshold Level
16	200MSa/s per channel	512k per channel	pattern and duration	TTL=1.4V, CMOS=2.5V, ECL=-1.3V, USER= -8V ~ +8V

Ordering Information

	Description	Order Number
Model	DS1102E (100MHz, 1Mpts, 2CH)	DS1102E
	DS1052E (50MHz, 1Mpts, 2CH)	DS1052E
	DS1102U (100MHz, 16kpts, 2CH)	DS1102U
	DS1072U (70MHz, 512kpts, 2CH)	DS1072U
	DS1102D (100MHz, 2+16 CH)	DS1102D
	DS1052D (50MHz, 2+16 CH)	DS1052D
	DS1204B (200MHz, 4CH)	DS1204B
	DS1104B (100MHz, 4CH)	DS1104B
	DS1074B (70MHz, 4CH)	DS1074B
Standard Accessories	1 passive probe (150 MHz) for each analog channel	RP2200
	DS1204B standard with 350Mz 10x passive probes	RP3300A
	1 Set LA probe (DS1000D only)	LA Module
	Power Cord	-
	Quick Guide	-

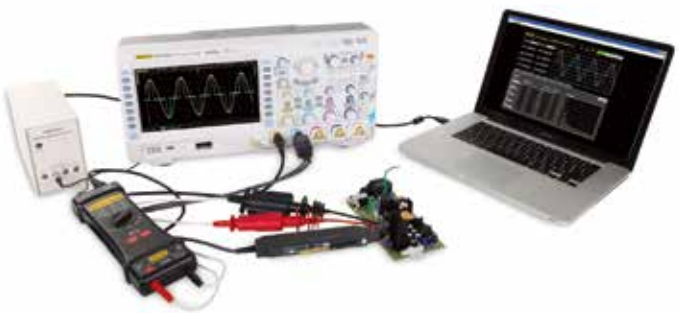
Bus Analysis Guide

Serial bus like I2C, SPI, UART/RS232, USB are widely used in electronic and telecom products as well as other embedded devices. RIGOL mainstream oscilloscope provides common used bus analysis functions. The scope can trigger the at start frame, end frame, specific address and/or data, as well as error frame. Also, the scope can finish bus decoding functions which can help users to discover errors, debug hardware and accelerate development easily, so as to guarantee quick and high–quality accomplishment of projects.

Main Units and Options	Number of Decoding Buses	Bus Analysis channels	I2C		SPI		RS232/UART		CAN		LIN		FlexRay	
			Trigger	Decode	Trigger	Decode	Trigger	Decode	Trigger	Decode	Trigger	Decode	Trigger	Decode
DS6000 Series	2	Analog	●		●		●		●				●	
SD-I2C/SPI-DS6000				○		○								
SD-RS232-SD6000								○						
SD-CAN-DS6000										○				
SD-FlexRay-DS6000														○
MSO/DS4000 Series	2	Analog or Digital	●		●		●		●		●		●	
SD-I2C/SPI-DS4000				○		○								
SD-RS232-SD4000								○						
SD-AUTO-DS4000										○		○		
SD-FlexRay-DS4000														○
MSO/DS2000A Series	2	Analog or Digital	●		●		●							
SD-DS2000				○		○		○						
CAN-DS2000									○	○				
MSO/DS1000Z Series	2	Analog or Digital												
AT-DS1000Z			○		○		○							
SA-DS1000Z			○	○	○	○	○	○						

● Standard function ○ Options

Power Measurement and Analysis



Power supply is an important component of electronic devices. The quality of power supply will have direct influences on the electronic devices. During the design and manufacture of power supply, performance testing becomes more and more important.

Ultra Power Analyzer is a power measurement and analysis software. The software along with RIGOL DS6000/MSO4000/DS4000/MSO2000A/DS2000A series digital oscilloscope, high voltage differential probe, current probe, probe deskew fixture, and passive probe, form a complete power measurement system for power supply design and testing. It can analyze switching power supply efficiency and reliability.

- Power quality analysis
- Current harmonics analysis
- Inrush current analysis
- Power device analysis
- Safe operating area analysis
- Modulation analysis
- Output analysis

Power quality analysis

Safe operating area analysis

Power device switching loss analysis

Output ripple analysis

Recommended Configuration

	Description	Order Number
Scope	DS6000, MSO/DS4000, MSO/DS2000A Series	
Probes	High Voltage Differential Probe (depend on bandwidth and voltage range in practical application)	RP1000D Series
	Current probe (depend on bandwidth and current range in practical application)	RP1000C Series
PC Software	Ultra Power Analyzer	UPA-DS
Other Accessories	T2R1000 probe adapter (convert TekProbe to RIGOL standard BNC connector)	T2R1000

Common Used Probes

RP1000D High Voltage Differential Probe

RP1003C/04C Current Probe

RP7150 Differential Probe

RP1001C/02C Current Probe

RP1018H High Voltage Probe

RP7080S Single ended Probe

Probes Configuration Guide

		DS6000	MSO/DS4000	MSO/DS2000A	MSO/DS1000Z	DS1000E/U/B	DS1000D
RP7150	1.5GHz Differential/Single ended Probe, 30Vp, CATI	●	●				
RP7150S	1.5GHz Single ended Probe, 30Vp, CATI	●	●				
RP7080	800MHz Differential/Single ended Probe, 30Vp, CATI	●	●				
RP7080S	800MHz Single ended Probe, 30Vp, CATI	●	●				
RP6150A	1.5GHz Low Z Probe	●	●				
RP5600A	600MHz High Z Probe	●	●				
RP3500A	500MHz High Z Probe	○	●	●	●	●	●
RP3300A	350MHz High Z Probe	○	○	●	●	●	●
RP2200A	150MHz High Z Probe, 10X:1X	○	○	○	●	●	●
RP1300H	High Voltage Probe, DC-300MHz, 2000V CATI, 1500V CATII (DC+AC)	●	●	●	●	●	●
RP1010H	High Voltage Probe, DC-50MHz, DC：10KV, AC：Pulse≤ 20KVpp, Sine≤ 7KVrms	●	●	●	●	●	●
RP1018H	High Voltage Probe, DC-150MHz, DC+AC：18KVp CATII, AC：12KVrms CATII	●	●	●	●	●	●
RP1025D	High Voltage Differential Probe, DC-25MHz, Vmax ≤ 1400Vpp	●	●	●	●	●	●
RP1050D	High Voltage Differential Probe, DC-50MHz, Vmax ≤ 7000Vpp	●	●	●	●	●	●
RP1025D	High Voltage Differential Probe, DC-100MHz, Vmax ≤ 7000Vpp	●	●	●	●	●	●
RP1001C	Current Probe, DC-300KHz, DC: ±100A, AC: 200App,70Arms	●	●	●	●	●	●
RP1002C	Current Probe, DC-1MHz, DC: ±70A, AC: 140App, 50Arms	●	●	●	●	●	●
RP1003C	Current Probe, DC-50MHz, Max. AC Peak: 50A (Non-continuous), 30Arms. Must order power supply RP1000P.	●	●	●	●	●	●
RP1004C	Current Probe, DC-100MHz, Max. AC Peak: 50A (Non-continuous), 30Arms. Must order power supply RP1000P.	●	●	●	●	●	●
RP1005C	Current Probe, DC-10MHz, Max.150 Arms, 300 A peak (Non-continuous), 500 A peak (@pulse width <=30 ms). Must order power supply RP1000P.	●	●	●	●	●	●
RPL2316	16-channel logic analysis probe		●	●			
RPL1116	16-channel logic analysis probe				●		
LA module	DS1000D logic analysis probe: one data cable, one logic probe, 20 test clips, 20 test leads.						●
T2R1000	Tekprobe Probe Adapter	●	●				
RM-DSxxxx	Rack Mount Kit	●	●	●	●		
USB-GPIB	USB to GPIB Module	●	●	●	●	●	●
ARM	Desk Mount Instrument Arm	●					
BAT	11.1 V, 147 Wh Lithium Battery Set	●					

Spectrum Analyzer

Ask Instruments 4 Engineers about our EMC Pre-compliance Test Sets!

DSA800 Series spectrum analyzers are compact and light with high performance and specification. There are three selectable frequencies: 7.5GHz, 3.2GHz and 1.5GHz, and each of them provides “-TG” model.The digital IF technology guarantees its reliability and performance to meet the most demanding RF applications.

DSA1000 series is a portable spectrum analyzer with small size and light weight and its outstanding performance can satisfy most of radio frequency applications. The frequency range is from 9 kHz to 3 GHz and the “-TG” model provides 3GHz tracking generator. The digital IF technology enables exceptional system performance and stability. In addition, the wide-screen display, innovative parameter icon layout and user-friendly designs ensure easy and fast spectrum measurement.

	Frequency Range				Min.RBW	Phase Noise (10KHz offset)	Software Options			Hardware Options	
	1.5GHz	3GHz	3.2GHz	7.5GHz			Advanced Meas	EMI test	VSWR test	Tracking generator	Preamplifier (factory installed)
DSA815/-TG	●				100Hz	-80dBc/Hz	○	○	○	-TG model	Built-in
DSA832/-TG			●		10Hz	-98dBc/Hz	○	○	○	-TG model	PA-DSA832
DSA875/-TG				●	10Hz	-98dBc/Hz	○	○	○	-TG model	PA-DSA875
DSA1030A/-TG		●			10Hz	-88dBc/Hz	●	●		-TG model	Built-in
DSA1030/-TG		●			100Hz	-80dBc/Hz	○	●		-TG model	PA-DSA1030

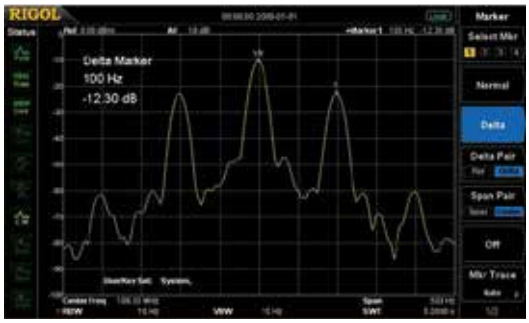
● Standard function
○ Options

DSA800 Series Spectrum Analyze

DSA800 Series spectrum analyzers are compact and light with high performance and specification. There are three selectable frequencies: 7.5GHz, 3.2GHz and 1.5GHz, and each of them provides “-TG” model. The digital IF technology guarantees its reliability and performance to meet the most demanding RF applications.

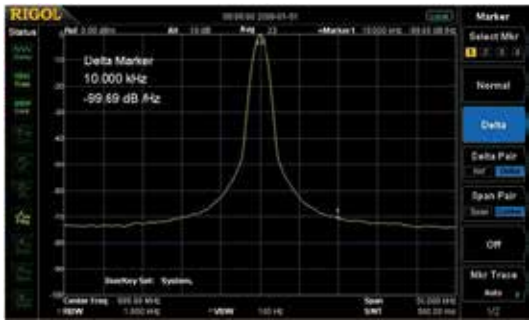
- 10 Hz Minimum Resolution Bandwidth (100Hz for DSA815)
- Min. -161 dBm Displayed Average Noise Level
- Min. < -98 dBc/Hz @ 10 kHz Offset Phase Noise
- EMI Filter & Quasi-Peak Detector Kit (Opt.)
- VSWR Measurement Kit (Opt.)
- Powerful DSA PC software

Distinguish the two nearby signals clearly with the 10 Hz RBW

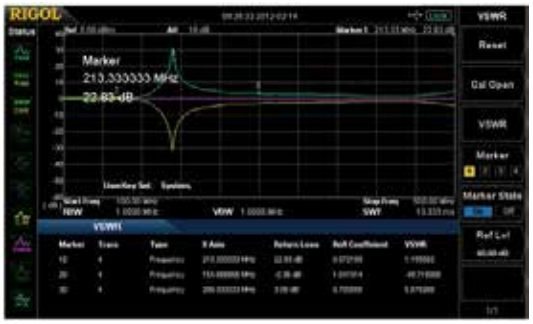


EMI kit (EMI flter & Quasi-peak & Pass/Fail)

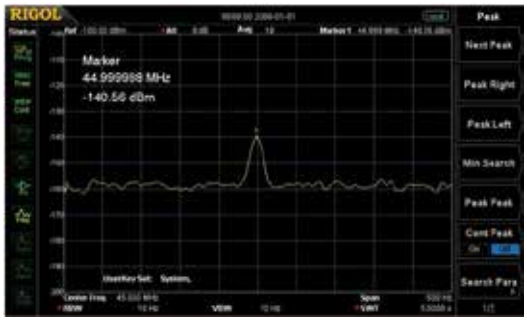
Phase noise < -98 dBc/Hz @10 kHz offset



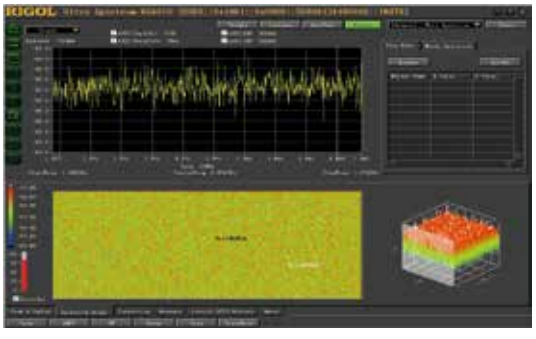
VSWR measurement



Measure lower level signal with the preamplifer turn on



Powerful DSA PC software



Key Specifications

	DSA815	DSA832	DSA875
Frequency range	9kHz - 1.5GHz	9kHz - 3.2GHz	9kHz - 7.5GHz
Frequency resolution	1Hz		
Aging rate	< 2ppm/year	< 1ppm/ year	
SSB Phase Noise（f_c=1GHz）	<-80dBc/Hz@10kHz offset	<-98dBc/Hz@10kHz offset	
	<-100dBc/Hz@100kHz offset（typ.）	<-100dBc/Hz@100kHz offset（typ.）	
Resolution bandwidth（-3dB）	100 Hz ~ 1MHz; 1-3-10 step	10Hz ~ 1MHz; 1-3-10 step	
Resolution bandwidth（-6dB）	200Hz, 9kHz, 120KHz（EMI-DSA800 option）		
Video bandwidth（-3dB）	1 Hz ~ 3MHz, 1-3-10 step		
Displayed Average Noise Level（DANL）	PA on, RBW=VBW=100Hz, sample detector,trace average≥ 50, tracking generator off, normalized to 1Hz		
100KHz-1MHz	< -130dBm, < -150dBm (typ.)	< -152dBm, < -155dBm (typ.)	< -152dBm, < -155dBm (typ.)
1MHz-5MHz	< -150dBm, < -155dBm (typ.)		
5MHz-1.5GHz		< -157dBm, < -161dBm (typ.)	< -157dBm, < -161dBm (typ.)
1.5GHz-3.2Ghz			
3.2GHz-6GHz			< -153dBm, < -157dBm (typ.)
6GHz-7.5GHz			< -148dBm, < -152dBm (typ.)
Level measurement uncertainty	<1.5dB (nom.)	< 0.8dB (nom.)	
TG Frequency range（-TG model）	100kHz ~ 1.5GHz	100kHz ~ 3.2GHz	100kHz ~ 7.5GHz
TG Output level range（-TG model）	-20dBm ~ 0dBm	-40dBm ~ 0dBm	
TG Output level resolution （-TG model）	1dB		
Interfaces	LAN（LXI）, USB, USB-GPIB（option）		

Ordering Information

	Description	Order Number
Model	Spectrum analyzer, 9 kHz to 1.5 GHz (with preamplifer)	DSA815
	Spectrum analyzer, 9 kHz to 1.5 GHz (with preamplifer, with tracking generator, factory installed)	DSA815-TG
	Spectrum analyzer, 9 kHz to 3.2 GHz	DSA832
	Spectrum analyzer, 9 kHz to 3.2 GHz (with tracking generator, factory installed)	DSA832-TG
	Spectrum analyzer, 9 kHz to 7.5 GHz	DSA875
	Spectrum analyzer, 9 kHz to 7.5 GHz (with tracking generator, factory installed)	DSA875-TG
Standard accessories	Quick guide (hard copy)	-
	CDROM (user's guide, programming guide for DSA875/-TG DSA832/-TG)	-
	Power cable	-
Options	Preamplifer, 100 kHz to 3.2 GHz (only for DSA832)	PA-DSA832
	Preamplifer, 100 kHz to 7.5 GHz (only for DSA875)	PA-DSA875
	EMI filter & quasi-peak detector	EMI-DSA800
	Advanced measurement kit	AMK-DSA800
	VSWR measurement kit	VSWR-DSA800
	DSA PC software	Ultra Spectrum
For other optinal accessories refers to the RF accessories selection table.		

Ask Us About Current Specials on the Rigol Spectrum Analysers! +44 (0) 161 871 7450

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New Website Coming Soon!

- All-Digital IF Technology
- Frequency Range from 9 kHz to 3.2 GHz
- Min. -148 dBm Displayed Average Noise Level (Typ.)
- Min. <-90 dBc/Hz @ 10 kHz Offset Phase Noise
- Level Measurement Uncertainty <1.0 dB
- 10 Hz Minimum Resolution Bandwidth
- Up to 3.2 GHz Tracking Generator (DSA832E-TG)
- Optional Preamplifier
- Advanced Measurement Functions (Opt.)
- EMI Filter & Quasi-Peak Detector Kit (Opt.)
- VSWR Measurement Kit (Opt.)
- PC Software (Opt.)
- Optional RF TX/RX Training Kit
- Optional RF Accessories (Cable, Adaptor, Attenuator, Bridge ...)
- Complete Connectivity: LAN (LXI), USB Host & Device, GPIB (Opt.)
- 8 Inch WVGA (800×480) Display
- Compact Size, Light Weight Design

DSA800E Series Spectrum Analyzer

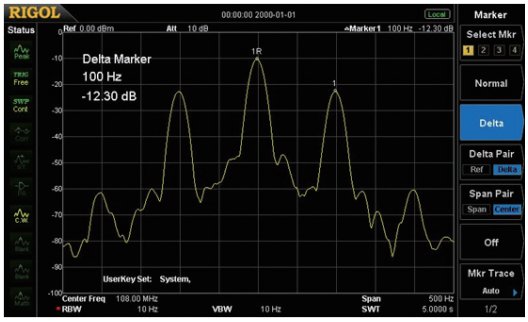
Product Dimensions: Width × Height × Depth = 361.6 mm × 178.8 mm × 128 mm

➤ Benefits of Rigol's all digital IF design

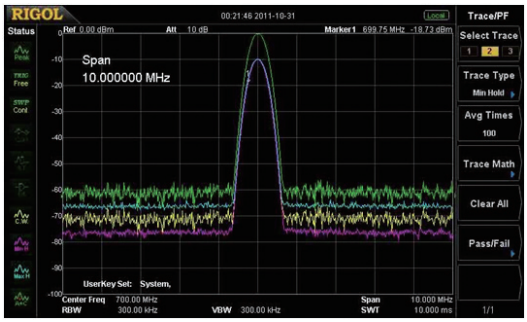
- The ability to measure smaller signals: on the basis of this technology, the IF filter enables smaller bandwidth settings, which greatly reduce the displayed average noise level.
- The ability to distinguish between small signals by frequency: using the IF filter with the smallest bandwidth setting, it is possible to make out signals with a frequency difference of only 10 Hz.
- High precision amplitude readings: this technology almost eliminates the errors generated by filter switching, reference level uncertainty, scale distortion, as well as errors produced in the process of switching between logarithmic and linear display of amplitude when using a traditional analog IF design.
- Higher reliability: compared with traditional analog designs, the digital IF greatly reduces the complexity of the hardware, the system instability caused by channel aging, and the temperature sensitivity that can contribute to parts failure.
- High measurement speed: the use of digital IF technology improves the bandwidth precision and selectivity of the filter, minimizing the scanning time and improving the speed of the measurement.

Features and Benefits

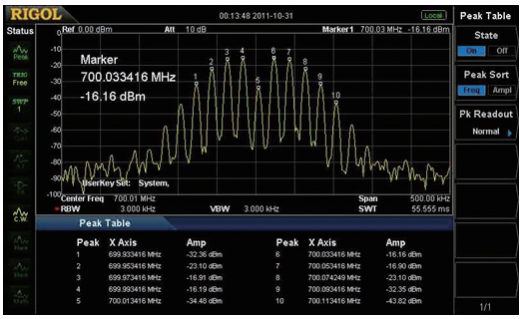
Distinguish the two nearby signals clearly with the 10 Hz RBW



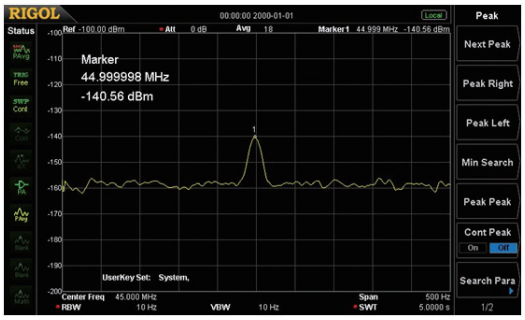
Compare the spectrums with different color trace



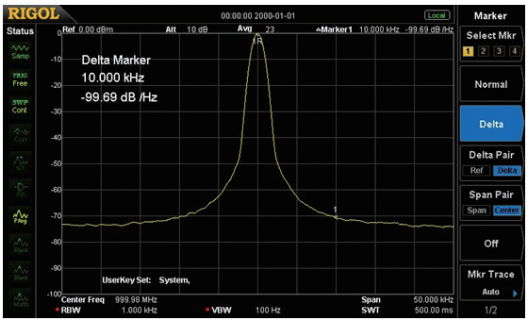
Readout the spectrum peak values with the peak table function



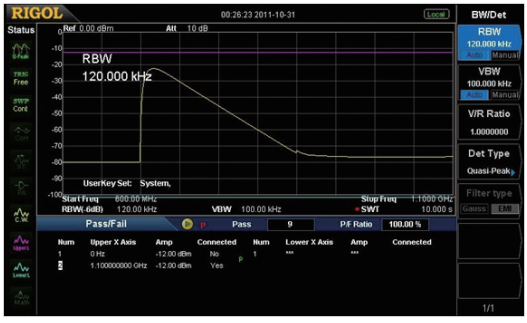
Measure lower level signal with the preamplifier turn on



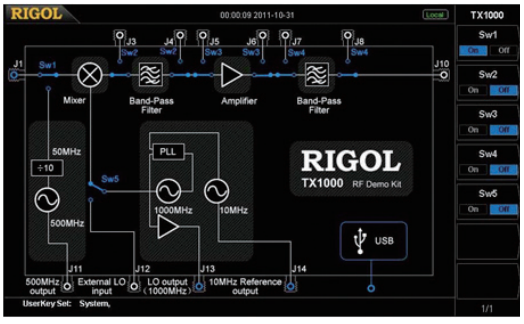
Phase noise < -90 dBc/Hz @10 kHz offset



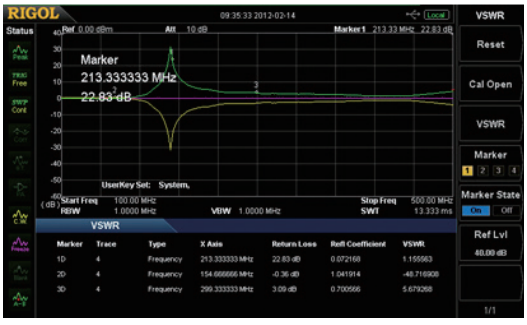
EMI kit (EMI filter & Quasi-peak & Pass/Fail)



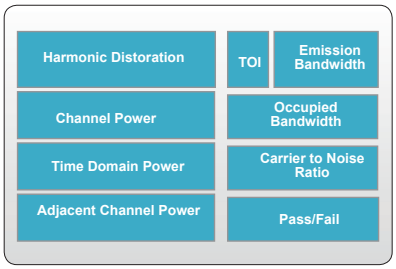
The GUI to control the RF demo kit (Transmitter) directly



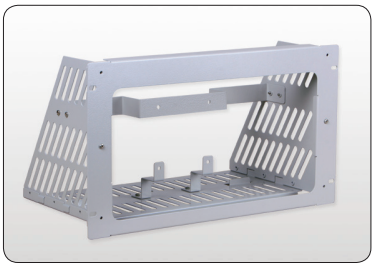
VSWR measurement



► RIGOL Spectrum Analyzer Option and Accessory

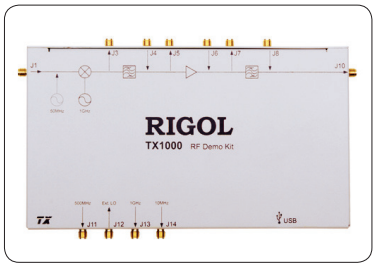


Advanced Measurement Kit
(AMK–DSA800)

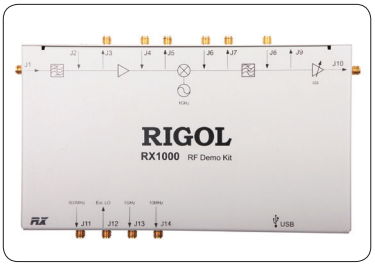


Rack Mount Kit
(RM–DSA800)

VSWR Bridge
(VB1020/VB1032/VB1040/VB1080)



RF Demo Kit
(TX1000)



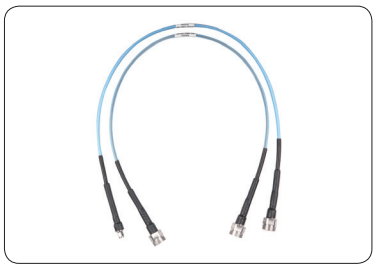
RF Demo Kit
(RX1000)

RF CATV Kit

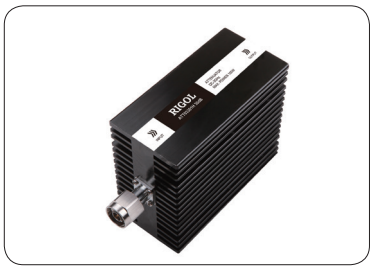
DSA Utility Kit

RF Adaptor Kit

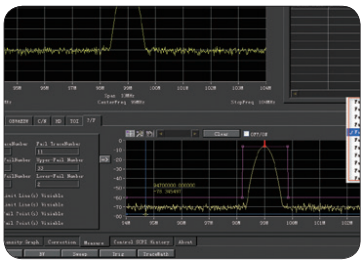
RF Attenuator Kit



RF Cable Kit
(CB-NM-NM-75-L-12G)
(CB-NM-SMAM-75-L-12G)

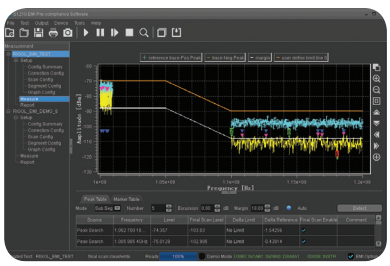


High Power Attenuator
(ATT03301H)



DSA PC Software
(Ultra Spectrum)

USB to GPIB Converter
(USB-GPIB)



EMI Pre-compliance Test Software
(S1210 EMI Pre-compliance Software)

Near Field Probe
(NFP-3)

▶ Specifications

Specifications are valid under the following conditions: the instrument is within the calibration period, is stored for at least two hours at 0 ℃ to 50 ℃ temperature, and is warmed up for 40 minutes. Unless otherwise noted, the specifications in this manual include the measurement uncertainty.

Typical (typ.): characteristic performance, which 80 percent of the measurement results will meet at room temperature (approximately 25℃). This data is not warranted and does not include the measurement uncertainty.

Nominal (nom.): the expected mean or average performance or a designed attribute (such as the 50Ω connector). This data is not warranted and is measured at room temperature (approximately 25℃).

Measured (meas.): an attribute measured during the design phase which can be compared to the expected performance, such as the amplitude drift variation with time. This data is not warranted and is measured at room temperature (approximately 25℃).

NOTE: All charts in this manual are the measurement results of multiple instruments at room temperature unless otherwise noted. The specifications (except the TG specifications) listed in this manual are those when the tracking generator is off.

Frequency

Frequency		
	DSA832E	
Frequency range	9 kHz to 3.2 GHz	
Frequency resolution	1 Hz	

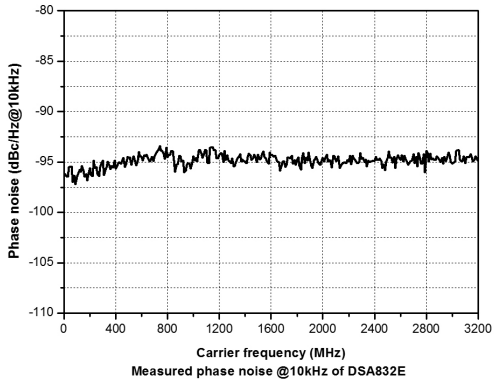
Internal Reference Frequency		
Reference frequency	10 MHz	
Accuracy	±[(time since last calibration × aging rate) + temperature stability + calibration accuracy]	
Initial calibration accuracy	<1 ppm	
Temperature stability	0℃ to 50℃ , reference to 25℃	
	<1 ppm	
Aging rate	<2 ppm/year	

Frequency Readout Accuracy		
Marker resolution	span/ (number of sweep points - 1)	
Marker uncertainty	±(frequency indication × reference frequency accuracy + 1% × span + 10% × resolution bandwidth + marker resolution)	

Frequency Counter		
Resolution	1 Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz	
Uncertainty	±(frequency indication × reference frequency accuracy + counter resolution)	

Frequency Span		
Range	0 Hz, 100 Hz to maximum frequency of instrument	
Uncertainty	±span/ (number of sweep points - 1)	

SSB Phase Noise		
	20℃ to 30℃ , f_c = 1 GHz	
Carrier offset	10 kHz offset	<-90 dBc/Hz



Measured phase noise @10kHz of DSA832E

Residual FM	
	20℃ to 30℃ , RBW = VBW = 1 kHz
Residual FM	<20 Hz (nom.)

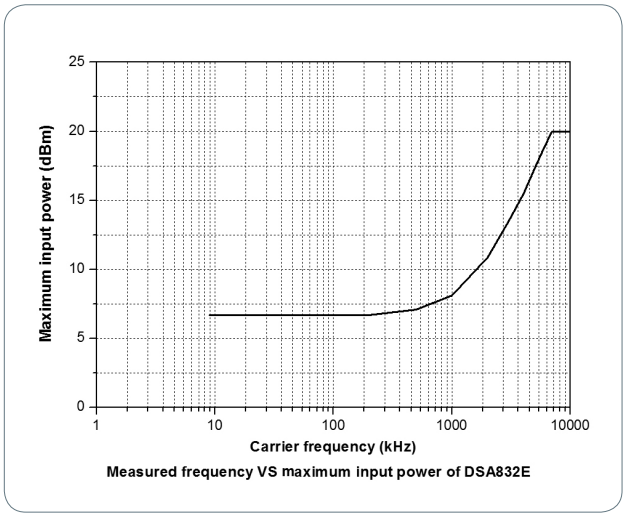
Bandwidths	
	Set "Auto SWT" to "Accy"
Resolution bandwidth (-3 dB)	10 Hz to 1 MHz, in 1-3-10 sequence
RBW uncertainty	<5% (nom.)
Resolution filter shape factor (60 dB : 3 dB)	<5 (nom.)
Video bandwidth (-3 dB)	1 Hz to 3 MHz, in 1-3-10 sequence
Resolution bandwidth (-6 dB) (EMI-DSA800 option)	200 Hz, 9 kHz, 120 kHz

Amplitude

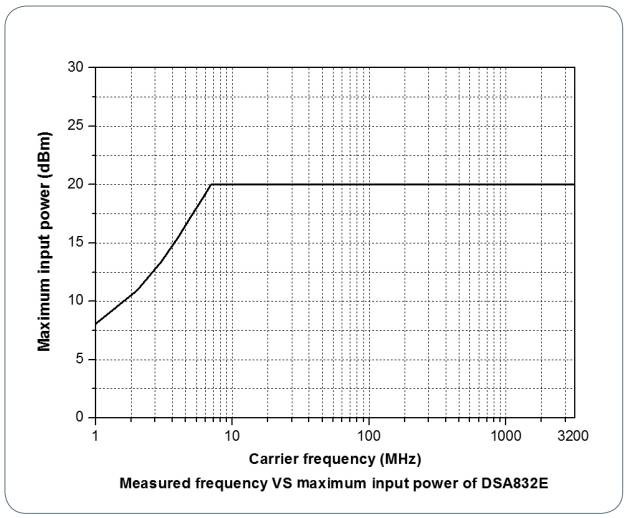
Measurement Range	
Range	f_c ≥ 10 MHz
	DANL to +20 dBm

Maximum Input Level	
DC voltage	50 V
CW RF power	attenuation = 30 dB
	+20 dBm (100 mW)
Max. damage level[1]	+30 dBm (1 W)

NOTE: [1] When f_c ≥ 10 MHz, input level > +25 dBm and PA is Off, the protection switch will be on.

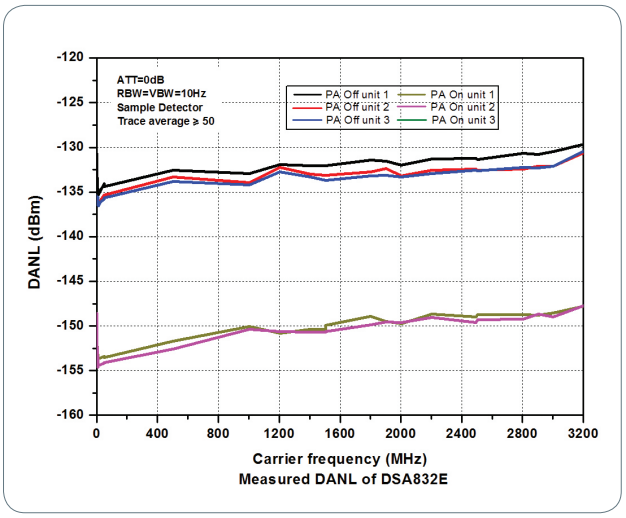


Measured frequency VS maximum input power of DSA832E



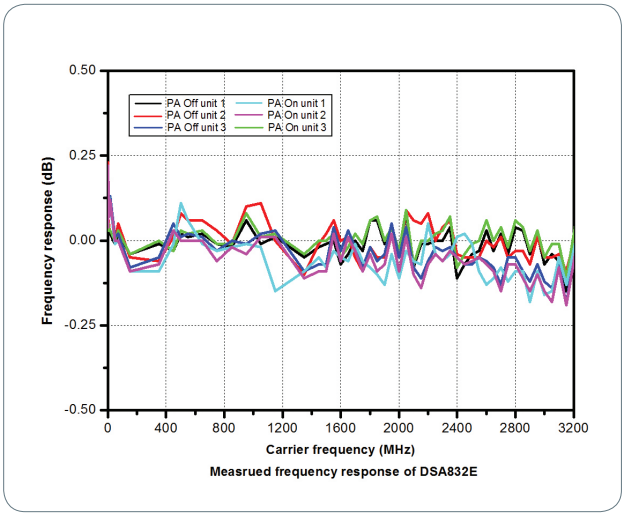
Measured frequency VS maximum input power of DSA832E

Displayed Average Noise Level (DANL)		
	attenuation = 0 dB, RBW = VBW = 10 Hz, sample detector, trace average ≥ 50, tracking generator off, 20℃ to 30℃ , input impendence = 50 Ω	
PA off	9 kHz to 100 kHz	<-110 dBm (typ.)
	100 kHz to 5 MHz	<-122 dBm, <-125 dBm (typ.)
	5 MHz to 3.2 GHz	<-127 dBm, <-130 dBm (typ.)
PA on	100 kHz to 1 MHz	<-142 dBm (typ.)
	1 MHz to 5 MHz	<-140 dBm, <-143 dBm (typ.)
	5 MHz to 3.2 GHz	<-145 dBm, <-148 dBm (typ.)

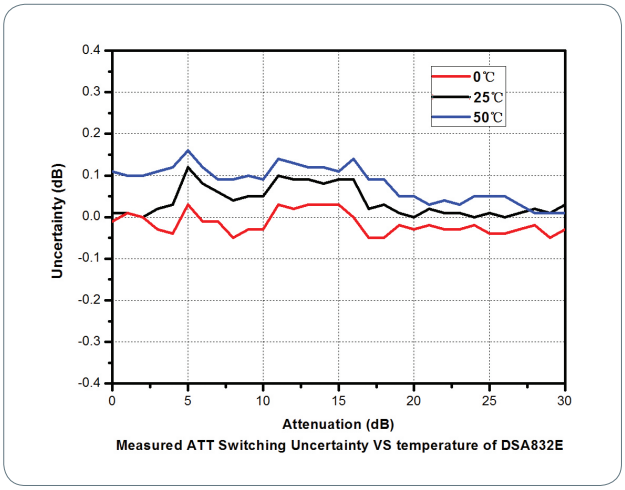


Level Display		
Logarithmic level axis	1 dB to 200 dB	
Linear level axis	0 to reference level	
Number of display points	601	
Number of traces	3 + math trace	
Trace detectors	normal, positive-peak, negative-peak, sample, RMS, voltage average	
	quasi-peak (with EMI-DSA800 option)	
Trace functions	clear write, max hold, min hold, average, view, blank	
Units of level axis	dBm, dBmV, dBµV, nV, µV, mV, V, nW, µW, mW, W	

Frequency Response		
	$f_c \geq$ 100 kHz, attenuation = 10 dB, relative to 50 MHz, 20℃ to 30℃	
PA off	100 kHz to 3.2 GHz	<0.7 dB
	$f_c \geq$ 1MHz, attenuation = 10 dB, relative to 50 MHz, 20℃ to 30℃	
PA on	100 kHz to 3.2 GHz	<1.0 dB



Input Attenuation Switching Uncertainty	
Setting range	0 dB to 30 dB, in 1 dB step
Switching uncertainty	f_c = 50 MHz, relative to 10 dB, 20℃ to 30℃
	<0.3 dB



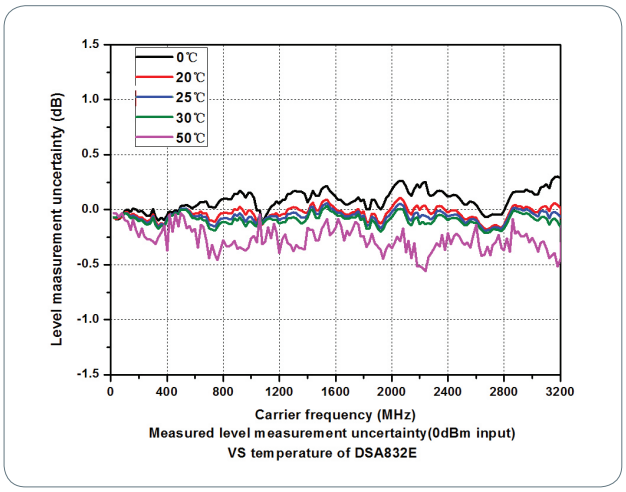
Absolute Amplitude Uncertainty		
Uncertainty	f_c = 50 MHz, peak detector, preamplifier off, attenuation = 10 dB, input signal level = -10dBm, 20℃ to 30℃	
	<0.3 dB	

RBW Switching Uncertainty		
Uncertainty	relative to 1 kHz RBW	
	<0.1 dB	

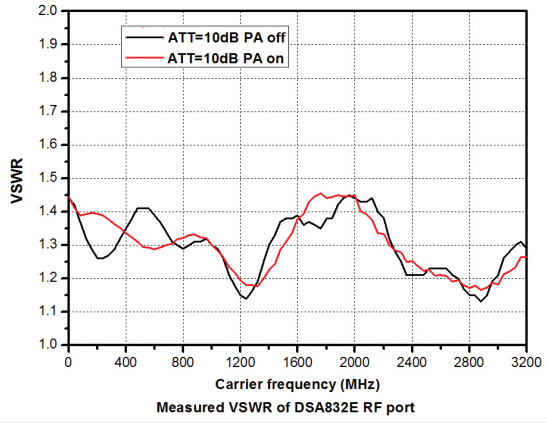
Reference Level		
Range	-100 dBm to +20 dBm, in 1 dB step	
Resolution	log scale	0.01 dB
	linear scale	4 digits

Preamplifier		
	PA-DSA832 (option)	
Gain	100 kHz to 3.2 GHz	17 dB (nom.)

Level Measurement Uncertainty	
	95% confidence level, S/N > 20 dB, RBW = VBW = 1 kHz, preamplifier off, attenuation = 10 dB, -50 dBm < input level ≤ 0 dBm, f_c > 10 MHz, 20℃ to 30℃
Level measurement uncertainty	<1.0 dB (nom.)



RF Input VSWR		
	attenuation ≥ 10 dB	
VSWR	300 kHz to 3.2 GHz	<1.5 (nom.)



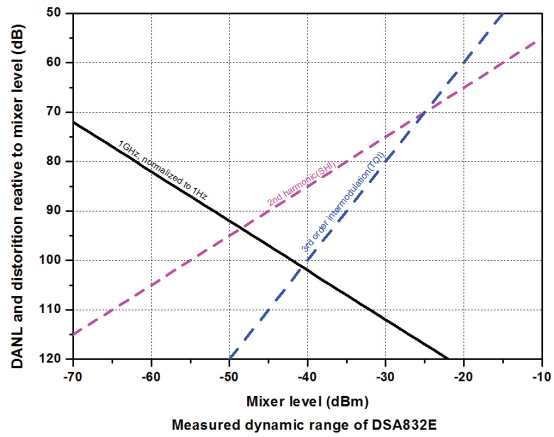
Measured VSWR of DSA832E RF port

Distortion

Second Harmonic Intercept	
Second harmonic intercept (SHI)	f_c ≥ 50 MHz, input signal level = -20 dBm, attenuation = 10 dB
	+40 dBm

Third-order Intercept	
Third-order intercept (TOI)	f_c ≥ 50 MHz, two -20 dBm tones at input mixer spaced by 200 kHz, attenuation = 10 dB
	+7 dBm

1dB Gain Compression	
1dB compression of input mixer (P_{1dB})	f_c ≥ 50 MHz, attenuation = 0 dB
	>0 dBm



Measured dynamic range of DSA832E

Spurious Response		
Spurious response, inherent	input terminated 50 Ω, attenuation = 0 dB, 20℃ to 30℃	
	<-90 dBm[2], <-100 dBm (typ.)	
Intermediate frequency	<-60 dBc	
System related sidebands	referenced to local oscillators, referenced to A/D conversion, referenced to subharmonic of first LO, referenced to harmonic of first LO	
	<-60 dBc	
Input related spurious	mixer level = -30dBm	
	<-60 dBc	

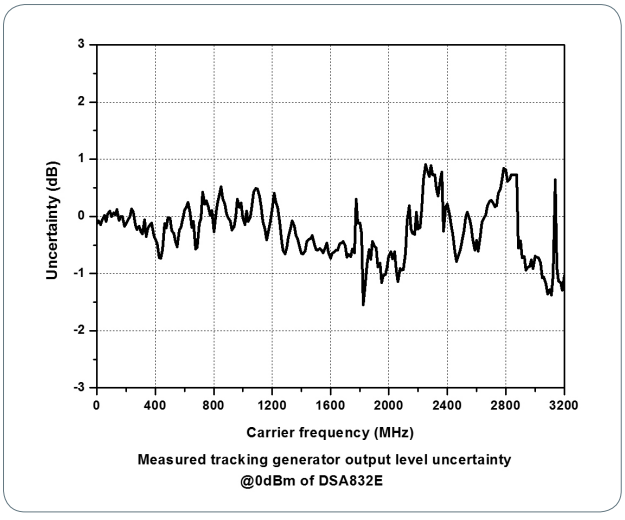
NOTE: [2] Except the internal local oscillator (1820 MHz) and its harmonics.

Sweep

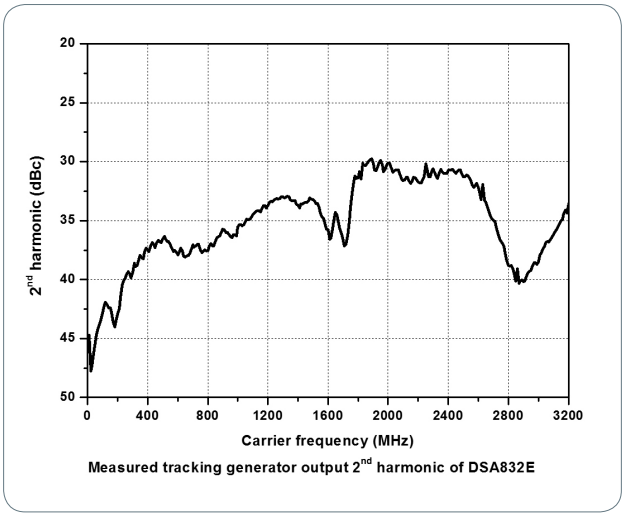
Sweep		
Sweep time	span ≥ 100 Hz	1 ms to 3200 s
	zero span	20 μs to 3200 s
Sweep time uncertainty	span ≥ 100 Hz	5% (nom.)
	zero span (sweep time setting value > 1 ms)	5% (nom.)
Sweep mode		continuous, single

Tracking Generator (Option)

TG Output	
Frequency range	100 kHz to 3.2 GHz
Output level range	-40 dBm to 0 dBm
Output level resolution	1 dB
Output flatness	relative to 50 MHz
	±3 dB (nom.)



Measured tracking generator output level uncertainty @0dBm of DSA832E



Measured tracking generator output 2nd harmonic of DSA832E

Trigger

Trigger	
Trigger source	Trigger source
External trigger level	External trigger level

Input /Output

Front Panel Connectors		
RF input	impedance	50 Ω (nom.)
	connector	N female
Tracking generator output	impedance	50 Ω (nom.)
	connector	N female

Internal/ External Reference		
Internal reference	frequency	10 MHz
	output level	+3 dBm to +10 dBm, +8 dBm (typ.)
	impedance	50 Ω (nom.)
	connector	BNC female
External reference	frequency	10 MHz ± 5 ppm
	input level	0 dBm to +10 dBm
	impedance	50 Ω (nom.)
	connector	BNC female

External Trigger Input		
External trigger input	impedance	1 kΩ (nom.)
	connector	BNC female

Communication Interface		
USB host	connector	A plug
	protocol	version2.0
USB device	connector	B plug
	protocol	version2.0
LAN	LXI core 2011 device	10/100Base, RJ-45
IEC/IEEE (GPIB) bus (USB-GPIB option)		IEEE488.2

General Specifications

Display	
Type	TFT LCD
Resolution	800 x 480 pixels
Size	8 inch
Colors	64k

Printer Supported	
Protocol	PictBridge

Mass Memory	
Mass memory	flash disk (internal), USB storage device (not supplied)

Power Supply	
Input voltage range, AC	100 V to 240 V (nom.)
AC supply frequency	45 Hz to 440 Hz
Power consumption	35 W (typ.), max. 50 W with all options

Environmental		
Temperature	operating temperature range	0℃ to 50℃
	storage temperature range	-20℃ to 70℃
Humidity	0℃ to 30℃	≤ 95% rel. humidity
	30℃ to 40℃	≤ 75% rel. humidity
Altitude	operating height	up to 3,000m

Electromagnetic Compatibility and Safety		
EMC	in line with EN61326-1:2006	
	IEC 61000-4-2:2001	±4.0 kV (contact discharge), ±4.0 kV (air discharge)
	IEC 61000-4-3:2002	3 V/m (80 MHz to 1 GHz), 3 V/m (1.4 GHz to 2 GHz), 1 V/m (2.0 GHz to 2.7 GHz)
	IEC 61000-4-4:2004	1 kV power lines
	IEC 61000-4-5:2001	0.5 kV (phase to neutral), 0.5 kV (phase to PE), 1 kV (neutral to PE)
	IEC 61000-4-6:2003	3 V, 0.15 to 80 MHz
	IEC 61000-4-11:2004	voltage dip: 0% UT during half cycle, 0% UT during 1 cycle, 70% UT during 25 cycles short interruption: 0% UT during 250 cycles

Electrical safety	in line with UL 61010-1:2012, CAN/CSA-C22.2 No. 61010-1-12, EN 61010-1:2010

Dimensions	
(W x H x D)	361.6 mm × 178.8 mm × 128 mm (14.2 in × 7.0 in × 5.0 in)

Weight	
Standard	4.55 kg (10.0 lb)
With tracking generator	5.15 kg (11.4 lb)

Calibration Interval	
Recommended calibration interval	1 year

▶ Ordering Information

	Description	Order Number
Model	spectrum analyzer, 9 kHz to 3.2 GHz	DSA832E
	spectrum analyzer, 9 kHz to 3.2 GHz (with tracking generator, factory installed)	DSA832E-TG
Standard accessories	quick guide (hard copy)	-
	power cable	-
Options	preamplifier, 100 kHz to 3.2 GHz	PA-DSA832
	EMI filter & quasi-peak detector	EMI-DSA800
	advanced measurement kit	AMK-DSA800
	VSWR measurement kit	VSWR-DSA800
	DSA PC software	Ultra Spectrum
Optional accessories	include: N-SMA cable, BNC-BNC cable, N-BNC adaptor, N-SMA adaptor, 75 Ω to 50 Ω adaptor, 900 MHz/1.8 GHz antenna (2pcs), 2.4 GHz antenna (2pcs)	DSA Utility Kit
	include: N(F)-N(F) adaptor (1pcs), N(M)-N(M) adaptor (1pcs), N(M)-SMA(F) adaptor (2pcs), N(M)-BNC(F) adaptor (2pcs), SMA(F)-SMA(F) adaptor (1pcs), SMA(M)-SMA(M) adaptor (1pcs), BNC T type adaptor (1pcs), 50 Ω SMA load (1pcs), 50 Ω BNC impedance adaptor (1pcs)	RF Adaptor Kit
	include: 50 Ω to 75 Ω adaptor (2pcs)	RF CATV Kit
	include: 6dB attenuator (1pcs), 10dB attenuator (2pcs)	RF Attenuator Kit
	30dB high power attenuator, max. power 100W	ATT03301H
	N(M)-N(M) RF cable	CB-NM-NM-75-L-12G
	N(M)-SMA(M) RF cable	CB-NM-SMAM-75-L-12G
	RF demo kit (transmitter)	TX1000
	RF demo kit (receiver)	RX1000
	VSWR bridge, 1 MHz to 2 GHz	VB1020
	VSWR bridge, 1 MHz to 3.2 GHz	VB1032
	VSWR bridge, 800 MHz to 4 GHz	VB1040
	VSWR bridge, 2 GHz to 8 GHz	VB1080
	near field probe	NFP-3
	EMI Pre-compliance test software	S1210 EMI Pre-compliance Software
	rack mount kit	RM-DSA800
	soft carrying bag	BAG-G1
	USB cable	CB-USBA-USBB-FF-150
	USB to GPIB interface converter for instrument	USB-GPIB

RIGOL
Innovation or nothing

DSA700 Series Spectrum Analyzer

Proudly Distributed By:

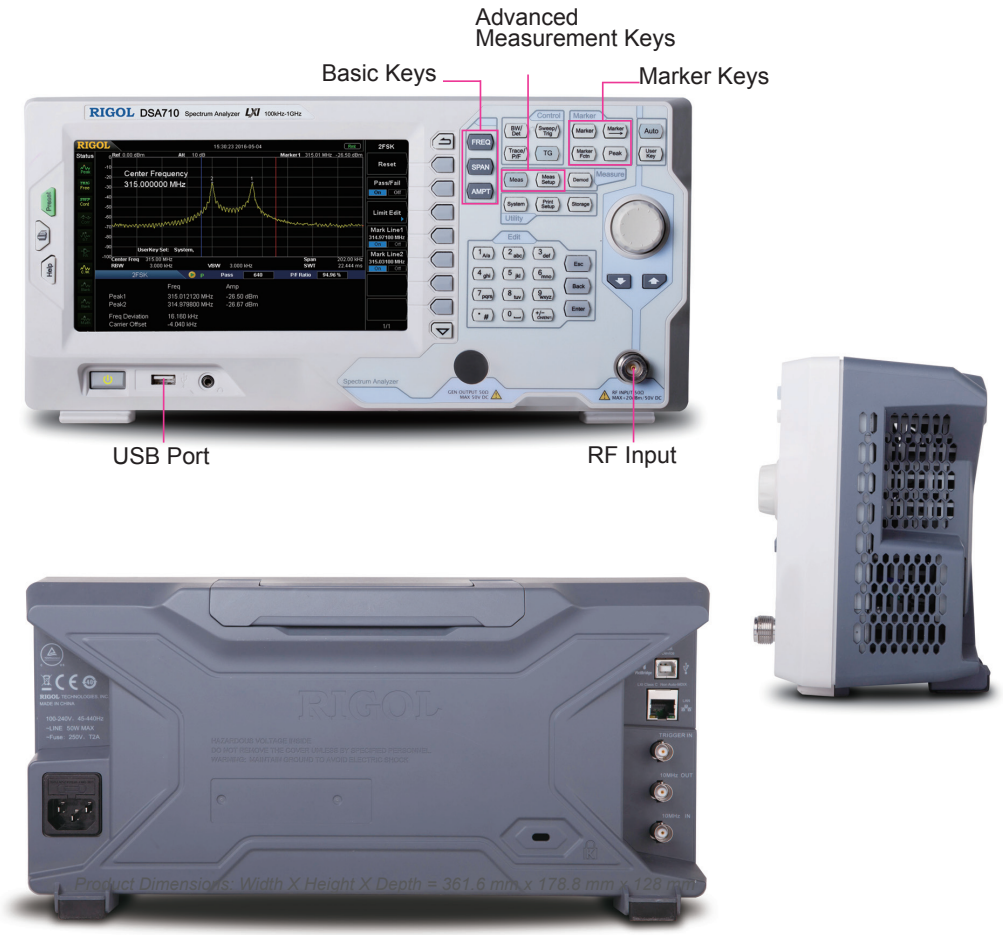
INSTRUMENTS 4 ENGINEERS

Tel: +44 (0) 161 871 7450

info@instruments4engineers.com

- All-Digital IF Technology
- Frequency Range from 100 kHz up to 1 GHz
- Min. -130 dBm Displayed Average Noise Level (Typ.)
- Min. <-80 dBc/Hz @ 10 kHz Offset Phase Noise
- Level Measurement Uncertainty <1.5 dB
- 100 Hz Minimum Resolution Bandwidth
- Advanced Measurement Functions (Opt.)
- EMI Filter & Quasi-Peak Detector Kit (Opt.)
- PC Software (Opt.)
- Optional RF TX/RX Training Kit
- Optional RF Accessories (Cable, Adaptor, Attenuator ...)
- Complete Connectivity: LAN (LXI), USB Host & Device, GPIB (Opt.)
- 8 Inch WVGA (800×480) Display
- Compact Size, Light Weight Design

DSA700 Series Spectrum Analyzer



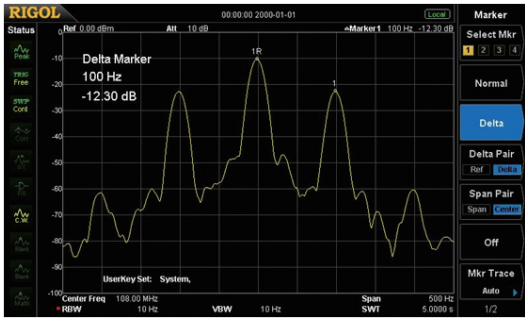
Product Dimensions: Width × Height × Depth = 361.6 mm × 178.8 mm × 128 mm

➤ Benefits of Rigol's all digital IF design

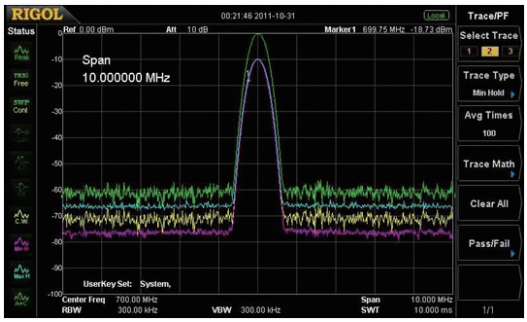
- The ability to measure smaller signals: on the basis of this technology, the IF filter enables smaller bandwidth settings, which greatly reduce the displayed average noise level.
- The ability to distinguish between small signals by frequency: using the IF filter with the smallest bandwidth setting, it is possible to make out signals with a frequency difference of only 100 Hz.
- High precision amplitude readings: this technology almost eliminates the errors generated by filter switching, reference level uncertainty, scale distortion, as well as errors produced in the process of switching between logarithmic and linear display of amplitude when using a traditional analog IF design.
- Higher reliability: compared with traditional analog designs, the digital IF greatly reduces the complexity of the hardware, the system instability caused by channel aging, and the temperature sensitivity that can contribute to parts failure.
- High measurement speed: the use of digital IF technology improves the bandwidth precision and selectivity of the filter, minimizing the scanning time and improving the speed of the measurement.

Features and Benefits

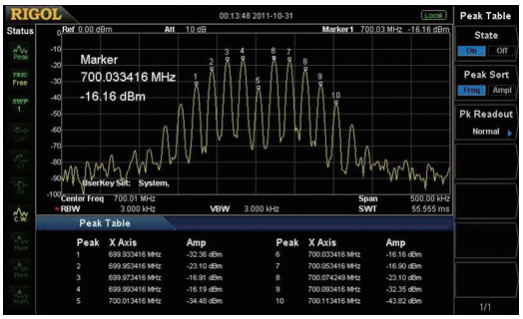
Distinguish the two nearby signals clearly with the 100 Hz RBW



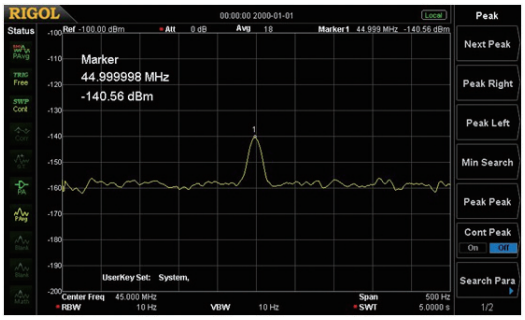
Compare the spectrums with different color trace



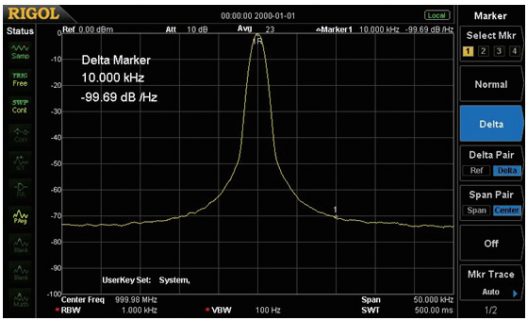
Readout the spectrum peak values with the peak table function



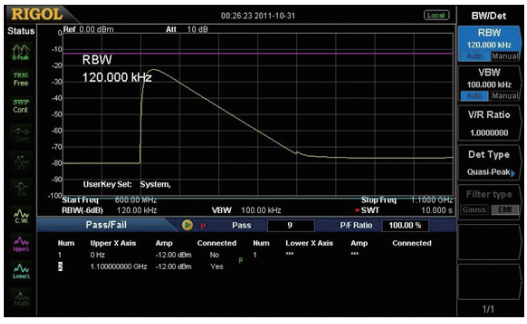
Measure lower level signal with the preamplifier turn on



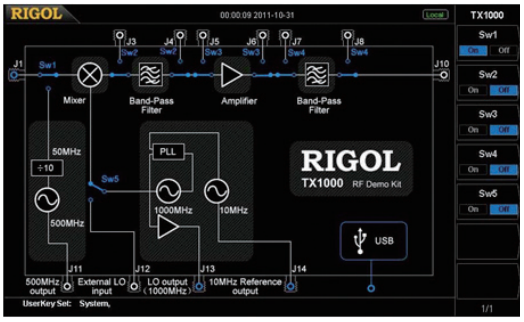
Phase noise < -80 dBc/Hz @10 kHz offset



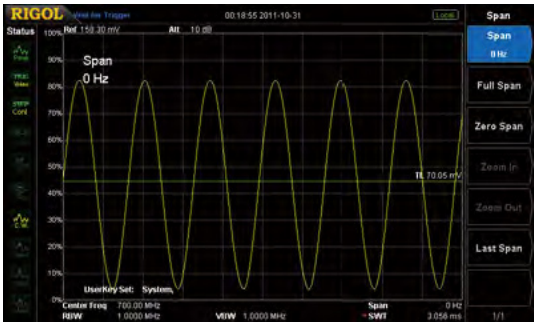
EMI kit (EMI filter & Quasi-peak & Pass/Fail)



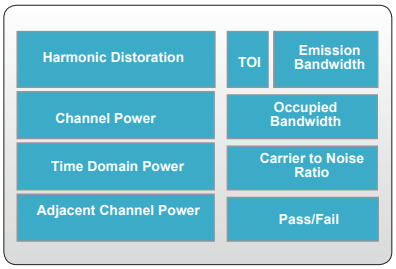
The GUI to control the RF demo kit (Transmitter) directly



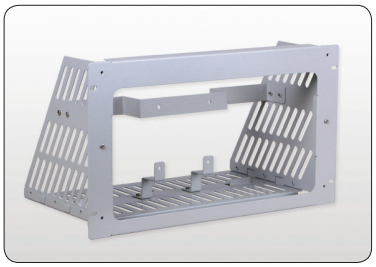
Zero span to demodulate the AM signal



► RIGOL Spectrum Analyzer Option and Accessory

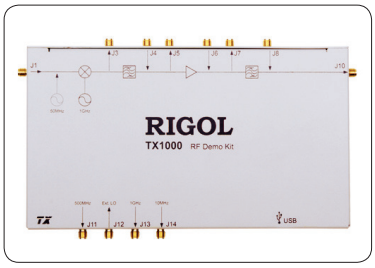


Advanced Measurement Kit
(AMK–DSA800)

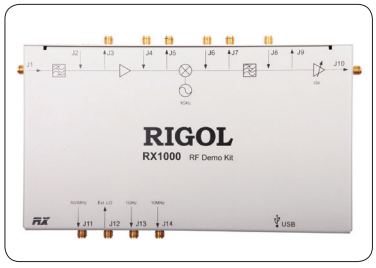


Rack Mount Kit
(RM–DSA800)

Near Field Probe
(NFP-3)



RF Demo Kit
(TX1000)



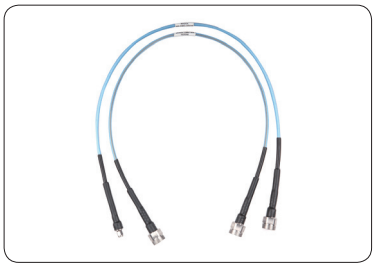
RF Demo Kit
(RX1000)

RF CATV Kit

DSA Utility Kit

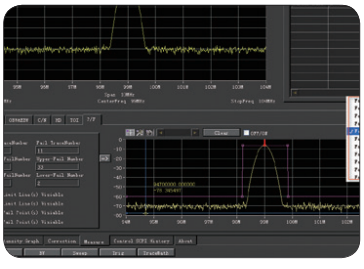
RF Adaptor Kit

RF Attenuator Kit



RF Cable Kit
(CB-NM-NM-75-L-12G)
(CB-NM-SMAM-75-L-12G)

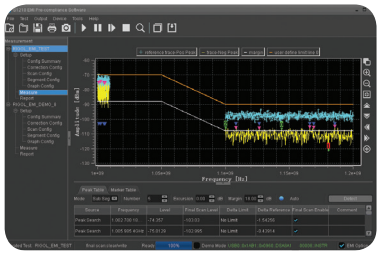
High Power Attenuator
(ATT03301H)



DSA PC Software
(Ultra Spectrum)

Soft Carrying Bag
(BAG-G1)

USB to GPIB Converter
(USB-GPIB)



EMI Pre-compliance Test Software
(S1210 EMI Pre-compliance Software)

▶ Specifications

Specifications are valid under the following conditions: the instrument is within the calibration period, is stored for at least two hours at 0℃ to 50℃ temperature, and is warmed up for 40 minutes. Unless otherwise noted, the specifications in this manual include the measurement uncertainty.

Typical (typ.): characteristic performance, which 80 percent of the measurement results will meet at room temperature (approximately 25℃). This data is not warranted and does not include the measurement uncertainty.

Nominal (nom.): the expected mean or average performance or a designed attribute (such as the 50 Ω connector). This data is not warranted and is measured at room temperature (approximately 25℃).

Measured (meas.): an attribute measured during the design phase which can be compared to the expected performance, such as the amplitude drift variation with time. This data is not warranted and is measured at room temperature (approximately 25℃).

NOTE: All charts in this manual are the measurement results of multiple instruments at room temperature unless otherwise noted.

Frequency

Frequency		
	DSA705	DSA710
Frequency range	100 kHz to 500 MHz	100 kHz to 1 GHz
Frequency resolution	1 Hz	

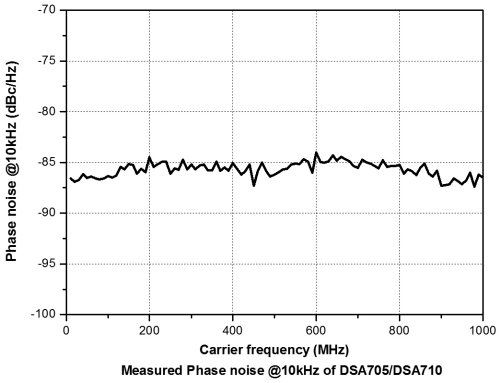
Internal Reference Frequency		
	DSA705	DSA710
Reference frequency	10 MHz	
Accuracy	±[(time since last calibration × aging rate) + temperature stability + calibration accuracy]	
Initial calibration accuracy	<1 ppm	
Temperature stability	0℃ to 50℃ , reference to 25℃	
	<2 ppm	
Aging rate	<2 ppm/year	

Frequency Readout Accuracy	
Marker resolution	span/ (number of sweep points - 1)
Marker uncertainty	±(frequency indication × reference frequency accuracy + 1% × span + 10% × resolution bandwidth + marker resolution)

Frequency Counter	
Resolution	1 Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz
Uncertainty	±(frequency indication × reference frequency accuracy + counter resolution)

Frequency Span	
Range	0 Hz, 100 Hz to maximum frequency of instrument
Uncertainty	±span/ (number of sweep points - 1)

SSB Phase Noise			
		DSA705	DSA710
		20℃ to 30℃ , f_c = 500 MHz	20℃ to 30℃ , f_c = 1 GHz
Carrier offset	10 kHz	<-80 dBc/Hz	
	100 kHz	<-100 dBc/Hz (typ.)	



Measured Phase noise @10kHz of DSA705/DSA710

Residual FM		
	20℃ to 30℃ , RBW = VBW = 1 kHz	
	DSA705	DSA710
Residual FM	<50 Hz (nom.)	

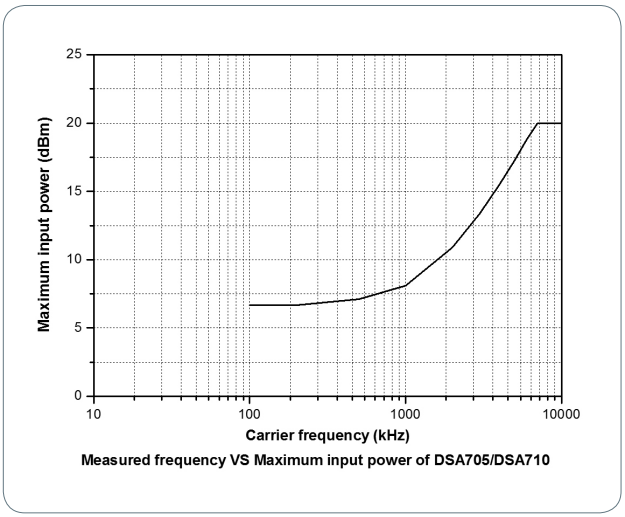
Bandwidths		
	Set "Auto SWT" to "Accy"	
	DSA705	DSA710
Resolution bandwidth (-3 dB)	100 Hz to 1 MHz, in 1-3-10 sequence	
RBW uncertainty	<5% (nom.)	
Resolution filter shape factor (60 dB : 3 dB)	<5 (nom.)	
Video bandwidth (-3 dB)	1 Hz to 3 MHz, in 1-3-10 sequence	
Resolution bandwidth (-6 dB) (EMI-DSA800 option)	200 Hz, 9 kHz, 120 kHz	

Amplitude

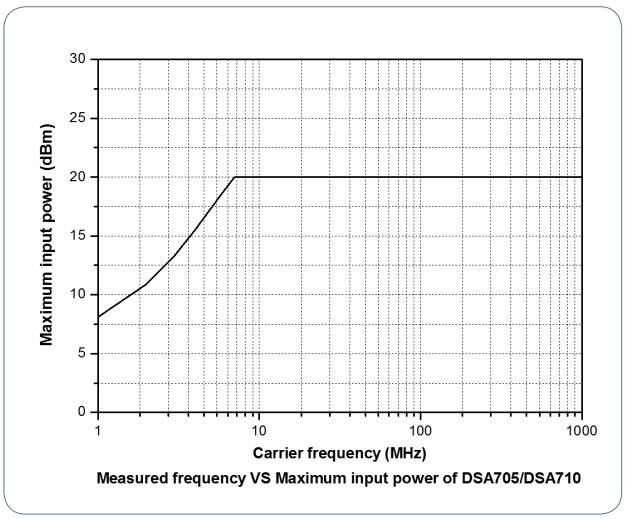
Measurement Range	
Range	f_c ≥ 10 MHz
	DANL to +20 dBm

Maximum Input Level	
DC voltage	50 V
CW RF power	attenuation = 30 dB
	+20 dBm (100 mW)
Max. damage level[1]	+30 dBm (1 W)

NOTE: [1] When f_c ≥ 10 MHz, input level > +25 dBm and PA is Off, the protection switch will be on.

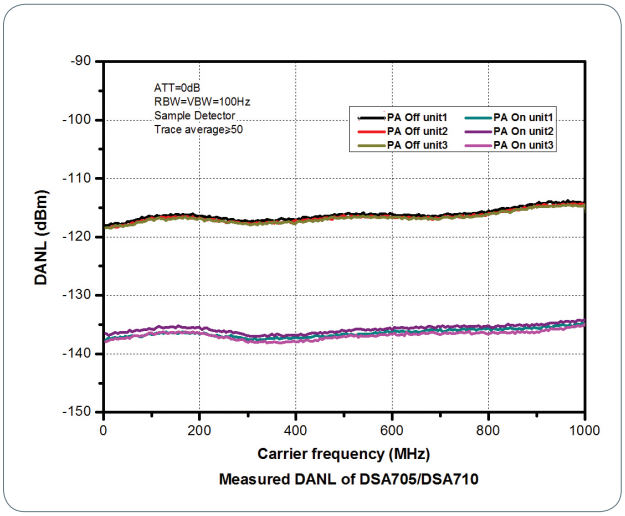


Measured frequency VS Maximum input power of DSA705/DSA710



Measured frequency VS Maximum input power of DSA705/DSA710

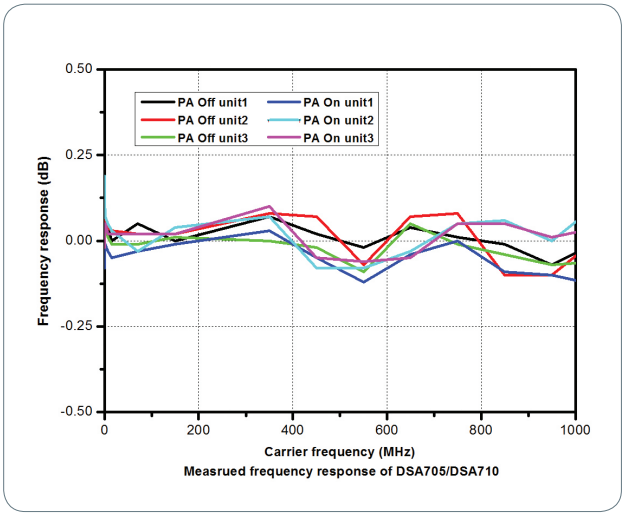
Displayed Average Noise Level (DANL)			
		DSA705	DSA710
Frequency		attenuation = 0 dB, RBW = VBW = 100 Hz, sample detector, trace average ≥ 50, 20℃ to 30℃ , input impendence = 50 Ω	
PA off	100 kHz to 1 MHz	<-90 dBm, <-110 dBm (typ.)	<-90 dBm, <-110 dBm (typ.)
	1 MHz to 500 MHz	<-100 dBm, <-110 dBm (typ.)	<-100 dBm, <-110 dBm (typ.)
	500 MHz to 1 GHz		
PA on	100 kHz to 1 MHz	<-110 dBm, <-130 dBm (typ.)	<-110 dBm, <-130 dBm (typ.)
	1 MHz to 500 MHz	<-120 dBm, <-130 dBm (typ.)	<-120 dBm, <-130 dBm (typ.)
	500 MHz to 1 GHz		



Measured DANL of DSA705/DSA710

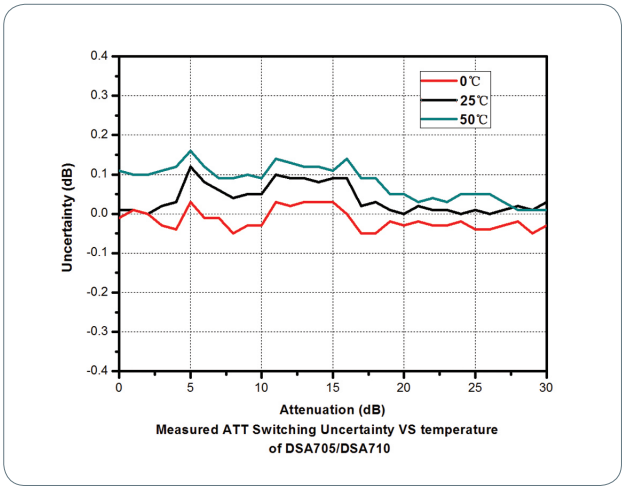
Level Display		
Logarithmic level axis	1 dB to 200 dB	
Linear level axis	0 to reference level	
Number of display points	601	
Number of traces	3 + math trace	
Trace detectors	normal, positive-peak, negative-peak, sample, RMS, voltage average	
	quasi-peak (with EMI-DSA800 option)	
Trace functions	clear write, max hold, min hold, average, view, blank	
Units of level axis	dBm, dBmV, dBμV, nV, μV, mV, V, nW, μW, mW, W	

Frequency Response			
		DSA705	DSA710
Frequency response		f_c ≥ 100 kHz, attenuation = 10 dB, relative to 50 MHz, 20℃ to 30℃	
PA off	100 kHz to 500 MHz	<0.7 dB	<0.7 dB
	500 MHz to 1 GHz		
		f_c ≥ 1MHz, attenuation = 10 dB, relative to 50 MHz, 20℃ to 30℃	
PA on	100 kHz to 500 MHz	<1.0 dB	<1.0 dB
	500 MHz to 1 GHz		



Measrued frequency response of DSA705/DSA710

Input Attenuation Switching Uncertainty		
	DSA705	DSA710
Setting range	0 dB to 30 dB, in 1 dB step	
Switching uncertainty	f_c = 50 MHz, relative to 10 dB, 20℃ to 30℃	
	<0.5 dB	



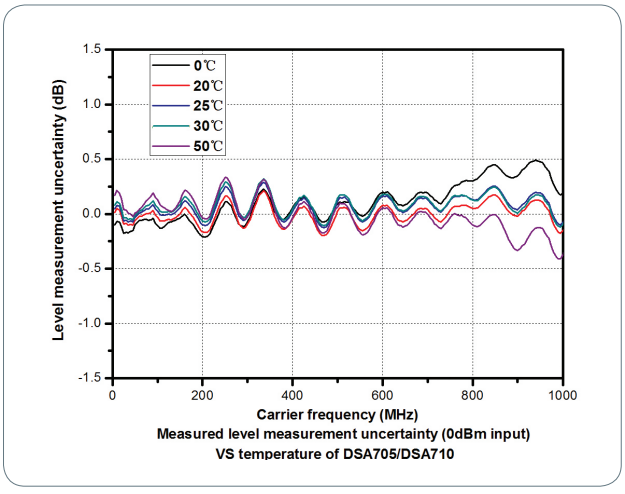
Absolute Amplitude Uncertainty		
	DSA705	DSA710
Uncertainty	f_c = 50 MHz, peak detector, preamplifier off, attenuation = 10 dB, input signal level = -10dBm, 20℃ to 30℃	
	<0.4 dB	

RBW Switching Uncertainty	
Uncertainty	relative to 1 kHz RBW
	<0.1 dB

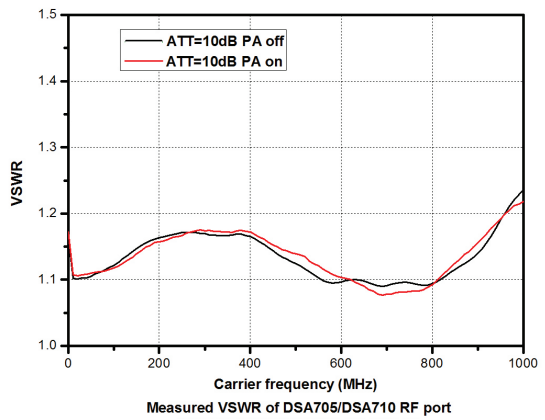
Reference Level		
Range		-100 dBm to +20 dBm, in 1 dB step
Resolution	log scale	0.01 dB
	linear scale	4 digits

Preamplifier			
		DSA705 (standard)	DSA710 (standard)
Gain	100 kHz to 500 MHz	20 dB (nom.)	20 dB (nom.)
	500 MHz to 1 GHz		

Level Measurement Uncertainty		
	DSA705	DSA710
	95% confidence level, S/N > 20 dB, RBW = VBW = 1 kHz, preamplifier off, attenuation = 10 dB, -50 dBm < input level ≤ 0 dBm, f_c > 10 MHz, 20℃ to 30℃	
Level measurement uncertainty	<1.5 dB (nom.)	



RF Input VSWR			
		DSA705	DSA710
		attenuation ≥ 10 dB	
VSWR	300 kHz to 500 MHz	<1.5 (nom.)	<1.5 (nom.)
	500 MHz to 1 GHz		



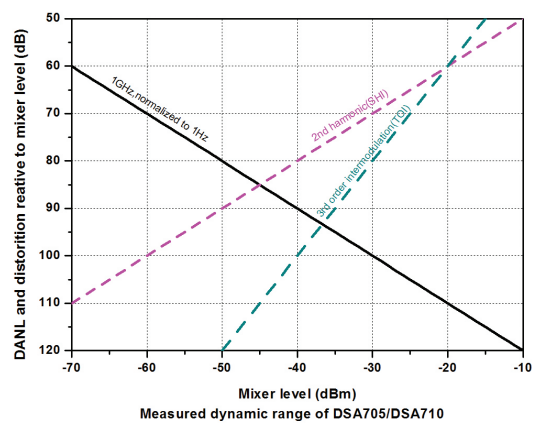
Measured VSWR of DSA705/DSA710 RF port

Distortion

Second Harmonic Intercept		
	DSA705	DSA710
Second harmonic intercept (SHI)	f_c ≥ 50 MHz, input signal level = -20 dBm, attenuation = 10 dB	
	+40 dBm	

Third-order Intercept		
	DSA705	DSA710
Third-order intercept (TOI)	f_c ≥ 50 MHz, two -20 dBm tones at input mixer spaced by 200 kHz, attenuation = 10 dB	
	+10 dBm	

1dB Gain Compression	
1dB compression of input mixer (P1dB)	f_c ≥ 50 MHz, attenuation = 0 dB
	>0 dBm



Measured dynamic range of DSA705/DSA710

Tel: +44 (0) 161 871 7450 Email: info@instruments4engineers.com

Spurious Response		
Spurious response, inherent	DSA705	DSA710
	input terminated 50 Ω, attenuation = 0 dB, 20℃ to 30℃	
	<-88dBm (typ.)	
Intermediate frequency	<-60 dBc	
System related sidebands	referenced to local oscillators, referenced to A/D conversion, referenced to subharmonic of first LO, referenced to harmonic of first LO	
	<-60 dBc	
Input related spurious	mixer level = -30 dBm	
	<-60 dBc	

Sweep

Sweep			
		DSA705	DSA710
Sweep time	span ≥ 100 Hz	10 ms to 500 s	10 ms to 1000 s
	zero span	20 µs to 500 s	20 µs to 1000 s
Sweep time uncertainty	span ≥ 100 Hz	5% (nom.)	
	zero span (sweep time setting value > 1 ms)	5% (nom.)	
Sweep mode		continuous, single	

Trigger

Trigger	
Trigger source	free run, video, external
External trigger level	5 V TTL level

SSC-DSA (Option)

Signal Seamless Capture (SSC)	
Measurement bandwidth	202 kHz
Measurement speed	650 spectrums/s

Input /Output

Front Panel Connectors		
RF input	impedance	50 Ω (nom.)
	connector	N female

Internal/ External Reference		
Internal reference	frequency	10 MHz
	output level	+3 dBm to +10 dBm, +8 dBm (typ.)
	impedance	50 Ω (nom.)
	connector	BNC female
External reference	frequency	10 MHz ± 5 ppm
	input level	0 dBm to +10 dBm
	impedance	50 Ω (nom.)
	connector	BNC female

External Trigger Input		
External trigger input	impedance	1 kΩ (nom.)
	connector	BNC female

Communication Interface		
USB host	connector	A plug
	protocol	version2.0
USB device	connector	B plug
	protocol	version2.0
LAN	LXI core 2011 device	10/100Base, RJ-45
IEC/IEEE (GPIB) bus (USB-GPIB option)		IEEE488.2

General Specifications

Display	
Type	TFT LCD
Resolution	800 x 480 pixels
Size	8 inch
Colors	64k

Printer Supported	
Protocol	PictBridge

Mass Memory	
Mass memory	flash disk (internal), USB storage device (not supplied)

Power Supply	
Input voltage range, AC	100 V to 240 V (nom.)
AC supply frequency	45 Hz to 440 Hz
Power consumption	35 W (typ.), max. 50 W with all options

Environmental		
Temperature	operating temperature range	0℃ to 50℃
	storage temperature range	-20℃ to 70℃
Humidity	0℃ to 30℃	≤ 95% rel. humidity
	30℃ to 40℃	≤ 75% rel. humidity
Altitude	operating height	up to 3,000m

Electromagnetic Compatibility and Safety		
EMC	in line with EN61326-1:2006	
	IEC 61000-4-2:2001	±4.0 kV (contact discharge), ±4.0 kV (air discharge)
	IEC 61000-4-3:2002	3 V/m (80 MHz to 1 GHz), 3 V/m (1.4 GHz to 2 GHz), 1 V/m (2.0 GHz to 2.7 GHz)
	IEC 61000-4-4:2004	1 kV power lines
	IEC 61000-4-5:2001	0.5 kV (phase to neutral), 0.5 kV (phase to PE), 1 kV (neutral to PE)
	IEC 61000-4-6:2003	3 V, 0.15 to 80 MHz
	IEC 61000-4-11:2004	voltage dip: 0% UT during half cycle, 0% UT during 1 cycle, 70% UT during 25 cycles short interruption: 0% UT during 250 cycles
Electrical safety		in line with UL 61010-1:2012, CAN/CSA-C22.2 No. 61010-1-12, EN 61010-1:2010

Dimensions	
(W x H x D)	361.6 mm × 178.8 mm × 128 mm (14.2 in × 7.0 in × 5.0 in)

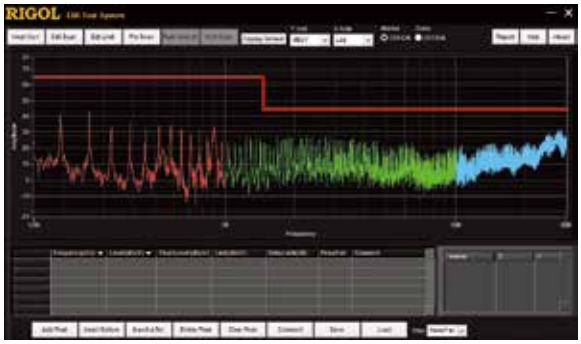
Weight		
	DSA705	DSA710
Standard	4.25 kg (9.4 lb)	

Calibration Interval	
Recommended calibration interval	1 year

▶ Ordering Information

	Description	Order Number
Model	spectrum analyzer, 100 kHz to 500 MHz (with preamplifier)	DSA705
	spectrum analyzer, 100 kHz to 1 GHz (with preamplifier)	DSA710
Standard accessories	quick guide (hard copy)	-
	power cable	-
Options	EMI filter & quasi-peak detector	EMI-DSA800
	advanced measurement kit	AMK-DSA800
	DSA PC software	Ultra Spectrum
	signal seamless capture	SSC-DSA
Optional accessories	include: N-SMA cable, BNC-BNC cable, N-BNC adaptor, N-SMA adaptor, 75 Ω to 50 Ω adaptor, 900 MHz/1.8 GHz antenna (2pcs), 2.4 GHz antenna (2pcs)	DSA Utility Kit
	include: N(F)-N(F) adaptor (1pcs), N(M)-N(M) adaptor (1pcs), N(M)-SMA(F) adaptor (2pcs), N(M)-BNC(F) adaptor (2pcs), SMA(F)-SMA(F) adaptor (1pcs), SMA(M)-SMA(M) adaptor (1pcs), BNC T type adaptor (1pcs), 50 Ω SMA load (1pcs), 50 Ω BNC impedance adaptor (1pcs)	RF Adaptor Kit
	include: 50 Ω to 75 Ω adaptor (2pcs)	RF CATV Kit
	include: 6dB attenuator (1pcs), 10dB attenuator (2pcs)	RF Attenuator Kit
	30dB high power attenuator, max. power 100W	ATT03301H
	N(M)-N(M) RF cable	CB-NM-NM-75-L-12G
	N(M)-SMA(M) RF cable	CB-NM-SMAM-75-L-12G
	RF demo kit (transmitter)	TX1000
	RF demo kit (receiver)	RX1000
	near field probe	NFP-3
	EMI pre-compliance test software	S1210 EMI Pre-compliance Software
	rack mount kit	RM-DSA800
	soft carrying bag	BAG-G1
	USB cable	CB-USBA-USBB-FF-150
	USB to GPIB interface converter for instrument	USB-GPIB

EMI Test System



EMI Test System is a PC application software developed by RIGOL for DSA1000A, DSA1000 and DSA800 (with the EMI-DSA800 option) with the EMI function. Users can perform conduction and radiation tests using EMI Test System and RIGOL DSA series spectrum analyzer. You can measure the interference voltage on the power cable using the linear impedance stability network (LISN) and perform amplitude correction on the results by loading the correction factor (antenna, cable, other or user) automatically in the radiation test.

This software also provides various functions to facilitate your measurements. You can set various parameters (such as the frequency range, resolution bandwidth and scan time) via the scan list. After performing a scan, the results can be displayed in log or linear format. You can search for signal, measure its peak value, quasi-peak value and average as well as display the results in the peak list. You can mark and delete the undesired signal as well as easily recognize signals that do not pass the standard limit line by using the peak list function.

- Provide amplitude correction function.
- You can edit the scan list and perform scan by segments to improve the measurement speed.
- The limit line function can be used to quickly judge the measurement results.
- Provide fast pre-scan and final scan modes.
- Provide peak search function. You can define and save the peak list.
- The frequency axis supports linear and log scale display.
- Auto generation of test report.

Rcommended Configuration

	Description	Order Number
Spectrum Analyzer	DSA1000/A series spectrum analyzer	DSA1030/A
	DSA800 series spectrum analyzer + EMI filter & quasi-peak detector	DSA875/32/15
EMI Software	EMI Test System pre-testing software	EMI Test System
Test Accessories	Near field probe (for near filed radiated EMI testing)	NFP-3
	Line Impedance Stabilization Network（LISN）（for conducted EMI testing)	User-owned
	Antenna (for far field radiated EMI testing)	User-owned

NFP-3 Near Field Probes

Need a higher Frequency Probe? Ask Us for Details!

NFP-3 is used with RIGOL DSA series spectrum analyzer for the EMI tests of electronic products. It can be used to test the magnetic field strength and magnetic field coupling channels on the surface of the electronic components as well as the magnetic field environment near the electronic module so as to quickly locate the interference source. NFP-3 includes four models (NFP-3-P1, NFP-3-P2, NFP-3-P3 and NFP-3-P4).continued on page 49

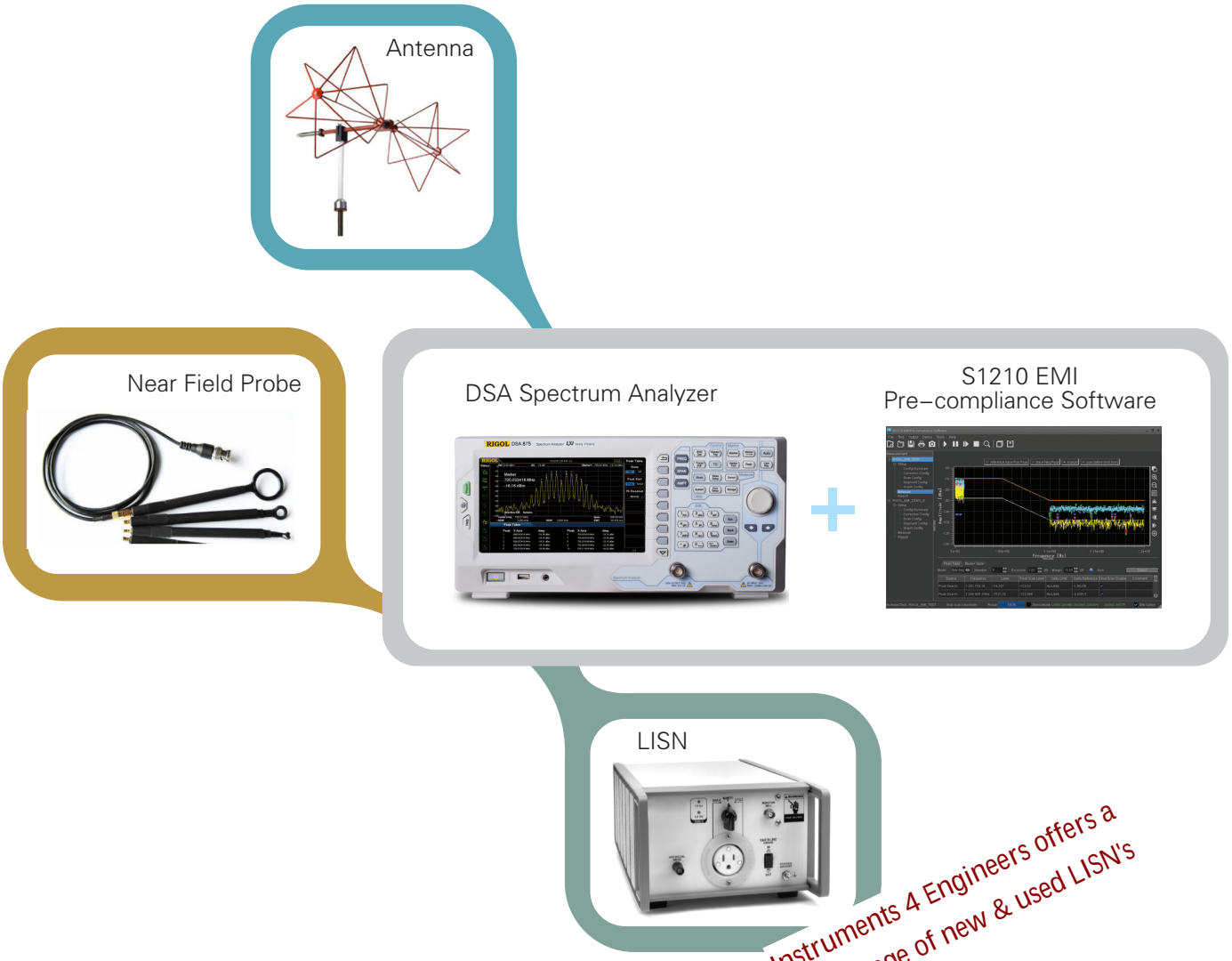
Measurement Connections

The connection mode of NFP-3 and spectrum analyzer is as shown in the figure below.

RIGOL
Innovation or nothing

S1210 EMI Pre-compliance Software Data Sheet

S1210 EMI Pre-compliance Software
DSA Series Spectrum Analyzer
EMC Laboratory



Product Overview

S1210 EMI Pre-compliance Software is a PC application software developed by **RIGOL** for DSA1000A, DSA1000, DSA800 and DSA800E (with the EMI-DSA800 option) with the EMI function. This software is designed on the basis of the standard drive VISA and you can realize the communication between the software and instrument via USB-TMC or LAN interface to control the instrument.

You can perform conduction and radiation tests using S1210 EMI Pre-compliance Software and **RIGOL** DSA series spectrum analyzer. You can measure the interference voltage on the power cable using the linear impedance stability network (LISN) and perform amplitude correction on the results by loading the correction factor (preamplifier, attenuator, antenna, cable, or correction array) automatically in the radiation test.

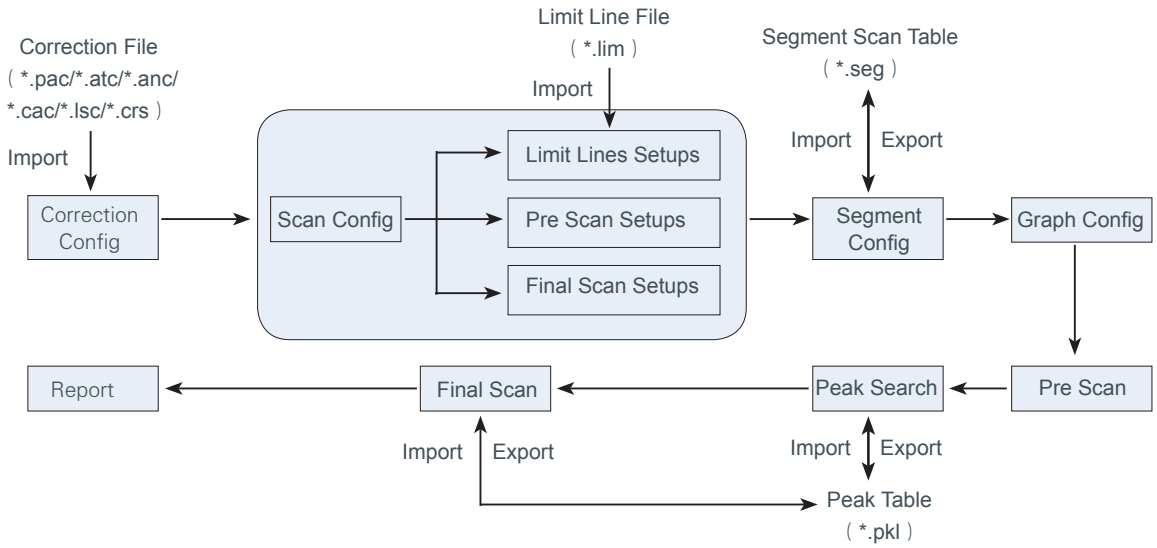
This software also provides various functions to facilitate your measurements. You can set various parameters (such as the frequency range, resolution bandwidth, and scan time) via the scan table. After performing a scan, the results can be displayed in log or linear format. You can search for signal peak value and view the results displayed in the peak table. Besides, you can mark and delete the undesired signal, as well as easily recognize signals that do not pass the standard limit line. The software also supports the marker table. In the marker table, you can double click the table to add a marker to mark any frequency point that interests you.

Product Features

- Introduce the workspace concept; manage multiple measurements
- Support the demo mode for you to enjoy a great user experience with the software, without connecting the instrument or obtaining a license
- Provide data manager function for you to edit required files for the software
- Provide amplitude correction function for you to preview the correction setting and get the calibration results in a timely manner
- Provide pre san and final scan, support three trace display modes: "Clear/Write", "Repeat Clear/Write", and "Repeat Max Hold"
- Provide the limit line for you to quickly judge the measurement results
- Support segment scanning and editing for the table to accelerate the measurement speed
- Frequency axis supports the scale display in linear or log format
- Amplitude axis supports multiple amplitude units
- Provide comprehensive peak search settings for you to search for the desired peaks that meet with your search conditions
- Support importing and exporting the peak table
- Support editing the marker table, marking any frequency point that interest you
- Support the reference trace, easy for you to compare the measurement results
- Support easy operation on the spectrum graph, convenient for you to analyze the results
- Provide report generation function

Product Functions

To quickly perform the EMI test with the software, we recommend you to follow the measurement procedures as shown in the figure below.



Correction Config
Load and select the correction file; compensate the gain or loss of the external devices (such as the antenna and cable). You can view the correction data in the Correction Preview.

Scan Config
Load and select the limit line file, set the limit lines, configure parameters for pre scan and final scan.

Segment Config
Set the parameters for the segment scan separately, and view the segment scan data sheet in the segment table. Besides, you can export the segment scan table currently edited, or import the edited segment scan table.

Graph Config
Set the graph axis and the graph title.

Pre Scan
Perform segment pre scan based on the segment scan setting to improve the measurement speed of the software. After the scan is completed, you can preview the measurement results in the spectrum graph, and compare the results with the set limit line value.

Peak Search
Perform the peak search operation. The software filters and marks the peak table according to the user-defined conditions. You can edit the peak table; add or delete frequency points; export/import the peak table.

Final Scan
The final scan provides a more accurate scan on the critical interference signals to ensure the measurement accuracy of the software.

Report
Fill in the actual parameter values based on the current measurement environment, and add remarks if necessary. You can also print the activated measurement report for further progressing of the measurement values.

Specifications

S1210 EMI Pre-compliance Software		
Frequency range	DSA705	100 kHz to 500 MHz
	DSA710	100 kHz to 1 GHz
	DSA815/DSA815-TG	9 kHz to 1.5 GHz
	DSA832/DSA832-TG	9 kHz to 3.2 GHz
	DSA875/DSA875-TG	9 kHz to 7.5 GHz
	DSA832E/DSA832E-TG	9 kHz to 3.2 GHz
	DSA1030/DSA1030-TG	9 kHz to 3 GHz
	DSA1030A/DSA1030A-TG	9 kHz to 3 GHz
Attenuation	DSA705	0 dB to 30 dB
	DSA710	
	DSA815/DSA815-TG	
	DSA832/DSA832-TG	
	DSA875/DSA875-TG	
	DSA832E/DSA832E-TG	
	DSA1030/ DSA1030-TG	0 dB to 50 dB
	DSA1030A/ DSA1030A-TG	
Pre scan resolution bandwidth/final scan resolution bandwidth (-3 dB)	DSA705	100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz
	DSA710	
	DSA815/DSA815-TG	
	DSA1030/DSA1030-TG	
	DSA832/ DSA832-TG	10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz
	DSA875/ DSA875-TG	
	DSA832E/DSA832E-TG	
	DSA1030A/ DSA1030A-TG	
Pre scan resolution bandwidth/final scan resolution bandwidth (-6 dB)	DSA705	200 Hz, 9 kHz, 120 kHz
	DSA710	
	DSA815/DSA815-TG	
	DSA832/DSA832-TG	
	DSA875/DSA875-TG	
	DSA832E/DSA832E-TG	
	DSA1030/DSA1030-TG	
	DSA1030A/DSA1030A-TG	

Measurement time	DSA705	0.0167 ms to 2500 ms
	DSA710	
	DSA815/ DSA815-TG	
	DSA832/ DSA832-TG	0.0167 ms to 5333.3 ms
	DSA832E/DSA832E-TG	
	DSA875/ DSA875-TG	0.0167 ms to 12500 ms
	DSA1030/ DSA1030-TG	0.0167 ms to 5000 ms
	DSA1030A/ DSA1030A-TG	

Ordering Information

	Description	Order Number
	EMI PC software	S1210 EMI Pre-compliance Software
Model	spectrum analyzer, 100 kHz to 500 MHz (with preamplifier)	DSA705
	spectrum analyzer, 100 kHz to 1 GHz (with preamplifier)	DSA710
	spectrum analyzer, 9 kHz to 1.5 GHz (with preamplifier)	DSA815
	spectrum analyzer, 9 kHz to 3.2 GHz	DSA832
	spectrum analyzer, 9 kHz to 7.5 GHz	DSA875
	spectrum analyzer, 9 kHz to 3.2 GHz	DSA832E
	spectrum analyzer, 9 kHz to 1.5 GHz (with preamplifier, with tracking generator, factory installed)	DSA815-TG
	spectrum analyzer, 9 kHz to 3.2 GHz (with tracking generator, factory installed)	DSA832-TG
	spectrum analyzer, 9 kHz to 7.5 GHz (with tracking generator, factory installed)	DSA875-TG
	spectrum analyzer, 9 kHz to 3.2 GHz (with tracking generator, factory installed)	DSA832E-TG
	spectrum analyzer, 9 kHz to 3 GHz (with preamplifier)	DSA1030A
	spectrum analyzer, 9 kHz to 3 GHz	DSA1030
	spectrum analyzer, 9 kHz to 3 GHz (with preamplifier, with tracking generator, factory installed)	DSA1030A-TG
	spectrum analyzer, 9 kHz to 3 GHz (with tracking generator, factory installed)	DSA1030-TG
Option	EMI filter &quasi-peak detector	EMI-DSA800

Connect the spectrum analyzer

Connect the SMB (M) terminal of NFP-3 and the BNC (F) terminal of the N-BNC adaptor respectively via the BNC-SMB RF cable; connect the N (M) terminal of the N-BNC adaptor to the RF input terminal of the spectrum analyzer.

Connect the device under test

NFP-3 is used to perform short-distance noncontact measurement on the device under test. Pay attention to the direction of the probe during measuring.

Typical Applications

Locate the EMI radiation interference source. Determine the frequency and relative strength of the spectral component of the interference source.

Specification

Frequency	
Frequency Range	30 MHz to 3 GHz
Terminal Type	
Terminal Type	SMB (M)
Adaptor	N (M)-BNC (F)
RF Cable	BNC (M)-SMB (F), 1000 mm
Terminal and Adaptor Impedance	50 Ω

Common RF Accessories

DSA Utility Kit

RF CATV Kit

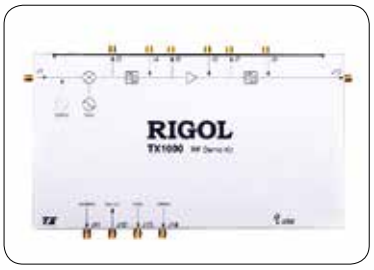
30dB High Power Attenuator

RF Adaptor Kit

RF Attenuator Kit

VSWR Bridge

RF Cable



RF Demo Kit (Transmitter) TX1000

RF Demo Kit (Receiver) RX1000

RF Accessories Selection Guide

		DSA875/-TG	DSA832/-TG	DSA815/-TG	DSA1030A/-TG	DSA1030/TG
Software Options						
AMK-DSA800	Advanced Measurement Kit. Include: T-Power,ACP (Adjacent Channel Power), Chan Pwr (Channel Power), OBW (Occupied Bandwidth), EBW (Emission Bandwidth), C/N Ratio, Harmo Dist (Harmonic Distortion), TOI (Third Order Intermodulation)	○	○	○		
AMK-DSA1000	Advanced Measurement Kit. Include:T-Power,ACP (Adjacent Channel Power), Chan Pwr (Channel Power), OBW (Occupied Bandwidth), EBW (Emission Bandwidth), C/N Ratio, Harmo Dist (Harmonic Distortion), TOI (Third Order Intermodulation) and Pass/Fail.				●	○
EMI-DSA800	EMI filter & quasi-peak detector	○	○	○	●	●
VSWR-DSA800	VSWR Measurement Kit. Measurement results include return loss, reflection coefficient and VSWR. (Work with VSWR bridge)	○	○	○		
EMI Test System	EMI test PC software for EMI pre-competible testing	○	○	○	○	○
Ultra Spectrum	DSA PC software	○	○	○	○	○
Preamplifier				●	●	
PA-DSA875	Preamplifier (for DSA875 and DSA875-TG only), factory installed	○				
PA-DSA832	Preamplifier (for DSA832 and DSA832-TG only), factory installed		○			
PA-DSA1030	Preamplifier (for DSA1030 and DSA1030-TG only), factory installed				○	○
Optional Accessories						
NFP-3	Near Field Probe, 30MHz-3GHz, 4pcs	○	○	○	○	○
DSA Utility Kit	Include: N-SMA Cable, BNC-BNC Cable, N-BNC Adapter, N-SMA Adapter, 75Ω-50Ω Adapter, Antenna 2 (900MHz/1.8GHz), Antenna 2 (2.4GHz)	○	○	○	○	○
RF Adaptor Kit	Include:N(F)-N(F)Adaptor(1pcs),N(M)-N(M)Adaptor(1pcs),N(M)-SMA(F) Adaptor(2pcs),N(M)-BNC(F)Adaptor (2pcs),SMA(F)-SMA(F)Adaptor (1pcs),SMA(M)-SMA(M)Adaptor(1pcs),BNC T type Adaptor (1pcs),50ΩSMA Load(1pcs),50Ω Impedance Adaptor (1pcs)	○	○	○	○	○
RF CATV Kit	Include:50Ωto 75ΩAdaptor (2pcs)	○	○	○	○	○
RF Attenuator Kit	Include: 6dB Attenuator(1pcs),10dB Attenuator (2pcs)	○	○	○	○	○
ATT03301H	30dB High Power Attenuator, Max Power 100W	○	○	○	○	○
CB-NM-NM-75-L-12G	N(M)-N(M)RF Cable, up to 12.4GHz	○	○	○	○	○
CB-NM-SMAM-75-L-12G	N(M)-SMA(M)RF Cable, up to 12.4GHz	○	○	○	○	○
TX1000	RF Demo Kit (Transmitter)	○	○	○	○	○
RX1000	RF Demo Kit (Receiver)	○	○	○	○	○
VB1020	VSWR Bridge (1 MHz to 2 GHz)	○	○	○	○	○
VB1032	VSWR Bridge (1 MHz to 3.2GHz)	○	○	○	○	○
VB1040	VSWR Bridge (800 MHz to 4 GHz)	○	○	○	○	○
VB1080	VSWR Bridge (2 GHz to 8 GHz)	○	○	○	○	○
RM-DSA800	Rack Mount Kit (for DSA800 series only)	○	○	○		
RM-DSA1000	Rack Mount Kit (for DSA1000 series only)				○	○
ARM	Desk Mount Instrument Arm (for DSA1000 series only)				○	○
BAT	11.1 V, 147 Wh Li-ion Battery Pack (China only)				○	○
USB-GPIB	USB to GPIB Interface Converter for Instrument	○	○	○	○	○
BAG-G1	Soft Carrying Bag (for DSA800 series only)	○	○	○		
BAG-DSA1000	Soft Carrying Bag (for DSA1000 series only)				○	○

● Standard function
○ Options

RF Signal Generator

DSG3000 is a high performance RF signal generator which ranges from 9 kHz to 3 GHz/6 GHz. It is designed for the customers who works in the application filed of Wireless Communication, Radar test, Audio/Video Broadcasting, General Purpose, Education, Consumer Electronics etc. DSG3000 provides variety of analog, digital IQ and pulse modulations with high quality signal and stable specifications. It is a desirable choice for replacing of import products.

DSG800 offers outstanding performance at an affordable price point. There are two models available that cover output frequencies from 9 kHz to 1.5 GHz or 9 kHz to 3GHz. Maximum output power is +20 dBm (typical). Phase noise reaches -105 dBc/Hz (typical). DSG800 also provides frequency and level sweep functions, AM/FM/ØM analog modulations as well as powerful pulse modulation function. Compared with similar products, DSG800 occupies the very little workbench space and is light in weight. Due to its outstanding portability, it is the perfect choice for various fields such as education laboratories, industrial production lines, as well as research and development labs.

	Frequency Range			Level Range	Accuracy	Clock Stability	Phase Noise	Std. Modulations	Pulse Train Generator	I/Q Modulation
	1.5GHz	3GHz	6GHz							
DSG815	●			-110dBm-+13dBm	≤ 0.5dB (Typ.)	<2ppm <5ppb (B08 Option)	<-100dBc/Hz (<-105dBc/Hz Typ.)	AM/FM/ΦM	DSG800-PUM DSG800-PUG (Pulse Modulation + Pulse Train)	–
DSG830		●								
DSG3030		●		-130dBm-+13dBm	≤ 0.5dB (Typ.)	<0.5ppm <5ppb (A08 Option)	<-105dBc/Hz (<-110dBc/Hz Typ.)	AM/FM/ ΦM/ Pulse	PUG-DSG3000	I/Q-DSG3000
DSG3060			●							

DSG3000 Series RF Signal Generator

DSG3000 is a high performance RF signal generator which ranges from 9 kHz to 3 GHz/6 GHz. It is designed for the customers who works in the application filed of Wireless Communication, Radar test, Audio/Video Broadcasting, General Purpose, Education, Consumer Electronics etc. DSG3000 provides variety of analog, digital IQ and pulse modulations with high quality signal and stable specifications. It is a desirable choice for replacing of import products.

- Plenty of output functions
- Support multiple types of modulations
- Output amplitude level ranges from -130dBm to +13dBm
- Excellent phase noise specification
- Support internal and external I/Q modulation
- Support pulse modulation with 80dB on/off ratio

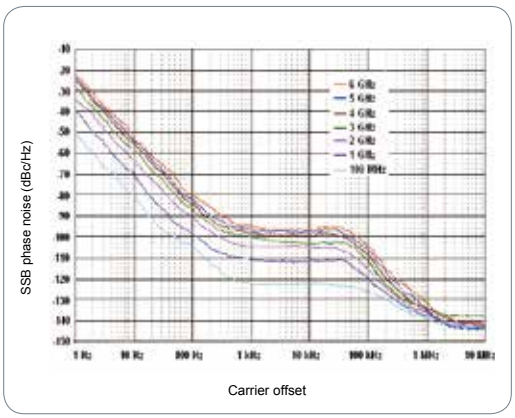
Plenty of Output Functions

9kHz~3/6GHz
+25dBm~-140dBm
CW
LF
Sine, Square, Triangle, Ramp, Swp-Sine
Frequency sweep, Amplitude sweep, Frequency and amplitude sweep
Sweep
PMC
Power meter controller, Test system automatic calibration

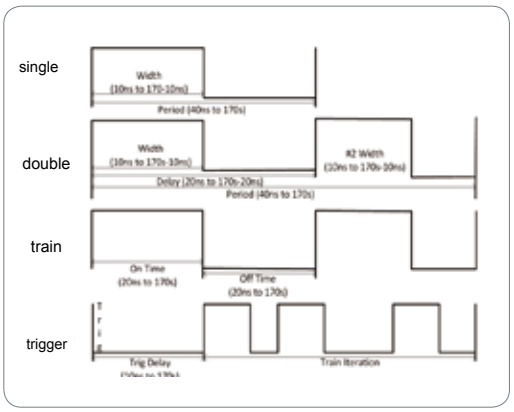
Multiple types of Modulations

Internal modulation, External modulation
AM
FM ΦM
Internal modulation, External modulation
Internal modulation, External modulation, Pulse train generator, Pulse generator
Pulse
I/Q
Internal modulation, External modulation, I/Q baseband generator, Baseband output

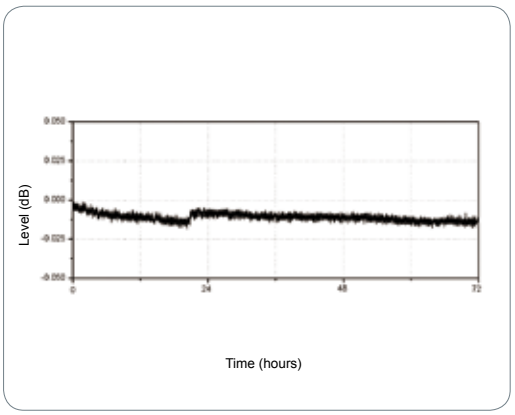
Excellent Phase Noise Specification



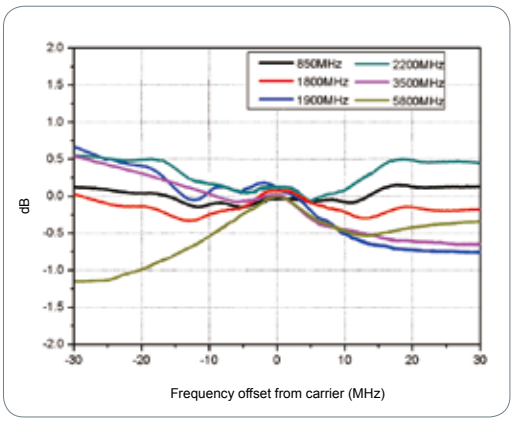
Pulse Modulation with 80dB on-off ratio



Excellent Amplitude Repeatability (6GHz，0dBm, ALC ON, 25℃)



Measured IQ modulation Bandwidth



Key Specifications

Model		DSG3030	DSG3060
Frequency range		9kHz-3GHz	9kHz-6GHz
Amplitude output level		-130dBm - +13dBm	
Amplitude setting Level		-140dBm - +25dBm	
Level uncertainty		< 0.5dB typ.	
Clock stability		< 0.5ppm, <5ppb(With option OCXO-A08)	
Spectral purity	SSB phase noise	Typ. <-110dBc/Hz@1GHz,20KHz offset	
	Harmonic	<-30dBc; non-harmonic: typ. <-64dBc	
Sweep	Sweep type	Linear sweep, Step/List sweep, Single/Continue sweep	
	Sweep points	2 ~65535（Step sweep）;1-6001（List sweep）	
Modulation type		AM, FM, PM, Pulse mod, I/Q mod	
AM	modulation depth	0%-100%	
	Uncertainty	< setting value x 4% + 1%	
	Modulation frequency response	<3dB(10Hz ~ 50kHz m<80%)	
FM	Max. deviation	N x 1MHz	
	Uncertainty	< setting value x 2% + 20Hz	
	Modulation frequency response	<3dB(10Hz ~ 100kHz)	
PM	Max. deviation	3rad（f ≤ 23.4375MHz）, N x 5rad（f > 23.4375MHz）	
	Uncertainty	< setting value x 1% + 0.1rad	
	Modulation frequency response	<3dB(10Hz ~ 100kHz)	
Pulse modulation	On/off ratio	>80dB(25MHz ≤ f <3GHz),>70dB(3GHz ≤ f ≤ 6GHz)	
	Rise/fall time	10ns typ.	
	Pulse mode	Single pulse, dual pulse, pulse train（option PUG-DSG3000）	
I/Q modulation	Bandwidth	External modulation: baseband (I or Q): up to 120MHz; RF(I+Q): up to 240MHz	
		External modulation：baseband (I or Q): up to 30MHz; RF(I+Q): up to 60MHz	
	EVM	≤ 0.7%rms(typ., 50MHz ≤ f ≤ 3GHz, output power≤ 4dBm)	
		≤ 1.2%rms(typ., 3GHz < f ≤ 6GHz, output power≤ 4dBm)	
General	Interfaces	Std.: USB,LAN, GPIB	
		10MHz Ref In/Out, Trigger In	
		I/Q In/Out(install IQ modulation option), LF Out	
		Ext Mod, Pulse In/Out	
		Signal Valid, Sweep Out	

Ordering Information

	Description	Order Number
Models	DSG3030 RF Signal Generator, 9kHz-3GHz	DSG3030
	DSG3060 RF Signal Generator, 9kHz-6GHz	DSG3060
Standard Accessories	Power Cable, Quick Guide (Hard Copy), CDROM (User's Guide, Programming Guide)	-
	DSG IQ function PC software	Ultra IQ Station
Options	Pulse Train Generator	PUG-DSG3000
	High Stable OCXO Reference Clock	OCXO-A08
	I/Q Modulation, Baseband Output	IQ-DSG3000
	Power Meter Controller	PMC-DSG3000
	Rack Mount Kit	RM-DSG3000

DSG800 Series RF Signal Generator

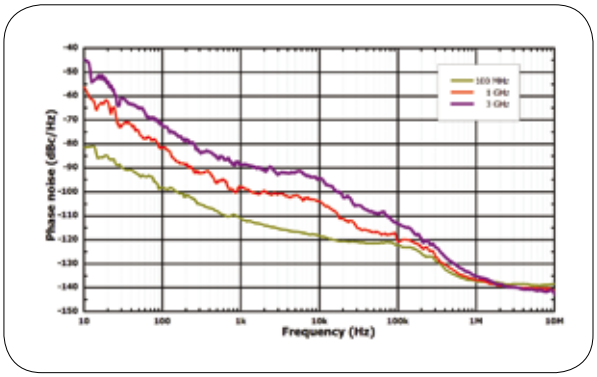
DSG800 establishes a new standard of economical RF signal generator by the unprecedented cost-effective advantage in. Combining with DSA800 economical spectrum analyzer, the product pair provides a screaming solution for RF test and measurement application.

DSG800 offers outstanding performance comparing with the same-level economical RF signal generator. It covers the frequency range from 9 kHz to 1.5 GHz or 3 GHz. Maximum output power is +20 dBm (typical). Phase noise reaches -105 dBc/Hz (typical).

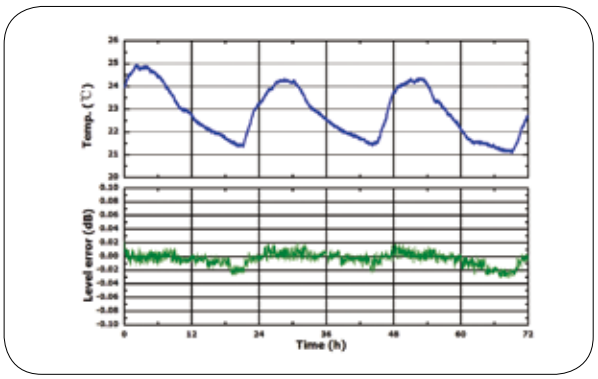
DSG800 provides the frequency and level sweep functions, AM/FM/ØM analog modulations as well as powerful pulse modulation function. Thus DSG800 can be used as an excitation source to output all kinds of high quality signals (including RF, LF, sweep, pulse and a variety of analog modulated signals), and can be used as a reference source.

- Up to -105 dBc/Hz (typical) phase noise
- Up to +20 dBm (typical) maximum output power
- Special digital ALC circuit ensuring its stability and reliability
- Flexible frequency and amplitude sweep functions
- Complete AM/FM/ØM analog modulation functions
- Powerful pulse modulation function
- Prominent portability; Simple and easy to operate

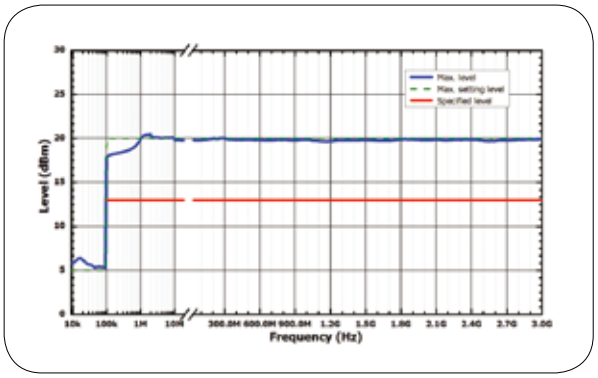
Measured SSB phase noise



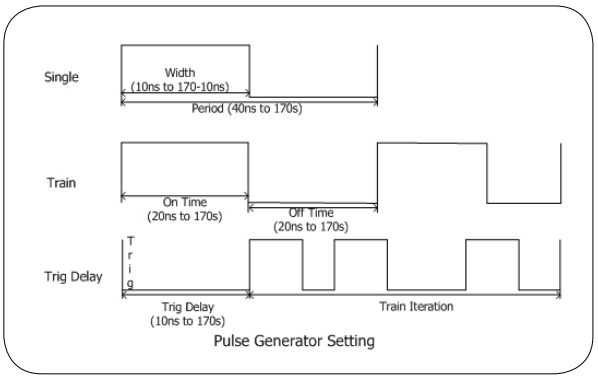
Measured level repeatability @ 1 GHz, 0 dBm



Measured maximum level vs. frequency



Powerful pulse modulation and pulse train generator



Simultaneous Modulation

	AM	FM	ØM	Pulse mod. (opt.)
AM	—	○	○	△
FM	○	—	×	○
ØM	○	×	—	○
Pulse mod. (opt.)	△	○	○	—

Note: ○: Compatible; ×: Not compatible; △ : Compatible, but the AM performance will decrease when pulse modulation is turned on.

Key Specifications

Models		DSG815	DSG830
Frequency range		9kHz-1.5GHz	9kHz-3GHz
Amplitude Output Level		-110dBm - +13dBm	
Amplitude Setting Level		-110dBm - +20dBm	
Level uncertainty		<0.9dB (< 0.5dB typ.)	
Clock stability		< 2ppm, <5ppb(With option OCXO-B08)	
Spectral Purity	SSB phase noise	100KHz ≤ f ≤ 1.5GHz, <-100dBc/Hz (<-105dBc/Hz typ.) 1.5GHz ≤ f ≤ 3GHz, <-94dBc/Hz (<-99dBc/Hz typ.) CW mode, carrier offset =20KHz	
	Harmonic	<-30dBc CW mode 1MHz ≤ f ≤ 3GHz, Level≤ +13dBm	
	Non-harmonic	100KHz ≤ f ≤ 1.5GHz, <-60dBc (<-70dBc typ.); 1.5GHz ≤ f ≤ 3GHz, <-54dBc/Hz(<-64dBc/Hz typ.)	
Sweep	Sweep type	Linear sweep, Step/List sweep, Single/Continue sweep	
	Sweep points	2 ~65535(Step sweep); 1-6001 (List sweep)	
Modulation type		AM, FM, ØM, Pulse mod	
AM	modulation depth	0%-100%	
	Uncertainty	< setting value x 4% + 1%	
	Modulation frequency response	<3dB(10Hz ~ 100kHz m<80%)	
FM	Max. deviation	N x 1MHz	
	Uncertainty	< setting value x 2% + 20Hz	
	Modulation frequency response	<3dB(10Hz – 100KHz)	
PM	Max. deviation	N x 5rad	
	Uncertainty	< setting value x 1% + 0.1rad	
	Modulation frequency response	<3dB(10Hz – 100kHz)	
Pulse modulation	On/off ratio	>70dB(100kHz ≤ f <3GHz)	
	Rise/fall time	<50ns, 10ns (typ.)	
	Pulse mode	Single pulse, pulse train (option DSG800-PUG)	
General	Interfaces	Std.: USB, LAN	
		Front Panel: RF output, Internal modulation generator (LF) output	
		Rear Panel: External trigger input, Signal valid output, Pulse input or output	
		External modulating signal input, 10MHz input/output	

Ordering Information

	Description	Order Number
Models	DSG830 RF Signal Generator, 9kHz-3GHz	DSG830
	DSG815 RF Signal Generator, 9kHz-1.5GHz	DSG815
Standard Accessories	Power Cable, Quick Guide (Hard Copy), CDROM (User's Guide, Programming Guide)	-
Options	Pulse Modulation, Pulse Generator	DSG800-PUM
	Pulse Train Generator (DSG800-PUM Included)	DSG800-PUG
	High Stable Reference Clock	OCXO-B08
	Rack Mount Kit (For one Instrument)	RM-1-DG1000Z
	Rack Mount Kit (For two Instrument)	RM-2-DG1000Z

Function/Arbitrary Waveform Generator

RIGOL's Function / Arbitrary Waveform generator adopts the latest Direct Digital Frequency Synthesis technology (DDS) to generate accurate and stable regular waveforms (such as sine waves and square waves) as well as the Analog or Digital modulated signals. What's more, the generator also provides arbitrary waveform function which allows engineers to generate any desired waveforms either using the UltraWave arbitrary waveform editing software or using the oscilloscope to capture the actual signal and then downloading it to the generator. The digital sampling technology and the Direct Digital Frequency Synthesis technology enable engineers to generate any desired waveform for circuit verification design.

RIGOL has introduced a complete range of Function / Arbitrary Waveform generators in the past years includes DG1022A, DG1000Z, DG2000, DG3000, DG4000 and DG5000 series with up to 350MHz frequency, 1 GSa/s sample rate, 14 bits vertical resolution, 128M points arbitrary waveform memory. The rich features let RIGOL's generators to be the excellent circuit debug tools for engineers.

	Max. Output Frequency（MHz）									Channels	Max. Sample rate	Max. Arb Memory Depth	Modulation Types
	350	250	200	160	100	70	60	30	25				
DG5000	●	●			●	●				1/2	1Gsa/s	128M	AM,FM,PM,ASK,FSK,PSK,PWM,IQ
DG4000			●	●	●		●			2	500Msa/s	16K	AM,FM,PM,ASK,FSK,PSK,BPSK,QPSK ,3FSK,4FSK,OSK,PWM
DG1000Z							●	●		2	200Msa/s	8M (16M option)	AM,FM,PM,ASK,FSK,PSK,PWM
DG1022A									●	2	100Msa/s	4K	AM,FM,PM,FSK

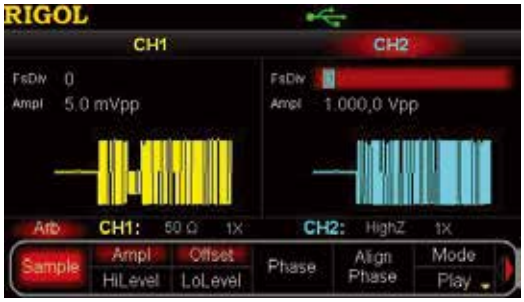
Do you currently use the Agilent 33250A Arb. Gens? You'll love the Price & Quality of the Rigol DG5000. Ask for a Demo Today!

DG5000 Series Function/Arbitrary Waveform Generator

DG5000 is a multifunctional generator that combines many functions in one, including Function Generator, Arbitrary Waveform Generator, IQ Baseband Source/IQ IF Source, Frequency Hopping Source (optional) and Pattern Generator (optional).DG5000 can provide stable, precise, pure and low distortion signal by adopting the Direct Digital Synthesizer (DDS) technology. It provides single and dual-channel models. The dual-channel model, with two channels having complete equivalent functions and precisely adjustable phase deviation between the two channels, is a real dual-channel signal generator.

- Arb function with 1 GSa/s sample rate, 14 bits vertical resolution
- Support internal and external IQ modulation
- Whole range of Analog/Digital modulation functions (Standard))
- Various Sweep Types (standard)
- Intuitive Constellation setup and display
- Support Frequency Hopping function (option)
- Complete connectivity, support Parallel Bus output (Option)

Arb function with 1 GSa/s sample rate, 14 bits vertical resolution



Intuitive Constellation setup and display

Various Sweep Types (standard)

Support Frequency Hopping function (option）

Support internal and external IQ modulation

Complete connectivity, support Parallel Bus output (Option)

Key Specifications

Model	DG5351/2	DG5251/2	DG5101/2	DG5071/2
Channel	1/2	1/2	1/2	1/2
Maximum Frequency	350MHz	250MHz	100MHz	70MHz
Sample Rate	1GSa/s			
Waveforms	Standard Waveforms: Sine, Square, Ramp, Pulse, Noise Arbitrary Waveforms: Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz, Dual-Tone, DC, User defined			
Frequency Characteristics				
Sine	1uHz-350MHz	1uHz-250MHz	1uHz-100MHz	1uHz-70MHz
Square	1uHz-120MHz	1uHz-120MHz	1uHz-100MHz	1uHz-70MHz
Ramp	1uHz-5MHz	1uHz-5MHz	1uHz-3MHz	1uHz-3MHz
Pulse	1uHz-50MHz			
Noise	250MHz			
Arb	1uHz-50MHz			
Waveform Length	128M (std.)			
Sine Wave Spectrum Purity	Total Harmonic Distortion: <0.5%(10Hz-20KHz,0dBm); Phase Noise: <-110dBc@10MHz (0dBm,10KHz offset)			
Square Rise/Fall Time	<2.5ns	<2.5ns	<3ns	<4ns
Jitter (rms)	≤ 30MHz: 10ppm+500ps, >30MHz: 500ps			
Amplitude (into 50 Ω)	≤ 100MHz: 5mVpp-10Vpp; ≤ 300MHz:5mVpp-5Vpp; ≤ 350MHz:5mV-2Vpp			
IQ Modulation	4QAM,8QAm,16QAM,32QAM,64QAM,BPSK,QPSK,OQPSK,8PSK,16PSK,user; Code Rate: 1bps to 1Mbps; Carrier Waveform: Sine (max.200MHz)			
FH Characteristic	FH Bandwidth 1.5MHz-250MHz; FH Rate: 1 Hop/s to 12.5M Hop/s; Frequency Point Numbers:4096			
Burst Characteristics	Carrier Frequency 1uHz-120MHz, Burst Count: 1 to 1 000 000 or Infinite			

Ordering Information

	Description	Order Number
Model	DG5352 (350 MHz, dual-channel, 128Mpts)	DG5352
	DG5351 (350 MHz, single-channel, 128Mpts)	DG5351
	DG5252 (250 MHz, dual-channel, 128Mpts)	DG5252
	DG5251 (250 MHz, single-channel, 128Mpts)	DG5251
	DG5102 (100 MHz, dual-channel, 128Mpts)	DG5102
	DG5101 (100 MHz, single-channel, 128Mpts)	DG5101
	DG5072 (70MHz, dual-channel, 128Mpts)	DG5072
	DG5071 (70MHz, single-channel, 128Mpts)	DG5071
Standard Accessories	USB Cable	CB-USBA-USBB-FF-150
	BNC Cable (1 meter)	CB-BNC-BNC-MM-100
	SMB(F) to BNC(M) Cable (1 meter)	CB-SMB-BNC-FM-100
	Power Cord	-
	Quick Guide (Hard Copy)	-
	Resource CD (including User's Guide and Application Software)	-
Options	Frequency Hopping Module	FH-DG5000
	Logic Signal Output Module	DG-POD-A
	Power Amplifier	PA1011
	40 dB Attenuator	RA5040K
	Rack Mount Kit	RM-DG5000

DG4000 Series Function/Arbitrary Waveform Generator

DG4000 series is a multifunctional generator that combines many functions in one, including Function Generator, Arbitrary Waveform Generator, Pulse Generator, Harmonic Generator, Analog/Digital Modulator and Counter. DG4000 can provide stable, precise, pure and low distortion signal by adopting the Direct Digital Synthesizer (DDS) technology. All the models have two channels with complete equivalent functions and precisely phase adjustable, they are the real dual-channel signal generator.

- 7 inch color LCD
- Arbitrary waveform function and built-in 150 waveform
- Abundant analog and digital modulation function
- Various Sweep modes
- Noise and Burst modes
- Up to 16 orders customized Harmonic generation function

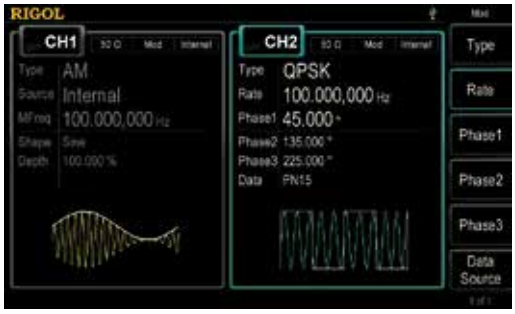
Standard 2 identical channels with frequency and phase coupling

Various Sweep modes

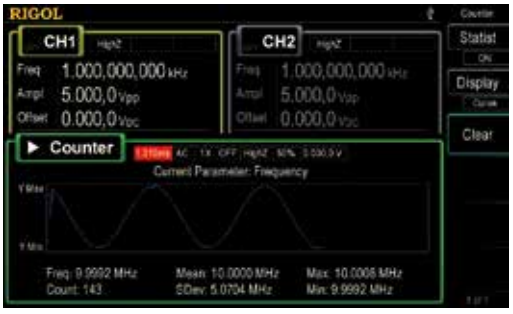
Arbitrary waveform function and built-in 150 waveform

Noise and Burst modes

Abundant analog and digital modulation function



Standard 7digits/s counter with statistic analysis



Key Specifications

Model	DG4202	DG4162	DG4102	DG4062
Channel	2			
Maximum Frequency	200MHz	160MHz	100MHz	60MHz
Sample Rate	500Msa/s			
Waveforms	Standard Waveforms: Sine, Square, Ramp, Pulse, Noise, Harmonics (up to 16 orders) Arbitrary Waveforms: Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz, Dual-Tone, DC, etc. up to 150 waveforms			
Waveform Length	16K			
Vertical Resolution	14bits			
Sine	1uHz-200MHz	1uHz-160MHz	1uHz-100MHz	1uHz-60MHz
Square	1uHz-60MHz	1uHz-50MHz	1uHz-40MHz	1uHz-25MHz
Ramp	1uHz-5MHz	1uHz-4MHz	1uHz-3MHz	1uHz-1MHz
Pulse/arb	1uHz-50MHz	1uHz-40MHz	1uHz-25MHz	1uHz-15MHz
Noise（-3dB）	120MHz	120MHz	80MHz	60MHz
Sine Wave Spectrum Purity	Total Harmonic Distortion：<0.1%(10Hz-20KHz,0dBm); Phase Noise：≤ -115dBc@10MHz (0dBm,10KHz offset)			
Square Rise/Fall Time	<8ns	<8ns	<10ns	<12ns
Jitter (rms)	≤ 5MHz: 2ppm+500ps, >5MHz : 500ps			
Amplitude (into 50 Ω)	≤ 20MHz：1mVpp-10Vpp; ≤ 60MHz:1mVpp-5Vpp; ≤ 120MHz:1mV-2.5Vpp; ≤ 200MHz:1mV-1Vpp			
Modulation Type	AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, 3FSK, 4FSK, OSK, PWM			
Work Mode	Continue, Burst, Sweep, Modulation			
Burst Characteristics	Carrier Frequency 2mHz-100MHz, Burst Count：1 to 1 000 000 or Infinite; trigger source: internal, external, manual			

Ordering Information

	Description	Order Number
Model	DG4202 (200 MHz, dual-channel)	DG4202
	DG4162 (160 MHz, dual-channel)	DG4162
	DG4102 (100 MHz, dual- channel)	DG4102
	DG4062 (60 MHz, dual-channel)	DG4062
Standard Accessories	USB Cable	CB-USBA-USBB-FF-150
	BNC Cable (1 meter)	CB-BNC-BNC-MM-100
	Power Cord	-
	Quick Guide (Hard Copy)	-
Optional Accessories	DG4 PC Software(Advanced functions)	Ultra Station-adv
	40 dB Attenuator	RA5040K
	Rack Mount Kit	RM-DG4000
	USB-GPIB Module	USB-GPIB

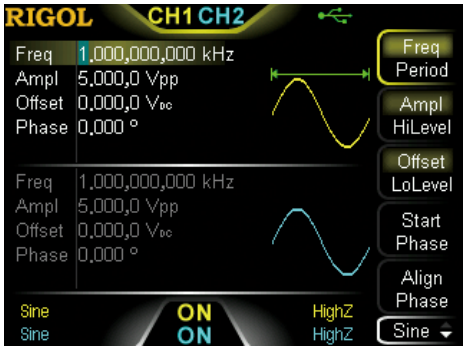
DG1000Z Series Function/Arbitrary Waveform Generator

DG1000Z series function/arbitrary waveform generator is a multi-functional generator that combines many functions in one, including Function Generator, Arbitrary Waveform Generator, Noise Generator, Pulse Generator, Harmonics Generator, Analog/Digital Modulator and Counter.

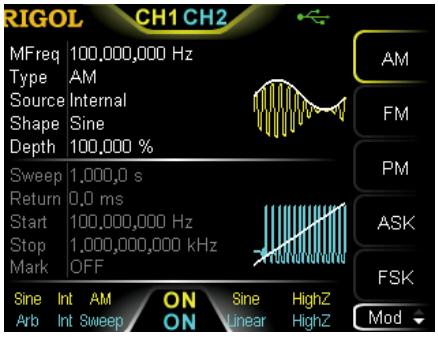
The maximum output frequency (Sine) of DG1000Z is 30MHz or 60MHz. It provides 2 full functional channels with precisely phase adjustable. The standard interfaces are USB and LAN.

- Innovative SiFi technology
- Up to 160 built-in waveforms
- Multiple analog and digital modulations
- Standard harmonic generator
- Waveform summing function
- Standard 7 digits/s full function frequency counter

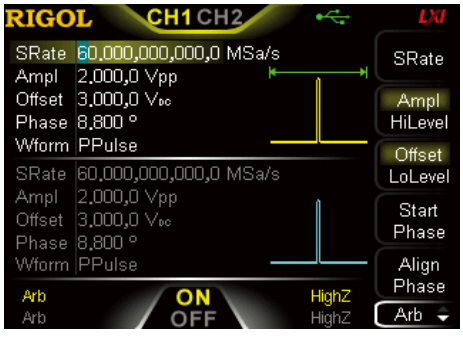
Standard 2 full functional channels



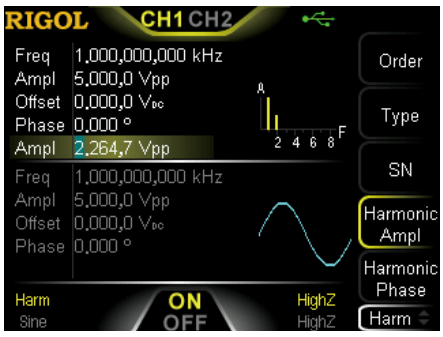
Multiple analog and digital modulations



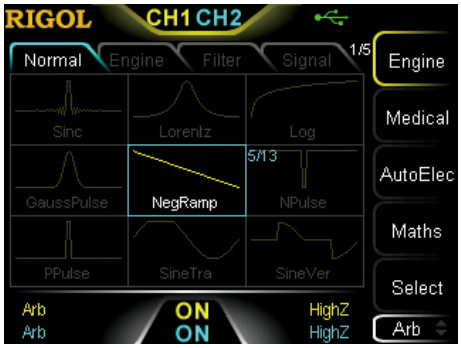
Arbitrary waveform function with innovative SiFi technology



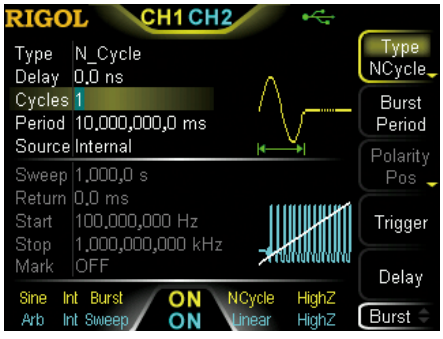
Standard harmonic generator



Up to 160 built-in waveforms



Burst function



Key Specifications

Model	DG1062Z	DG1032Z
Channel	2	
Maximum Frequency	60MHz	30MHz
Sample Rate	200Msa/s	
Waveforms	Waveforms Standard Waveforms: Sine, Square, Ramp, Pulse, Noise, Harmonics (up to 8 orders) Arbitrary Waveforms: Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz, Dual-Tone, DC, etc. up to 160 waveforms	
Waveform Length	8Mpts, optional 16Mpts	
Vertical Resolution	14bits	
Sine	1uHz-60MHz	1uHz-30MHz
Square	1uHz-25MHz	1uHz-15MHz
Ramp	1uHz-1MHz	1uHz-500KHz
Pulse	1uHz-25MHz	1uHz-15MHz
Arb/Harmonics	1uHz-20MHz	1uHz-10MHz
Noise（-3dB）	60MHz	30MHz
Sine Wave Spectrum Purity	Total Harmonic Distortion：<0.075%(10Hz-20KHz,0dBm); Phase Noise：<-125dBc@10MHz (0dBm,10KHz offset)	
Square Rise/Fall Time	<10ns	
Jitter (rms)	≤ 5MHz： 2ppm+200ps， >5MHz : 200ps	
Amplitude (into 50 Ω)	≤ 10MHz：2.5mVpp-10Vpp; ≤ 30MHz:2.5mVpp-5Vpp; ≤ 60MHz:2.5mV-2.5Vpp	
Modulation Type	AM,FM,PM,ASK,FSK,PSK,PWM	
Work Mode	Continue, Burst, Sweep, Modulation	
Burst Characteristics	Carrier Frequency 2mHz-60MHz (or 30MHz), Burst Count：1 to 1 000 000 or Infinite; trigger source: internal, external, manual	
Standard Interfaces	USB, LAN（LXI-C）, USB-GPIB（option）	

Ordering Information

	Description	Order Number
Model	DG1062Z (60MHz, Dual-channel)	DG1062Z
	DG1032Z (30MHz, Dual-channel)	DG1032Z
Standard Accessories	USB Cable	CB-USBA-USBB-FF-150
	BNC Cable (1 meter)	CB-BNC-BNC-MM-100
	Power Cord	-
	Quick Guide	-
Optional Accessories	16Mpts Memory for Arb	ARB16M-DG1000Z
	40dB Attenuator	RA5040K
	10W Power Amplifier	PA1011
	Rack Mount Kit (for single instrument)	RM-1-DG1000Z
	Rack Mount Kit (for dual instruments)	RM-2-DG1000Z
	USB-GPIB module	USB-GPIB

DG1022A Function/Arbitrary Waveform Generators

DG1022A function/arbitrary waveform generators use Direct Digital Synthesis (DDS) technology and can generate accurate, stable, clean, low distortion signals. It provides dual channel with 5 standard waveforms and built-in 48 arbitrary waveforms.

- 1μHz frequency resolution
- 2mV minimum range (50 Ohm)
- Dual channel output synchronously
- 48 built-in arbitrary waveforms
- 200 MHz built-in frequency counter

Key Specifications

Model	DG1022A					
Channel	2					
Maximum Frequency	25MHz					
Sample Rate	100Msa/s					
Waveforms	Sine, Square, Ramp / Triangular, Pulse, Noise, Arb（built-in 48 waveforms）					
Waveform Length	CH1：4Kpts；CH2：1Kpts					
Vertical Resolution	CH1：14bits；CH2：10bits					
Waveform Characteristics	Sine	Square	Pulse	Ramp / Triangular	Noise	Arb
	1uHz-25MHz	1uHz-5MHz	500uHz-5MHz	1uHz-500KHz	5MHz（-3dB）	1uHz-5MHz
Sine Wave Spectrum Purity	Total Harmonic Distortion：<0.2%(10Hz-20KHz,0dBm); Phase Noise：<-108dBc@10MHz (0dBm,10KHz offset)					
Square Rise/Fall Time	<20ns					
Amplitude (into 50 Ω)	CH1：≤ 20MHz：2mVpp-10Vpp; >25MHz:2mVpp-5Vpp; CH2：2mV - 3Vpp					
Modulation Type	AM,FM,PM,FSK					
Work Mode	Continue, Burst, Sweep, Modulation					
Burst Characteristics	Burst Count：1 to 50 000 or Infinite; gated; trigger source: internal, external, manual					

Ordering Information

	Description	Order Number
Model	DG1022A (25 MHz, dual-channel)	DG1022A
Standard Accessories	BNC Cable (1 meter)	CB-BNC-BNC-MM-100
	Power Cord	-
	Quick Guide	-
Optional Accessories	USB Cable	CB-USBA-USBB-FF-150
	40dB Attenuator	RA5040K
	10W Power Amplifier	PA1011
	BNC to Alligator Clamp	CB-BNC-AC-100-L

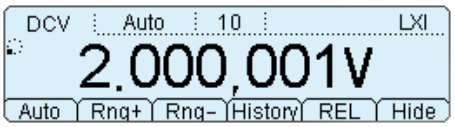
Digital Multimeter

DM3000 series Digital multimeters (DM3068, DM3058, DM3058E) are the products designed with multi-functions, high-precision, high performance and automatic measurements, they are integrated with the features of high-speed data acquisition, high precision, high statability, support any type of sensors, complete interfaces.

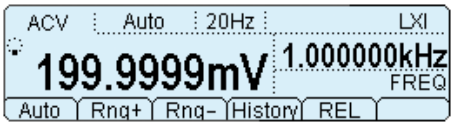
They have complete interface includes RS-232, USB, LAN (LXI-C) and GPIB, they support the U disk storage. It's easy to be connected to the PC by the USB or LAN. They have been optimized for the production line automatic measurements with the PASS/FAIL control, unified power management, pre-programmed configurations, configuration setup cloning, fast measurement speed and noise immunity to improve the productivity.DM3000 series Digital multimeters are widely used in the areas of Research, Production line tests, Education, Quality Assurance, Service/ Maintenance, etc.

- 6 ½ (DM3068) or 5 ½ (DM3058/E) digits readings resolution
- Max. 10A Current Measurement Range
- Dual Measurements Display
- Support temperature sensors (TC,RTD and THERM) and user defined any sensor
- Statistical analysis; Real-time Trend and Histogram display functions (DM3068)
- Abundant interfaces; Command compatible with main stream DMMs

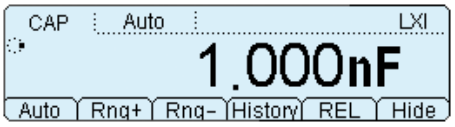
Real 6½ digits readings resolution (DM3068)



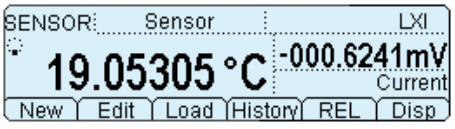
Easy to measure AC signal with double display



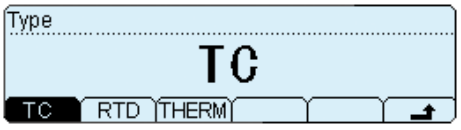
Standard Capacitor measurement function



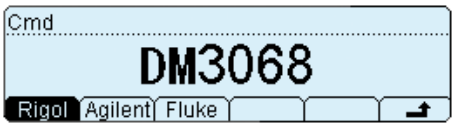
“Any sensor” function



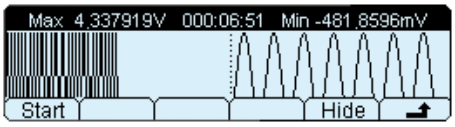
Support multiple temperature sensors



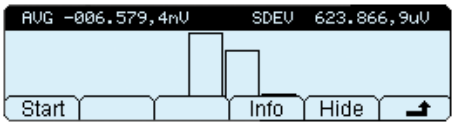
Support multiple commands



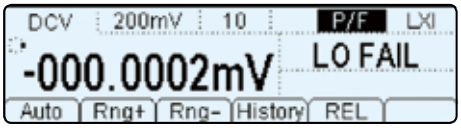
Trend display



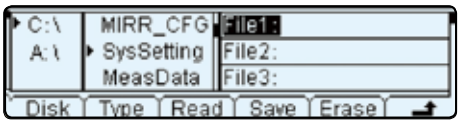
Histogram display



Pass/Fail test



Clone all configurations from one instrumemt to another



Key Specifications

Function	Range	1Year Accuracy Specifications ± (% of reading + % of range) (Tcal 23℃ ±5℃)	
		DM3068	DM3058/E
DC Voltage	200.000mV ~ 1000.00V	0.0035 + 0.0006	0.015 + 0.003
DC Current	200.000uA ~ 10.0000A	0.030 + 0.003	0.055 + 0.005
AC Voltage (RMS)	200.000mV ~ 750.000V	0.06 + 0.04	0.2 + 0.05
AC Current (RMS)	200.0000uA ~ 10.00000A[1]	0.10 + 0.04	0.30+ 0.10
Resistance	200.000Ω ~ 100.000MΩ	0.010 + 0.001	0.020 + 0.003
Diode Test	2.000V/1mA	0.010 + 0.020	0.05 + 0.01
Continuity Test	2000.0Ω/1mA	0.010 + 0.020	0.05 + 0.01
Period/Frequency	3Hz-1MHz (200mV ~750V)	0.007	0.01+ 0.003
Capacitance	2.000nF ~ 100.0mF[2]	1 + 0.3	1+0.5
Max. Reading Speed		10000 rdgs /s	123 rdgs /s
Volatile Memory		512k readings of history records	2000 readings of history records
Remote Command		RIGOL, Agilent, FLUKE	

[1] DM3058/E ACI range: 20mA to 10A
[2] DM3058/E Cap range: 2nF to 10uF

Ordering Information

	Description	Order Number
Model	DM3068: 6½ digits; standard interfaces: GPIB, LAN, USB, RS232	DM3068
	DM3058: 5½ digits; standard interfaces: GPIB, LAN, USB, RS232	DM3058
	DM3058E: 5½ digits; standard interfaces: USB, RS232	DM3058E
Standard Accessories	Two Test Leads (black and red)	LD-DM
	Two Alligator Clips (black and red)	ALLIGATORCLIP - DMM
	USB Cable	CB-USBA-USBB-FF-150
	Spare Fuses（DM3068: four; DM3058/E: two)	-
	Power Cord	-
	Quick Guide	-
	Resource CD (User's Guide and Application Software)	-
Optional Accessories	Kelvin Test Clips	KELVINTESTCLIP - DMM
	RS232 cable	-
	Rack Mount Kit	RM-DM3000

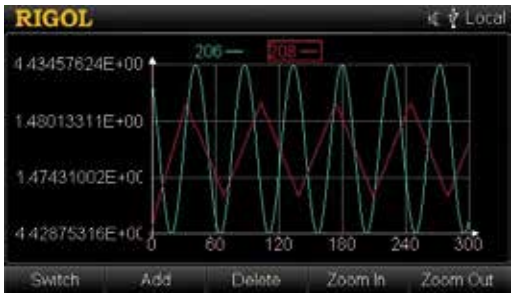
Data Acquisition/ Switch System

M300 Series Data Acquisition/Switch System with modular structure, which combines precision measurement capability with flexible signal connections, can provide versatile solutions for the applications with multiple points or signals to be tested in product performance test during R&D phase as well as automatic test during production process.

- 4.3' TFT LCD, easy for operation
- 6½ digit DMM can be inserted into any slot. supporting multiple measurement functions, including DCV,DCI, ACV, ACI, 2WR, 4WR, PERIOD, FREQ, TEMP and any sensor
- Up to 320 switch channels per mainframe, save on cost of ownership
- 8 kinds of Modules supported
- Full Interfaces supported: USB Device, USB Host, GPIB, LAN(LXI-C), RS232
- Powerful PC software

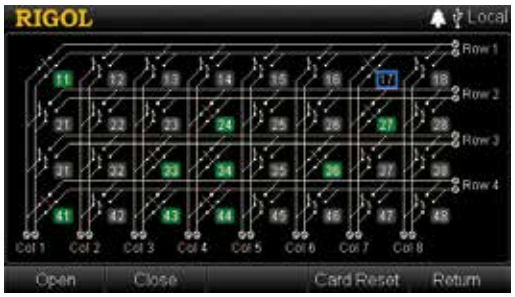
Measurement Configuration

Draw realtime scan data curves



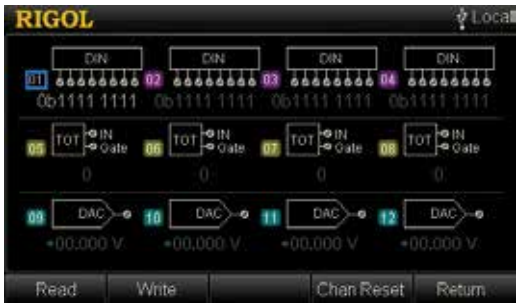
Single Channel Monitor

MC3648 Control Interface



Display real–time scan information and all the measurement data

MC3534 Control Interface



Key Specifications

Module	Terminal Box	Channels				Description
		20	24	32	64	
MC3065	-					DMM module, 6½ digits, support functions: DCV, ACV, DCI, ACI, 2WR, 4WR, FREQ, PERIOD, TEMP and any sensor
MC3120	TB20	●				20-channel HI/LO (differential) input, Support 4-wire measurement
MC3132	TB32			●		32-channel HI/LO (differential) input, Support 4-wire measurement
MC3164	TB64				●	64-channel (single-ended), switch HI input only
MC3324	TB24		●			Mix multiplexer with 20 voltage channels and 4 current channels
MC3416	TB16					16-channel actuator that can connect signal to the device under test or enable external device
MC3534	TB34					Multifunction module. ·DIO: four 8-bit digital input/output ports ·TOT: four totalizer input terminals ·DAC: four analog output terminals
MC3648	TB48					4×8 two-wire matrix switch

Ordering Information

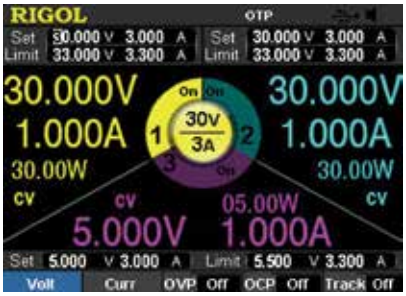
	Description	Order Number
Mainframe	M300: Data Acquisition/Switch System	M300
	M301: Data Acquisition/Switch System + DMM Module	M301
	M302: Data Acquisition/Switch System + DMM Module+MC3120 20-channel Multiplexer	M302
Module	DMM Module (6½ digits)	MC3065
	20-channel Multiplexer	MC3120
	32-channel Multiplexer	MC3132
	64-channel Single-ended Multiplexer	MC3164
	20-voltage-channel+4-current-channel Mixed Multiplexer	MC3324
	16-channel Actuator	MC3416
	Multifunction Module	MC3534
	4×8 Matrix Switch	MC3648
Terminal Box	MC3120 Terminal Box	M3TB20
	MC3324 Terminal Box	M3TB24
	MC3648 Terminal Box	M3TB48
	MC3534 Terminal Box	M3TB34
	MC3416 Terminal Box	M3TB16
	MC3132 Terminal Box	M3TB32
	MC3164 Terminal Box	M3TB64
Standard Accessories	USB Cable	CB-USBA-USBB-FF-150
	Mixed-interface Separator Line	MIX-SEPARATOR
	Power Cord, Quick Guide, Resource CD (User's Guide and Ultra Acquire Software)	-
	Spare Fuses	-
Optional Accessories	RS232 Ctable	CB-DB9-DB9-FF-150
	GPIB Reverse Entry for M300	M3GPIB
	External Port for Analog Bus Interface	M3A2B
	Rack Mount Kit	RM-1-M300
	Rack Mount Kit for Two Instruments	RM-2-M300
	M300 Series control and advanced data analysis PC Software	UltraAquire Pro

Programmable DC Power Supply

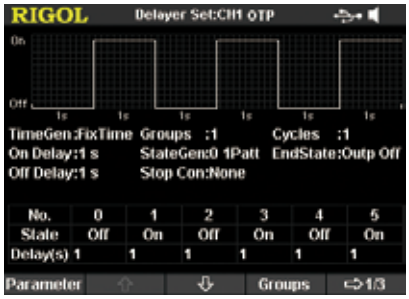
DP800 Series are high-performance programmable linear DC power supply. They have excellent features including timed outputs and tracking capabilities; extremely clean ripple and noise, comprehensive over-voltage, over current, over-temperature protection, a large and clear user interface, super performance specifications, and multiple standard interfaces. Note that the DP800A are high resolution models (1mV/1mA) and provide full interfaces.

- One, two or three outputs, the maximum power is 195W
- Low Ripple and Noise: <350uVrms/2mVpp
- Fast Transient Response Tim: < 50us
- 0.01% Linear Regulation Rate and Load Regulation Rate
- Standard Timing output; Built-in V,A,W measurements and waveform display
- 3.5 inch TFT display, easy for operation

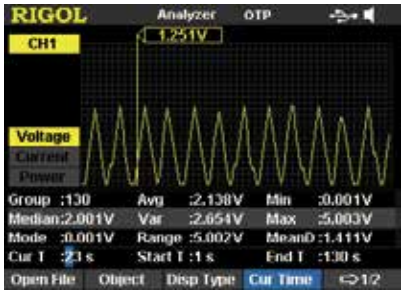
Intuitive User Interface



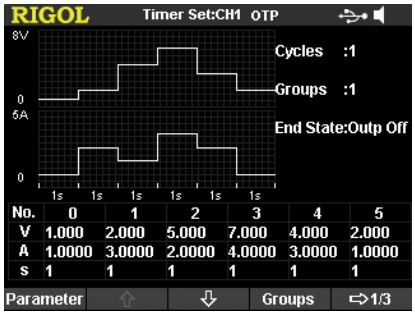
Output On/Off Delay



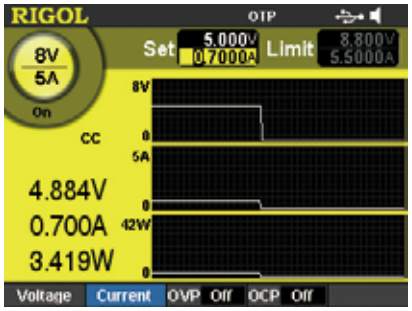
Output Analysis



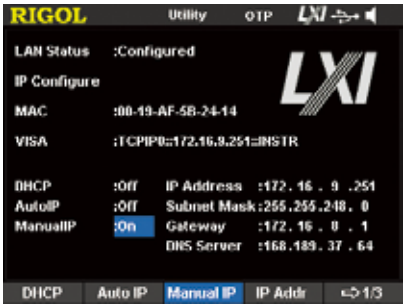
Timing Output Setting



V/A/W Waveform Display



LAN Setting



Key Specifications

Model	DP832A	DP832	DP831A	DP831	DP821A	DP821	DP811A	DP811
Channels	3				2		1	
DC Output	30V/3A || 30V/3A, 5V/3A		8V/5A || 30V/2A, -30V/2A		8V/10A||60V/1A		20V/10A or 40V/5A	
Load Regulation Rate	Voltage：< 0.01% + 2mV; Current：< 0.01% + 250uA							
Linear Regulation Rate	Voltage：< 0.01% + 2mV; Current：< 0.01% + 250uA							
Ripples and Noise(20Hz-20MHz)	Normal Mode Voltage：<350μVrms/2mVpp; Normal Mode Current：<2mArmss							

Programming Annual Accuracy	Voltage	CH1	0.05% + 20mV		0.1%+5mV		0.1%+25mV		0.05%+10mV	
		CH2	0.05% + 20mV		0.05%+20mV		0.05%+10mV		–	
		CH3	0.1% + 5mV		0.05%+20mV		–		–	
	Current	CH1	0.2% + 5mA		0.2%+10mA		0.2%+10mA		0.1%+10mA	
		CH2	0.2% + 5mA		0.2%+5mA		0.2%+10mA		–	
		CH3	0.2% + 5mA		0.2%+5mA		–		–	
Readback Annual Accuracy	Voltage	CH1	0.05% + 20mV		0.1%+5mV		0.1%+25mV		0.05%+10mV	
		CH2	0.05% + 20mV		0.05%+20mV		0.05%+10mV		–	
		CH3	0.1% + 5mV		0.05%+20mV		–		–	
	Current	CH1	0.15% + 5mA		0.2%+10mA		0.15%+10mA		0.1%+10mA	
		CH2	0.15% + 5mA		0.1%+5mA		0.15%+10mA		–	
		CH3	0.15% + 5mA		0.1%+5mA		–		–	
Programming Resolution	Voltage		1mV	10mV	1mV 10mV 10mV	1mV 10mV 10mV	10mV 1mV	10mV 10mV	1mV	10mV
	Current		1mA	1mA	0.3mA 0,1mA 0,1mA	1mA 1mA 1mA	0.1mA 1mA	1mA 10mA	0.5mA	10mA
Readback Resolution	Voltage		0.1mV	10mV	0.1mV	1mV	1mV 1mV	10mV 10mV	0.1mV	1mV
	Current		0.1mA	1mA	0.1mA	1mA	0.1mA 1mA	1mA 10mA	0.1mA	1mA
Display Resolution	Voltage		1mV	10mV	1mV	10mV	1mV 1mV	10mV 10mV	1mV	10mV
	Current		1mA	10mA	1mA	10mA	0.1mA 1mA	1mA 10mA	1mA	10mA
Interface	USB Device		●	●	●	●	●	●	●	●
	USB Host		●	●	●	●	●	●	●	●
	LAN		●	○	●	○	●	○	●	○
	RS232		●	○	●	○	●	○	●	○
	Digital IO		●	○	●	○	●	○	●	○
	USB-GPIB		○	○	○	○	○	○	○	○

Ordering Information

	Description	Order Number
Models	Three channel, high resolution, Programmable DC Power	DP832A
	Three channel, Programmable DC Power	DP832
	Three channel, two polarity ,high resolution, Programmable DC Power	DP831A
	Three channel, two polarity ,Programmable DC Power	DP831
	Two channel, high resolution, Programmable DC Power	DP821A
	Two channel, Programmable DC Power	DP821
	One channel, dual ranges, high resolution, Programmable DC Power	DP811A
	One channel, dual ranges, Programmable DC Power	DP811
Standard Accessories	USB cable	CB-USBA-USBB-FF-150
	One fuse (50T-025H 250V 2.5A)	-
	One shorted device	-
	Power cord, Quick Guide	-
Optional Accessories	1mV & 1mA High resolution option(DP8xx models)	HIRES-DP800
	4 Lines Trigger In&Out (DP8xx models)	DIGITALIO-DP800
	On-line Monitoring and analysis (DP8xx models)	AFK-DP800
	RS232 and LAN interface (DP8xx models)	INTERFACE-DP800
	USB-GPIB Converter	USB-GPIB
	Rack Mount Kit (one instrument)	RM-1-DP800
	Rack Mount Kit (two instruments)	RM-2-DP800

RIGOL

DP700 Series Programmable Linear DC Power Supply

Authorized Rigol Distributor

INSTRUMENTS 4 ENGINEERS

www.instruments4engineers.com

- DP711: single output, 30 V/5 A, total power up to 150 W
- DP712: single output, 50 V/3 A, total power up to 150 W
- Low ripple and noise:
  DP711: <500 μVrms/3 mVpp; <2 mArms
  DP712: <500 μVrms/4 mVpp; <2 mArms
- Excellent load and line regulation rate: <0.01% + 2 mV; <0.01% + 2 mA
- Transient response time: <50 μs
- 1 mV/1 mA resolution (optional)
- Sound overvoltage/overcurrent/overtemperature protection, with the response time for the overvoltage protection less than 10 ms
- External trigger function supported, enabling synchronous output for multiple devices
- Timing output supported (10 ms to 99999 s) for up to 2,048 groups
- 3.5-inch TFT-LCD; compact and elegant; easy to use
- Front panel locking and any specified key locking supported
- RS232 interface communication supported

DP700 series power supply is a type of affordable programmable linear DC power supply with high performance. With superb performance specifications, pure and reliable output, and clear user interface, the DP700 series supports timing output and trigger function, and provides a remote communication interface, enabling you to meet your diversified test requirements.

DP700 Series Programmable Linear DC Power Supply

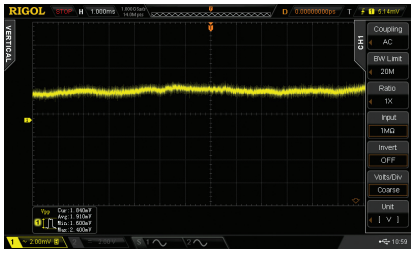
Dimensions: 140 mm (W) x 202 mm (H) x 332 mm (D) Net Weight: 6.9 kg

Typical Applications

- General-purpose testing in the R&D lab
- Quality control and assessment
- Pure power for RF (radio frequency)/MW (microwave) circuits or components
- Power for automobile electronic circuit test
- Verification and troubleshooting for the device or circuit characteristic
- Teaching experiment

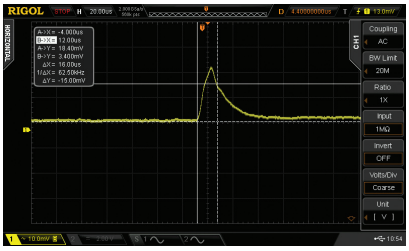
Design Features

Low ripple and noise



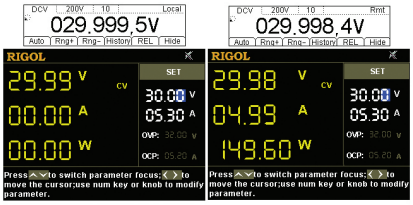
With extremely low noise, the product can satisfy your demands for highly pure power.

Fast transient response time



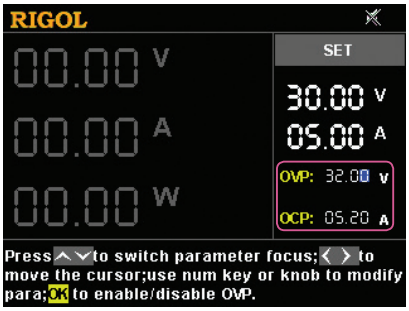
The transient response time is less than 50 μs. When the transient change occurs to the load current, the output voltage can be quickly restored to the set value, ensuring the output quality.

Excellent line regulation rate and load regulation rate: 0.01%



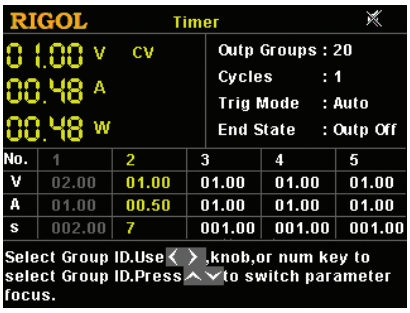
Excellent line regulation rate and load regulation rate ensure the output stability and safety.

Sound overvoltage/overcurrent protection (OVP/OCP)



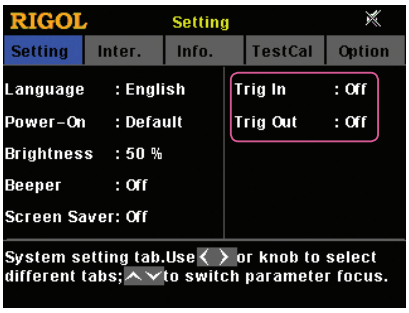
You can set thresholds for OVP and OCP values. If overvoltage or overcurrent occurs, the power supply shuts down the output automatically, and then a prompt message is displayed.

Powerful timing output function



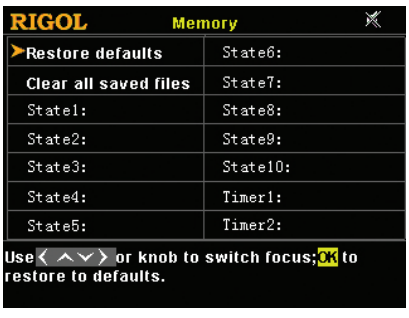
When the timing output is enabled, the system will configure the voltage, current, and the duration time based on the preset timer parameters, so as to provide varied voltage and/or current output for the load.

Convenient trigger function



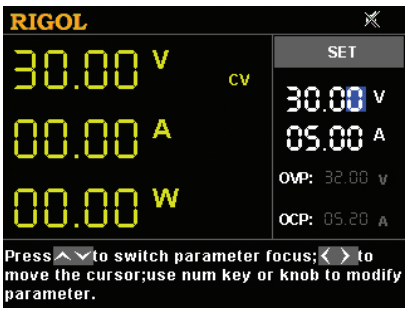
When multiple power supplies are in serial or parallel connection, enabling the external trigger function can realize the synchronous output for multiple power supplies.

Easy-to-use function of file storage and recalling



It supports storing and recalling state files and timer files, and allows you to restore the instrument settings to defaults.

Clear and intuitive user interface, easy to operate



You can clearly view the status of the instrument from its intuitive user interface. The help information is displayed in real time at the bottom of the interface, convenient for you to operate.

Specifications

All the technical specifications are guaranteed when the instrument has been working for more than 30 minutes under the specified operating temperature.

DC Output (0°C to 40°C)		
Model	Voltage/Current Rating	OVP/OCP
DP711	0 V to 30 V/0 A to 5 A	0.01 V to 33 V/0.01 A to 5.5 A
DP712	0 V to 50 V/0 A to 3 A	0.01 V to 55 V/0.01 A to 3.3 A

Load Regulation, ±(% of Output + Offset)	
Voltage	<0.01% + 2 mV
Current	<0.01% + 2 mA

Line Regulation, ±(% of Output + Offset)	
Voltage	<0.01% + 2 mV
Current	<0.01% + 2 mA

Ripple and Noise (20 Hz to 20 MHz)		
Model	Normal Mode Voltage	Normal Mode Current
DP711	<500 μVrms/3 mVpp	<2 mArms
DP712	<500 μVrms/4 mVpp	

Annual Accuracy[1] (25°C ± 5°C), ±(% of Output + Offset)		
Programming	Voltage	0.05% + 20 mV
	Current	0.2% + 10 mA
Readback	Voltage	0.05% + 20 mV
	Current	0.2% + 20 mA

Resolution		
Programming	Voltage	Standard: 10 mV High resolution option installed: 1 mV
	Current	Standard: 10 mA High resolution option installed: 1 mA
Readback	Voltage	Standard: 10 mV High resolution option installed: 1 mV
	Current	Standard: 10 mA High resolution option installed: 1 mA
Display	Voltage	Standard: 10 mV High resolution option installed: 1 mV
	Current	Standard: 10 mA High resolution option installed: 1 mA

Transient Response Time
Less than 50 μs for output voltage to recover to within 15 mV following a change in output current from full load to half load (or from half load to full load).

Command Processing Time[2]
<100 ms

OVP/OCP	
Accuracy, ±(% of Output + Offset)	0.5% + 0.5 V/0.5% + 0.5 A
OVP Activation Time	<10 ms (OVP>1 V)

Voltage Programming Speed[3] (within 1% of the total variation range)		
Up	Full Load	150 ms
	No Load	100 ms
Down	Full Load	30 ms
	No Load	450 ms

Temperature Coefficient[4], ±(% of Output + Offset)	
Voltage	0.01% + 2 mV
Current	0.02% + 3 mA

Stability[5], ±(% of Output + Offset)	
Voltage	0.02% + 2 mV
Current	0.1% + 3 mA

Mechanical	
Dimensions	140 mm (W) x 202mm (H) x 332 mm (D)
Weight	Net weight: 6.9 kg

Power	
AC Input Power (50 Hz to 60 Hz)	100 Vac ± 10%, 120 Vac ± 10%, 220 Vac ± 10%, and 240 Vac ± 10% (max: 253 Vac)
Maximum Input Power	400 VA

Interface	
RS232	1 (Male)

Environment	
Cooling Method	Fan cooled
Operating Temperature	0°C to 40°C for full rated output
Maximum Output Floating Voltage to Ground	±240 Vdc
Storage Temperature	-40°C to 70°C
Humidity	5% to 80% RH
Altitude	Below 2,000 m

Note[1]: The accuracy parameters are acquired through calibration under 25°C after 1-hour warm-up.
Note[2]: The maximum time required for the output to begin to change after receiving the APPLy and SOURce commands.
Note[3]: Exclude the command processing time.
Note[4]: Maximum change in output/readback per °C after a 30-minute warm-up.
Note[5]: Following a 30-minute warm-up, change in output over 8 hours under constant load, line, and ambient temperature.

Order Information

	Description	Order No.
Model	Programmable Linear DC Power Supply (single channel, 30 V/5 A)	DP711
	Programmable Linear DC Power Supply (single channel, 50 V/3 A)	DP712
Standard Accessories	Power Cord	-
	Either one of the following specified fuses: Fuse 50T-050H 250V 5A (AC Selector: 100 Vac or 120 Vac) Fuse 50T-025H 250V 2.5A (AC Selector: 220 Vac or 240 Vac)	-
	Quick Guide (hard copy)	-
Optional Accessories	High Resolution	HIRES-DP700
	Trigger (external synchronous trigger input and output)	TRIGGER-DP700
	Timer	TIMER-DP700
	9-Pin RS232 Cable (female-to-female, straight)	CB-DB9-DB9-F-F-150
	DP700 Series Rack Mount Kit (for a single instrument)	RM-1-DP700
	DP700 Series Rack Mount Kit (for two instruments)	RM-2-DP700
	DP700 Series Rack Mount Kit (for three instruments)	RM-3-DP700

Warranty Period

Three years for the mainframe.