

EXPERIMENT INSTRUMENTS

- OSCILLOSCOPE
- FUNCTION GENERATOR
- SIGNAL GENERATOR
- MULTIFUNCTION COUNTER
- LCR METER

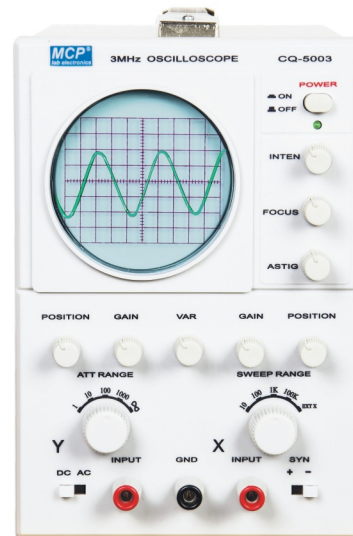
CQ5003



NEW

Features

- .3MHz single channel
- .Sensitivity 50mV
- .Easy to operate
- .Low cost, high performance
- .Signal input with binding post



CQ5003

Technical Data		CQ5003
CRT	Type	3" round
	Display area	8 × 10div (1div=6mm)
	Potential	1.3kV
Vertical System	Sensitivity	5mV/div ± 10%
	Width of band (-3dB)	DC:0~3MHz AC:10Hz~3MHz
	Input impedance	1MΩ ± 3% 40pF ± 5pF
	Input coupling	DC, AC
	Max. input voltage	400V (DC + ACpeak)
	Attenuator	1 / 1, 1 / 10, 1 / 100, 1 / 1000
Horizontal system	Sweep time	10Hz~10kHz 4 steps and fine control
	Trigger	INT (positive or negative)
X -Y operation	Sensitivity	100mV/div ± 10%
	Width of band (-3dB)	10Hz~500kHz
	Input impedance	1MΩ ± 3% 60pF ± 5pF
Power source	110~127 VAC ± 10%, 220~240VAC ± 10% 50Hz ± 2Hz, 60Hz ± 2Hz	
Dimensions (W × H × D)	130mm × 195mm × 300mm	
Weight	3kg	
Other	Accessories	One operation manual, one power cable

CQ 5005

Features

- .5MHz single channel
- .Sensitivity 50mV
- .Easy to operate
- .Low cost, high performance
- .Signal input with binding post



CQ5005

Technical Data		CQ5005
CRT	Type	3" round
	Display area	8 × 10div (1div=6mm)
	Potential	1.3kV
Vertical System	Sensitivity	5mV/div ± 10%
	Width of band (-3dB)	DC:0-5MHz AC:10Hz-5MHz
	Input impedance	1MΩ ± 3% 40pF ± 5pF
	Input coupling	DC, AC
	Max. input voltage	400V (DC + ACpeak)
	Attenuator	1 / 1, 1/ 10, 1/ 100, 1 / 1000
Horizontal system	Sweep time	10Hz~10kHz 4 steps and fine control
	Trigger	INT (positive or negative)
X -Y operation	Sensitivity	100mV/div ± 10%
	Width of band (-3dB)	10Hz~500kHz
	Input impedance	1MΩ ± 3% 60pF ± 5pF
Power source	110~127 VAC ± 10%, 220~240VAC ± 10% 50Hz ± 2Hz, 60Hz ± 2Hz	
Dimensions (W × H × D)	130mm × 195mm × 300mm	
Weight	3kg	
Other	Accessories	One operation manual, one fuse, one power cable, two test leads

CQ5010C/5010D

Features

- .Electrical encoder switch to make high stability
- .10MHz single channel
- .TV synchronizing, X-Y operating
- .Easy to operate
- .High performance, sensitive 5mV/div
- .New novel appearance



CQ5010C



CQ5010D

Technical Data		CQ5010C/CQ5010D
CRT	Type	3" round
	Display area	8 × 10div (1div=6mm)
	Potential	1.3kV
	Lighting color	Green
Vertical System	Sensitivity	5mV/div-5V/div ± 3%
	Width of band (-3dB)	DC: 0~10MHz AC: 10Hz~10MHz
	Input impedance	1MΩ ± 3% 30pF ± 5pF
	Input coupling	DC, GND, AC
	Max. input voltage	400V (DC + ACpeak)
	Trimming ratio	2.5 : 1
Horizontal system	Sweep time	0.1s/div-0.1 μs/div ± 3%
	Trimming ratio	2.5 : 1
Trigger system	Mode	AUTO, NORM, TV
	Source	INT, LINE, EXT
	Polarity	"+" or "-"
	Trigger sensitivity	INT: 1div, EXT: 3div, TV: 2div
	External trigger input	Input impedance: 1MΩ ± 3% 25pF ± 5pF Max. input voltage: 160V (DC+ACpeak)
X-Y operation	Sensitivity	X: 0.5V/div Y: 5mV/div-5V/div
	Width of band (-3dB)	DC: 0-1MHz AC: 10Hz - 1MHz
	Phase difference	≤ 3° (DC ~ 50kHz)
Calibration	Source	1kHz ± 2% 0.5Vp-p ± 2% square wave
Power source		110~127 VAC ± 10%, 220~240VAC ± 10% 50Hz ± 2Hz, 60Hz ± 2Hz
Dimensions (W × H × D)		225 × 91 × 290mm, 140 × 196 × 290mm
Weight		3kg
Other	Accessories	One operation manual, one fuse, one power cable, one probe

CQ5020/5030



Features

- .High sensitivity 1mV/div
- .Wide vertical range 20V/div
- .20MHz/30MHz dual channel
- .TV synchronization
- .Z axis input
- .Vertical mode triggering
- .Ch1 output



CQ5030

Technical Data		CQ5020/CQ5030			
CRT	Type	6" rectangle, internal graticule, 0%, 10%, 90% and 100% marks			
	Display area	8 × 10div (1div=10mm)			
	Accelerating voltage	1.9kV(CQ5020) 2kV (CQ5030)			
	Intensity and focusing	Continuously adjustable at front panel			
	Trace rotation	Adjusted at the front panel			
Vertical System	Sensitivity and accuracy	5mV/div~20V/div ± 3% 1mV/div~2mV/div ± 5% 12 calibration steps in 1-2-5 sequence, ×5 MAG only CH1			
	Trimming ratio	≥2.5:1			
	Width of band (-3dB)	DC(AC 10Hz) ~20MHz (CQ5020)/30MHz (CQ5030)			
	Rise time	≤ 17.5ns (CQ5020) ≤12ns (CQ5030)			
	Input impedance	Approx. 1MΩ ±3% 30pF ±5pF			
	Input coupling	DC, GND, AC			
	Max. input voltage	400V (DC + ACpeak) at 1kHz or less			
Horizontal system	Vertical mode	CH1, CH2, DUAL (CHOP, ALT), ADD, CH2 inverse			
	CH1 signal output	25mV/div 50Ω 20Hz~10MHz(-3dB)			
	Sweep time	0.2 μs/div~0.2s/div 19steps in 1-2-5 sequence			
	Sweep accuracy	±3%, ±5% at ×10MAG			
	Trimming ratio	≥2.5:1			
Trigger system	Sweep magnification	×10MAG			
	Max sweep time	20ns/div			
	Mode	AUTO, NORM, TV			
	Source	VERT-MODE, CH1, EXT, LINE			
	Coupling	AC			
X-Y operation	Polarity	"+" or "-"			
	Trigger sensitivity		10Hz~10MHz	10MHz~20MHz	20MHz~30MHz
		INT	0.5div	1.5div	1.5div
		EXT	0.2	0.8	0.2
			TV sync pulse 1 div or 1V(EXT)		
Axis Z	External trigger input	Input impedance: 1MΩ ±3% 25pF ±5pF Max. input voltage: 400V			
	Input	X-axis: CH1, Y-axis: CH2			
	Sensitivity & accuracy	5mV/div~20V/div ± 3%, 1mV/div~2mV/div ± 5%			
	Width of band (-3dB)	Axis X: CQ5020: DC ~ 500kHz CQ5030: DC ~ 1MHz			
	Phase difference	≤3° or less from DC to 50kHz			
Calibration	Sensitivity	5V			
	Polarity	Negative going input increase intensity			
	Input impedance	20kΩ ~30kΩ			
	Usable frequency range	DC-2MHz			
	Max input voltage	30V (DC + AC peak)			
Power source	Signal				
Dimensions (W × H × D)	1kHz 0.5Vp-p square wave				
Weight	110~127 VAC ± 10%, 220~240VAC ± 10%, 50Hz ± 2Hz / 60Hz ± 2Hz				
Other	Accessories				
	One operation manual, one fuse, one power cable, two probes				

CQ620C/620CF/640C/640CF 

Features

- .Build-in 6 digital frequency counter (CQ620CF, CQ640CF)
- .Economic choice for high quality
- .20MHz/40MHz/50MHz dual channel
- .ALT triggering function
- .Encoder for sweep switch
- .Fully sealed long life vertical sensitivity switch
- .10 times sweep magnification
- .TV synchronization, X-Y mode



CQ620CF

Technical Data		CQ620C/620CF	CQ640C/640CF	
CRT	Type	6-inch rectangular with internal graticule 8×10div (1div=1cm)		
	Z-Axis input	Zin: ≈47kΩ ; Vin: ≥5Vp-p; Bw: DC~2MHz		
	Accelerating voltage	2kV(20MHz) 12kV(40MHz)		
	Illumination	Front panel control		
Vertical	Sensitivity	±3% 5mV~5V/div		
	Bandwidth	DC (AC 10Hz) ~20MHz(-3dB)	DC (AC 10Hz) ~40/50MHz(-3dB)	
	Rise time	≤17.5ns	≤8.75ns /7ns	
	Input impedance	≈1MΩ / 25PF		
	Max input voltage	400V (DC +ACp-p)		
	Input coupling	AC, DC,GND		
	Vertical operation mode	CH1, CH2, DUAL (ALT/CHOP)ADD, CH2 INV		
Horizontal	Sweep time	0.2 μs~0.5s / div±3%; MAGx10:20ns ~ 50ms /div ±5%		
	Sweep time accuracy	±3%, ±5% at ×10MAG (20ns~50ns/DIV uncalibrated)		
	Sweep magnification	10 times		
	Max sweep time	20ns/DIV		
	Linear	±5%, ±10% at ×10MAG		
	Trigger	AUTO,NORM,TV-V,TV-H		
Trigger	Trg-level lock	√		
	Trigger source	CH1, CH2, ALT, LINE, EXT		
	Trigger coupling	AC		
	Trigger slope	"+" or "-"		
	Trigger sensitivity		20Hz~2MHz	2MHz~20MHz
			CH1,CH2 0.5DIV	1.5DIV
			ALT 2.0DIV	3.0DIV
			EXT 200mV	800mV
			TV sync pulse >1DIV or 1V (EXT)	
	External trigger input	Input impedance: 1MΩ ±3%, 25pF±5pF Max. input voltage: 400V (DC+ACpeak) at 1kHz		
X-Y	Sensitivity	5mV~5V/div, ±4%		
	X-axis bandwidth	DC ~500kHz		
	Phase error	≤3° DC ~ 50kHz		
Output signal	CH1 signal output	√		
	Calibrator output	1kHz square wave, 2Vp-p±2%		
Build-in frequency counter	10Hz~20/40MHz; 6digits			
Power source	AC 110/220V±10%, 50Hz/ 60Hz, ≈35W			
Dimensions	310(W) × 150(H) × 455(D)mm			
Weight	Approx. 8kg			
Accessories	One operation manual, one fuse, onepower cable, two probes			

VO-102B



Features

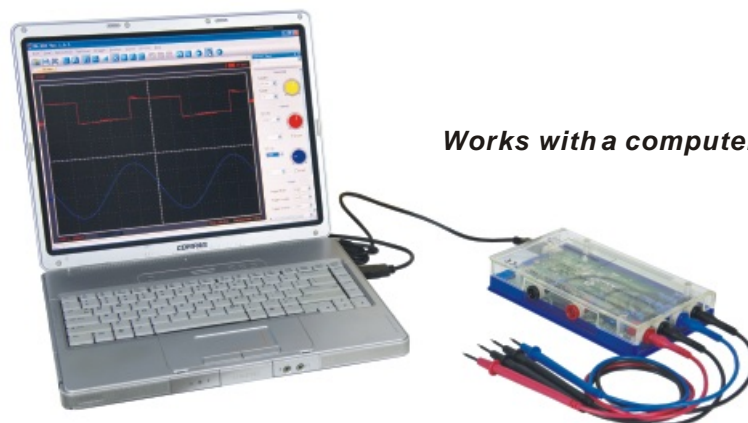
- .10MHz bandwidth 2CHs, 48MSa/s real-time sample rate
- .Safety 4mm input socket
- .Colored two pairs of multimeter probe
- .USB2.0 interface, no external power source required, easy to use
- .Excellent transparent design with functional block diagram
- .Double insulation
- .Carried easily
- .Operating system: Windows NT, Windows 2000, Windows XP, Windows VISTA, Windows 7



VO-102B

Specifications

Max. sample rate (real-time sampling):	48MSa/s
Channels:	2 channels (4 safety 4mm input sockets)
Bandwidth:	10MHz (-3dB)
Vertical resolution:	8 bits/channel
Vertical sensitivity and accuracy:	20mV~5V/div 8 step in 1,2,5 sequence ±3%
Vertical mode:	Ch1, CH2, Dual, ADD
Max. input voltage:	35V (DC+AC peak)
Input coupling:	DC
Input impedance:	1MΩ 25pF
Memory depth:	1M/CH
Time base range:	1ns-9000s, 39 Steps
Offset level:	±4 divisions
Offset increments:	0.02
Math:	+, -, ×, ÷, FFT
Trigger mode:	Auto, normal and single
Trigger slope:	+/-
Trigger level adjustable:	Yes
Trigger source:	CH1, CH2
Cursor measurement:	Time/frequency difference, voltage difference
Interface:	USB 2.0
Power source:	USB
Dimensions (W×H×D):	180×35×108 mm
Weight:	0.25kg



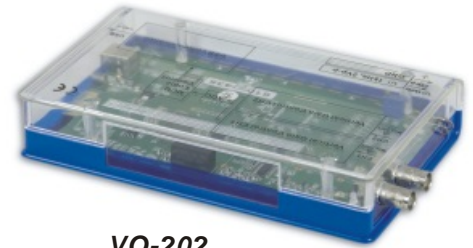
Works with a computer

V0-202



Features

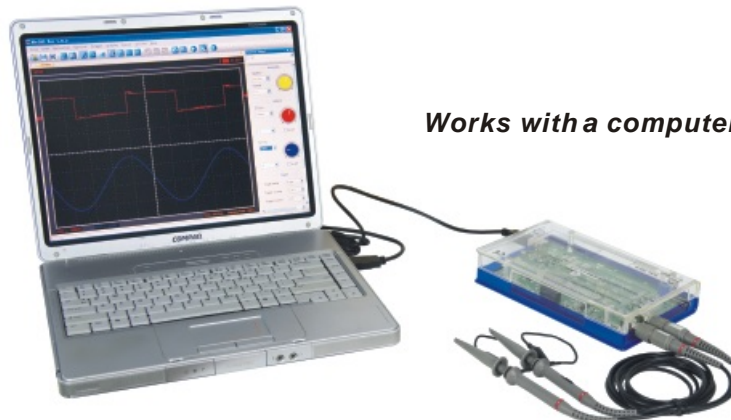
- .20MHz bandwidth 2CHs, 48MSa/s real-time sample rate
- .USB2.0 interface, no external power source required, easy to use
- .Excellent transparent design with functional block diagram
- .2Vp-p, 1KHz probe calibration output
- .20 measurement functions, be suitable for technical application
- .Intensity, invert, addition, subtraction, multiplication, division, X-Y plot, FFT
- .Waveform save: text file, jpg/bmp graphic file, MS excel/word file
- .Channel extensible by multiunit connecting to one computer
- .Labview\ VB\ VC\ builder second design kit
- .Operating system: Windows NT, Windows 2000, Windows XP, Windows VISTA, Windows 7



VO-202

Specifications

Real-time sampling (real-time sampling):	48MSa/s
Channels:	2 Channels (2 BNC input sockets)
Bandwidth:	20MHz (-3dB)
Vertical resolution:	8 bits/channel
Vertical sensitivity and accuracy:	20mV~5V/div 8 step in 1,2,5 sequence ±3%
Vertical mode:	Ch1, CH2, Dual, ADD
Max. input voltage:	300V (DC+AC peak)
Input coupling:	DC
Input impedance:	1MΩ 25pF
Memory depth:	1M/CH
Timebase range:	1ns-9000s, 39 Steps
Offset level:	±4 divisions
Offset increments:	0.02
Math:	+, -, ×, ÷, FFT
Trigger mode:	Auto, normal and single
Trigger slope:	+/-
Trigger level adjustable:	Yes
Trigger source:	Ch1, CH2
Cursor measurement:	Time/frequency difference, voltage difference
Interface:	USB 2.0
Power source:	USB
Dimensions (W×H×D):	180×35×108 mm
Weight:	0.25kg



Works with a computer

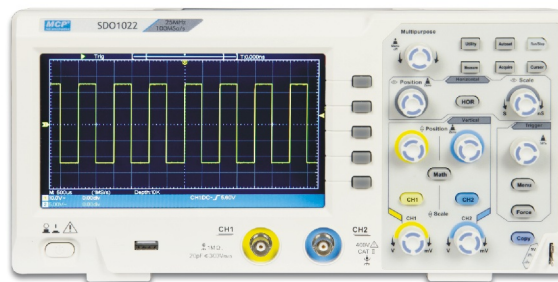
CLASS & ROOM TYPE DIGITAL STORAGE OSCILLOSCOPE

SDO 1000 SERIES 

NEW

Features

- . Bandwidth : 25MHz and 100MHz
- . Sample rate : 100MS/s - 1GS/s
- . 2-Channel
- . Ultra-thin body
- . 7 inch high resolution LCD
- . SCPI, and LabVIEW supported



SDO 1022

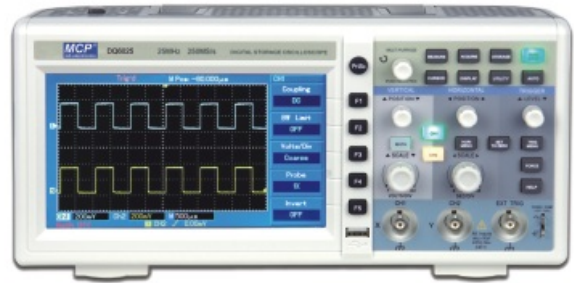
Technical Data	SDO 1022	SDO 1102
Channels	2	2
Bandwidth	25MHz	100MHz
Sample Rate	100MS/s	1GS/s
Display	7" color LCD, 800 x 480 pixels	
HorizontalScale	5ns/div - 1000s/div	2ns/div - 1000s/div
Rise Time	17.5ns	3.5ns
Input Impedance	1M Ω \pm 2%, in parallel with 20pF \pm 5pF	
Channel Isolation	50Hz : 100 : 1, 10MHz : 40 : 1	
Max Input Voltage	400V (PK - PK) (DC+AC, PK - PK)	
DC Gain Accuracy	\pm 3%	
Record Length	10K	
DC Accuracy(average)	\geq 16: \pm (3% reading + 0.05 div) for Δ V	
Probe Attenuation Factor	1X, 10X, 100X, 1000X	
LF Respond (AC, -3dB)	10Hz (at input, AC coupling, -3dB)	
Sample Rate	\pm 100ppm	
Relay Time Accuracy		
Interpolation	sin (x) / x	
Interval (Δ T) Accuracy (full bandwidth)	Single : \pm (1 interval time + 100ppm x reading + 0.6ns) Average > 16: \pm (1 interval time + 100ppm x reading + 0.4ns)	
Input Coupling	DC, AC, and GND	
Vertical Resolution(A/D)	8 bits (2 channels simultaneously)	
Vertical Sensitivity	5mV/div - 5V/div (at input)	
Trigger Type	Edge, Video	
Trigger Mode	Auto, Normal, and Single	
Trigger Level	\pm 5 divisions from screen center	
Line / Field Frequency (video)	NTSC, PAL and SECAM standard	
Cursor Measurement	Δ V, and Δ T between cursors	
Automatic Measurement	Vpp, Vavg, RMS, Frequency, Period, Vmax, Vmin, Vtop, Vbase, Width, Overshoot, Pre-shoot, Rise time, Fall time, +Width, -Width, +Duty, -Duty, Delay A->B \leftarrow , Delay A->B \rightarrow , area, cycle area	
Waveform Math	+, -, x, \div , invert, FFT	
Waveform Storage	16 waveforms	
Lissajous Figure Bandwidth	Full bandwidth	
Phase Difference	\pm 3 degrees	
Communication Interface	USB host, USB device	
Frequency Counter	available	
Power Supply	100V - 240V AC, 50/60Hz, CAT II	
Power Consumption	< 15W	
Fuse	2A, T class, 250V	
Dimension (W x H x D)	301 x 152 x 70 mm	
Weight	1.10 kg	

DQ6000 SERIES



Features

- 250MSa/s~1GSa/s sampling rate
- 7 inch wide rectangle colour LCD
- One key print screen
- 1mV/div~20V/div wide range
- FFT function
- Auto-setting for quick setup and waveform acquisition
- Advanced cursor modes: manual, auto and track
- Optional logic analyzer (DQ6052E, DQ6102E)



DQ6025

Technical Data		DQ6025	DQ6052	DQ6052E	DQ6102E
Display	Type	7" rectangle colour LCD			
	Backlight intensity	300nit (cd/m ²)			
	Display resolution	800 horizontal×480 vertical pixels			
	Display contrast	Adjustable			
Vertical system	Sensitivity	1mV / div~20V / div			
	Vertical resolution	8bit			
	Width of band (-3dB)	25MHz	50MHz	50MHz	100MHz
	Rise time	≤14ns	≤7ns	≤7ns	≤3.5ns
	Single-shot band width	25MHz	50MHz	50MHz	100MHz
	Input coupling	DC, GND, AC			
	DC gain accuracy	±5% (1mV/div~2mV/div)	±4% (5mV/div)	±3% (10mV/div~20V/div)	
Horizontal system	SEC/DIV range	10ns~50s/div	5ns~50s/div	2ns~50s/div	2ns~50s/div
	Sampling rate range	250MSa/s	500MSa/s	1GSa/s	1GSa/s
	Waveform interpolation	(Sinx)/x			
	Record length	2×512k	2×512k	2×7.5M	2×7.5M
	memory depth	12.5k per channel		32k per channel	
	Sampling rate and delay time accuracy	±50ppm over any ≥1ms time interval			
	Delta time measurement accuracy	Single ±(1 sampling interval time+50ppm×rdg+0.6ns) Average ±(1 sampling interval time+50ppm×rdg+0.4ns)			
Trigger system	Mode	Auto, Normal, Single			
	Type	Edge, Pulse Width, TV (only for DQ6025)			
	Hold off range	100ns ~ 1.5s		80ns ~ 1.5s	
Math		+, -, ×, ÷			
		FFT			
Acquire Input	Acquisition mode	Sampling, peak value sampling and smoothness sampling			
	Input coupling	DC, GND, AC			
	Input impedance	1MΩ ±2% 20pF±3pF		1MΩ ±2% 24pF±3pF	
	Probe attenuation factor	1×, 10×, 100×, 1000×			
	Max. input voltage	400V(DC+AC peak, 1MΩ)			
	Channel CMR	Better than 40: 1			
Measurement	Interchannel time delay	150ps			
	Cursor	Voltage difference (ΔV) between cursors Time difference (ΔT) between cursors Reciprocal of ΔT in Hz (1/ΔT)			
	Auto-measure	Max, Min, High, Low, Middle, Pk-Pk, Ampl, Mean, CycMean, RMS, CycRMS, Area, CycArea, Overshoot, Pre-shoot, Period, Frequency, Rise, Fall, +Width, -Width, +Duty, -Duty, RiseDelay, FallDelay, Phase, FPP, FRF, FFR, FFF, LRF, LRR, LFR, LFF, total 34 types of parameter measurements (DQ6025, DQ6052 only 26 types of above)			
I/O	Standard	USB(OTG); Pass/Fail (except DQ6052); USB logic analyzer (optional for DQ6052E, DQ6102E)			
	Channels	16			
USB logic analyzer (optional)	Sample rate	250MSa/s			
	Memory depth	128k×2			
	Max. input voltage	±40Vpp			
	Min. voltage swing	1.2Vpp			
	Logic level supported	TTL, CMOS, ECL			
Calibrator signal	Output voltage	3V (≥1MΩ load)			
	Output frequency	1kHz			
Power source	100~ 240VACrms, 45Hz~440Hz; 50VAMax; CAT II				
Dimensions	306(W) × 147(H) × 122(D)mm				
Weight	2.2kg				
Accessories	Operation manual, power cord, USB cable, probe×2, software CD-ROM				

F8-LG100

Features

- .DDS technology design, ultra-low power consumption
- .Frequency range: 0.01Hz~30kHz
- .High frequency accuracy: $\pm 1 \times 10^{-6}$
- .High frequency stability: $\pm 1 \times 10^{-6}$
- .Max frequency resolution: 0.01Hz
- .Low distortion sine wave: <0.8%
- .Audio input and power output
- .Optional USB interface



F8-LG100

Technical Data

Main output	Output frequency	0.01Hz ~ 30kHz
	Output waveforms	Sine, Square, Triangle
	Frequency accuracy	$\pm 5 \times 10^{-6}$
	Frequency resolution	0.01Hz
	Frequency stability	$\pm 1 \times 10^{-6}$
	Output amplitude	0.2~20Vp-p (no load)
	Amplitude accuracy	$\pm 10\%$ (1kHz, 20Vp-p)
	Impedance	$50 \Omega \pm 10\%$
	DC offset	$\pm 5V$ (no load)
Display	3 digits LED for frequency display	
Sine wave	Distortion factor	$\leq 0.8\%$ (at 1kHz)
Square wave	Rise or fall time	$\leq 5 \mu s$
Triangle wave	Linear	$\geq 98\%$ 100Hz~100kHz
Audio input	Frequency range	20Hz~20kHz
	Voltage gain	0~40dB
	Power output	$\geq 1.5W$ (4Ω load) $\geq 3W$ (8Ω load)
VCF	Input voltage	0~5V
	Input impedance	$10k \Omega \pm 10\%$
	Frequency change	0 to the current set of frequency value
Power output	Output amplitude	$\geq 20Vp-p$ (no load) $\geq 18Vp-p$ (10Ω load)
	Output impedance	$\leq 4 \Omega$
	Output current	$\geq 0.6A_{rms}$
Power supply		110~127 VAC $\pm 10\%$, 220~240VAC $\pm 10\%$, 50Hz $\pm 2Hz$ / 60Hz $\pm 2Hz$
Dimensions		240(W) \times 90(H) \times 170(D)mm
Weight		1.5 kg

PG1005



Features

.Separate TTL/CMOS output

- .Complement and one shot function
- .Output amplitude from 0.5V to 10V
- .Pulse width range from 100ns to 10s
- .50 Ω output impedance
- .400 Ω input impedance for TRIG/GATE



PG1005

Technical Data	PG1005	
Main output	Output frequency	0.5Hz ~ 5MHz
	Period	100ns~10s
	Pulse width and spacing control	100ns~10s in eight ranges
	Accuracy	±5%
		±15% at Max. range
	Output amplitude	0.5V~10V
	Amplitude accuracy	±5%
	Duty cycle	1~10 ⁸ continuously adjustable
	Rise/fall	30ns
Impedance		50 Ω
	Jitter	0.1%+50ps
Operating mode	Normal, trig., gate, one shot	
Trig./gate input	TTL & DC input	>2.4Vp-p, > 40ns
	Sine wave input	>1.7Vrms, <10MHz
	Input impedance	400 Ω
	Input amplitude	±10V
TTL/CMOS output	Fan out	40 TTL loads
	Sink	60mA at 0.8V
	Rise/fall	20ns
Sync. output	Amplitude	>2.4V
	Fan out	10 TTL loads
	Sink	16mA at 0.8V
	Rise/fall	20ns
Power supply		110~127 VAC±10%, 60Hz±2Hz
		220~240VAC±10%, 50Hz±2Hz
Dimensions	265(W) × 110(H)×300(D)mm	
Weight	1.5 kg	

SG1638B



Features

- .Three waveforms: sine, triangle, square
- .6 ranges of frequency, up to 2MHz



SG1638B

Technical Data

Main output	Output frequency	0.2Hz ~ 2MHz
	Output waveforms	Sine, Square, Triangle
	Output impedance	50 Ω ± 10%
	Output amplitude	≥20Vp - p (1MΩ Load); ≥10Vp - p (50Ω Load)
	Output attenuation	20dB / 40dB
	Attenuation accuracy	±3%
Sine wave	Distortion factor	≤2% (≤2100kHz)
	Frequency response	±0.5dB (≤100kHz) ±1dB (>100kHz)
Square wave	Rise or fall time	100ns (5Vp-p 1MHz)
Triangle wave	Linear	98% (≤100kHz) 95% (>100kHz)
Power supply		110~127 VAC±10%, 220~240VAC±10%, 50Hz±2Hz / 60Hz±2Hz
Dimensions		225(W) × 105(H) × 195(D)mm
Weight		2kg

FC1024A/FC1026A



Features

- .8 digits LED display
- .Measure range up to 2.4GHz (channel B)
- .Low pass filter for low frequency measuring
- .Two channels input



FC1024A

Technical Data	FC1024A	FC1026A
Function	Measure frequency, period	
Frequency range	10Hz~100MHz (channel A) 100MHz~2.4GHz (channel B)	
Period range	100ns~1s (channel A)	
Sensitivity	35mV (1~20Hz)	
	20mV (20Hz~100MHz)	
	30mV (100MHz~2.4GHz)	
Max input voltage	250V (channel A), 1/20 attenuation 30mVrms~1Vrms (channel B)	
Input impedance	1MΩ (channel A) 50Ω (channel B)	
Channel ALPF	-3dB bandwidth about 100kHz	
Channel A att.	0dB/20dB	
Couple mode	AC	
Measure error	±1×10 ⁻⁵	±1×10 ⁻⁶
Gate time	1s, 10s	
Power source	220V±10%, 50Hz±5%	
Dimensions (W×H×D)	230 × 85 × 240mm	
Weight	1.5 kg	

SG1634N, SG1638N, SG1640N & SG1642N



Features

- .Multi waveforms: sine, triangle, square, pulse and etc.
- .50Hz sine output
- .TTL output and single output(SG1634N & SG1638N)
- .DC offset and symmetry continuously adjustable
- .VCF input
- .Built-in 6 digits counter up to 15MHz (SG1638N & SG1642N)
- .Power output function (SG1642N)
- .Microphone input(SG1642N)
- .TTL and CMOS outputs (SG1640N)
- .Sweep outputs (SG1640N)



SG1640N



SG1634N



SG1638N



SG1642N

Technical Data

Main output	Output frequency	0.2Hz ~ 2MHz		
	Output waveforms	Sine, Square, Triangle, Ramp, Pulse and etc.		
	Output impedance	50Ω ±10%		
	Output amplitude	≥20Vp - p (1MΩ Load); ≥10Vp - p (50Ω Load)		
	Output attenuation	0dB / 20dB / 40dB		
	Attenuation accuracy	±3%		
	DC offset	0~±10V (1MΩ Load); 0~±5V (50Ω Load)		
	Duty cycle	20% ~ 80%		
	Sine wave	Distortion factor	≤2% (≤100kHz)	
		Frequency response	±0.5dB (≤100kHz)	±1dB (>100kHz)
Square wave	Rise or fall time	100ns (5Vp-p 1MHz)		
Triangle wave	Linear	98% (≤100kHz)	95% (>100kHz)	
	Rise or fall time	≤50ns		
TTL output	Low level	≤0.4V		
	High level	≥3.5V		
	Impedance	100Ω		
VCF	Input voltage	0~5V		
	Input impedance	10kΩ ±10%		
Counter (SG1638N, SG1640N & SG1642N)	Display	6 digits		
	Frequency range	1Hz ~ 15MHz		
	Input impedance	10kΩ ±10%		
	Sensitivity	200mVrms		
	Gate time	10s (≤8kHz)	1s (8kHz to 200kHz)	0.1s (200kHz to 15MHz)
	Resolution	0.1Hz/1Hz		
	Accuracy	≤1%±1 digit		
Power output (SG1642N)	Max. input voltage	50Vp-p		
	Output amplitude	20Vp-p (20Ω)	10Vp-p (4Ω)	
	Output impedance	4Ω		
CMOS output (SG1640N)	Protection	Short circuit;	Resist input voltage: ±35V(1 min)	
	Rise or fall time	≤50ns		
	Low level	≤0.6V		
	High level	4V~15V		
Sweep (SG1640N)	Input impedance	2KΩ		
	Sweep mode	Lin./log		
	Sweep time	10ms~5s		
Power supply	Sweep rate	100:1		
		110~127 VAC±10%, 220~240VAC±10%, 50Hz±2Hz / 60Hz±2Hz		
Dimensions	225(W) × 105(H) × 195(D)mm			
Weight	1 kg / 3kg (SG1642N)			

SG1000 SERIES

Features

.DDS technology design, ultra-low power consumption

- .Frequency range: 0.1Hz~3MHz(SG1003)
- 0.1Hz~5MHz(SG1005)
- 0.1Hz~8MHz(SG1008)
- .High frequency accuracy: $\pm 1 \times 10^{-6}$
- .High frequency stability: $\pm 1 \times 10^{-6}$
- .Max. frequency resolution: 100mHz
- .Low distortion sine wave: <0.3%
- .Through the keyboard input frequency set value
- .Voltage display



SG1003

Technical Data		SG1003/SG1005/SG1008
Main output	Output frequency	0.1Hz~3MHz(SG1003) 0.1Hz~5MHz(SG1005) 0.1Hz~8MHz(SG1008)
	Output waveform	Sine, square, triangle
	Frequency accuracy	$\pm 5 \times 10^{-6}$
	Frequency resolution	100mHz
	Frequency stability	$\pm 1 \times 10^{-6}$
	Output amplitude	0.2~20Vp-p
	Amplitude accuracy	$\pm 10\%$ (1kHz, 20Vp-p)
	Impedance	50 Ω $\pm 10\%$
	Attenuator	-40dB, 0dB
	DC offset	$\pm 10V$
Sine wave	Display	6 digits LED display
	Output control	ON/OFF selector
Sine wave	Distortion factor	$\leq 0.3\%$ (20Hz~20kHz)
Triangle wave	Linear	$\geq 98\%$ 100mHz~100kHz
		$\geq 95\%$ 100kHz~1MHz
Square wave	Duty cycle	10%~90%
	Rise or fall time	$\leq 25ns$
TTL/COMS output	TTL level	$\geq 3Vp-p$
	Output capability	20TTL load
Power supply	CMOS level	3~13.5Vp-p
		110~127VAC $\pm 10\%$ /220~240VAC $\pm 10\%$, 50Hz $\pm 2Hz$ /60Hz $\pm 2Hz$
Dimensions		300(W) \times 110(H) \times 265(D)mm
Weight		1.5kg

SG300A SERIES

NEW

Features

- .2 Channel output
- .Max. output frequency 25MHz
- .Arbitrary waveform output
- .Inner -20dB attenuator with 1mV accuracy
- .Max. 999s Ling/Log. sweep
- .Pulse duty cycle resolution up to 1%
- .Compact design, high desktop efficiency
- .PC software available



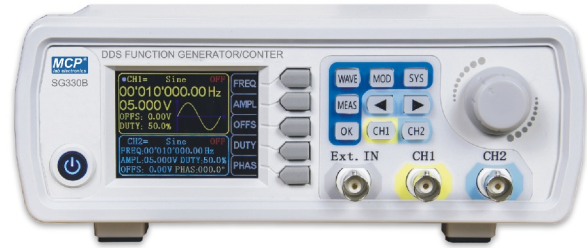
SG325A

Technical Data		SG306A	SG312A	SG325A
Main output	Output frequency	0~6MHz (sine) 0~6MHz (others)	0~12MHz (sine) 0~6MHz (others)	0~25MHz (sine) 0~6MHz (others)
	Output amplitude	5mVp-p~20Vp-p (>12MHz) 5mVp-p~15Vp-p (<12MHz)		
	Output wave	sine, square, triangle, TTL, arbitrary		
	Output modulation	sweep frequency		
	Wave length	2048 points		
	Wave accuracy	12bits		
	Sampling rate	200Msa/s		
	Frequency resolution	10mHz		
	Frequency accuracy	≤ ±20ppm		
	Amplitude resolution	10mVp-p(no attenuation), 1mVp-p(-20dB)		
	Amplitude accuracy	≤ ±1%+10mV@1kHz, 15Vp-p		
	Amplitude stability	±0.5% (every 5 hours)		
	Offset range	-120%~+120% (offset voltage : signal amplitude)		
	Offset resolution	1%		
	Phase range	0~ 359.0°		
Phase resolution	1°			
Sine wave	Harmonic distortion	40dBc(<1MHz) 35dBc(1MHz~20MHz)		
	Distortion factor	≤0.8% (20Hz~20kHz)		
Square wave	Rise time	≤20ns		
	Duty cycle range	0 ~ 99.9%		
TTL output	Rise or fall time	≤20ns		
	Low level	<0.3V		
	High level	1V~10V		
Sweep	Sweep mode	Line and log		
	Sweep time	1s~999s		
Ext. measuring	Frequency range	0.1Hz~60MHz	Gate time = 10s	
		1Hz~60MHz	Gate time = 1s	
		10Hz~60MHz	Gate time = 0.1s	
		100Hz~60MHz	Gate time = 0.01s	
	Output amplitude	0.5Vp-p~20Vp-p		
	Counter range (manual)	0~4294967295		
	Signal input	Ext. IN (analog input), TTLIN (digital input)		
Storage		M0~M9 (10 slot)		
Remote control interface		USB		
Power supply		DC 5V (with adapter)		
Dimensions(W × H × D)		190 × 71 × 180mm		
Weight		0.5 kg		

SG300B SERIES NEW

Features

- .2 Channel output
- .Max. output frequency 50MHz
- .Frequency resolution up to 0.01uHz
- .Arbitrary waveform output
- .2.4 inch TFT color display
- .Max. 999.9s Ling/Log. sweep
- .Pulse duty cycle resolution up to 1‰
- .Compact design, high desktop efficiency
- .PC software available



SG330B

Technical Data	SG315B	SG330B	SG350B	
Main output	Output frequency	0~15MHz (sine) 0~15MHz (triangle, square)	0~30MHz (sine) 0~6MHz (others)	0~50MHz (sine)
	Output amplitude	2mVp-p~20Vp-p ($\leq 10\text{MHz}$) 2mVp-p~10Vp-p (10MHz~30MHz)	2mVp-p~5Vp-p ($\geq 30\text{MHz}$)	
	Output wave	sine, square, triangle, TTL, arbitrary		
	Output modulation	sweep frequency		
	Wave length	2048 points		
	Wave accuracy	14bits		
	Sampling rate	266Msa/s		
	Frequency resolution	0.01uHz		
	Frequency accuracy	$\leq \pm 20\text{ppm}$		
	Amplitude resolution	1mV		
	Amplitude accuracy	$\leq \pm 1\% + 10\text{mV}@1\text{kHz}$, 15Vp-p		
	Amplitude stability	$\pm 0.5\%$ (every 5 hours)		
	Offset range	-9.99V~9.99V ($>2\text{V}$)	-2.5V~2.5V (0.2V~2V)	-0.25V~0.25V (0~0.2V)
	Offset resolution	0.01V		
	Phase range	0~ 359.9°		
Phase resolution	0.1°			
Sine wave	Harmonic distortion	$\geq 45\text{dBc}(<1\text{MHz})$ $\geq 40\text{dBc}(1\text{MHz}\sim 20\text{MHz})$		
	Distortion factor	$\leq 0.8\%$ (20Hz~20kHz)		
Square wave	Rise time	$\leq 25\text{ns}$	$\leq 20\text{ns}$	$\leq 15\text{ns}$
	Duty cycle range	0.1% ~ 99.9%		
	Overshot	$\leq 5\%$		
TTL output	Rise or fall time	$\leq 20\text{ns}$		
	Low level	$< 0.3\text{V}$		
	High level	1V~10V		
	Overshot	$\leq 5\%$		
Sweep	Sweep mode	Line and log		
	Sweep time	0.1s~999.9s		
Ext. measuring	Frequency range	1Hz~100MHz	Gate time = 0.01s~10s	
	Output amplitude	0.5Vp-p~20Vp-p		
	Counter range (manual)	0~4294967295		
	Pulse width measuring	Max. 20s (0.01us resolution)		
	Cycle measuring	Max. 20s (0.01us resolution)		
	Signal input	Ext. IN (analog input), TTLIN (digital input)		
Storage	M0~M99 (100 slot)			
Remote control interface	USB			
Power supply	DC 5V (with adapter)			
Dimensions(W × H × D)	194 × 69 × 180mm			
Weight	0.5 kg			

UPF1.5 

Features

- .Two outputs (major and minor)
- .Using Direct Digital Synthesis(DDS) technology
- .1 μ Hz~20MHz frequency range for main waveforms
- .100MHz equal-accuracy frequency counter
- .Arbitrary setting of start and stop for frequency sweep output
- .More than 50 kinds of output waveform(arbitrary is optional)
- .4.3" TFT colour display
- .Standard USB(H), USB(D)



UPF1.5-20

Technical Data	UPF1.5-5	UPF1.5-10	UPF1.5-20
Channel	CHA major and CHB minor		
Channel Bandwidth	CHA: 5MHz CHB: 2.5MHz	CHA: 10MHz CHB: 5MHz	CHA: 20MHz CHB: 10MHz
Sampling Rate	125MS/s		
Vertical Resolution	14 bits		
Waveform	Sine wave, square wave, triangle wave, pulsewave, oblique wave, noise, arbitrary wave (16 groups)		
Scan Mode	Linear, logarithmic and external scanning		
Modulation Type	single, internal, external		
Output			
Output Impedance	50 Ω /high resistance		
Amplitude Range	CHA: 1mVpp~10Vpp (50 Ω) CHB: 50mVpp~1.5Vpp (50 Ω)	CHA: 1mVpp~10Vpp (50 Ω) CHB: 50mVpp~1.5Vpp (50 Ω)	CHA: 1mVpp~10Vpp (50 Ω , \leq 10MHz) CHA: 1mVpp~5Vpp (50 Ω , \leq 20MHz) CHB: 50mVpp~1.5Vpp (50 Ω)
Accuracy (1kHz Sine wave)	Amplitude setting value of 1%+ 2 mV		
DC Offset Range	-5Vpp~5Vpp(50 Ω) (AC+DC) -10Vpp~10Vpp(high resistance)(AC+DC)		
Offset Precision	Offset set value of +1% + Amplitude set value of 0.5% + 2 mV		
Amplitude Resolution	1mV		
Amplitude Flatness	<100kHz 0.1dB 100kHz~10MHz 0.2dB		
Sine Wave			
Frequency Range	CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz	CHA: 1 μ Hz~10MHz CHB: 1 μ Hz~5MHz	CHA: 1 μ Hz~20MHz CHB: 1 μ Hz~10MHz
Resolution	1 μ Hz		
Harmonic Distortion (Typical Value)	(CHA):Test condition : Output Power 0dBm (CHA):DC~20kHz -55dBc (CHA):20kHz~1MHz -50dBc (CHA):1MHz~10MHz -40dBc		
THD	(CHA):DC~20kHz, 1Vpp<0.2%		
Square Wave/ Pulse Wave			
Frequency Range	CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz	CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz	CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz
Rise / fall Time	(CHA):<24ns (Typical value 1kHz, 1Vpp)		
Overshoot (Typical Value)	(CHA):<2%		
Duty Cycle	(CHA):0.01%~99.99%		
Minimum Pulse Width	(CHA): \geq 80ns		
Triangular Wave / Ramp Wave			
Frequency Range	1 μ Hz~400kHz		
Non-linearity	1% \pm 2 mV (typical value :1kHz,1Vpp; symmetry:50%)		
Symmetry	0~100.0%		

● DDS FUNCTION (ARBITRARY) GENERATOR

Technical Data	UPF1.5-5	UPF1.5-10	UPF1.5-20
Arbitrary Wave(CHA)			
Frequency range	1 μ Hz~ 1MHz	1 μ Hz~ 2MHz	1 μ Hz~ 2MHz
Internal storage (fixed)	16 group AbsSine, AmpALT, AttALT, Gaussian Monopulse, GaussPulse, SineVer, StairUd, Trapezia, LogNormal, Sinc, ECG, EEG, exponential rise, exponential decline, Lorentz, D-Lorentz		
AM Modulation(CHA)			
Carrier Wave	Sine wave, Square wave, Ramp wave, Arbitrary wave		
Source	Internal / external (frontpanel BNC)		
Modulated Wave	Sine, Square wave, rising Ramp wave, falling oblique wave, noise, Arbitrary wave		
Modulation Frequency	2mHz~50kHz		
Modulated Wave	0~120%		
FM Modulation(CHA)			
Carrier Wave	Sine wave, Square wave, Ramp wave, Arbitrary wave		
Source	Internal / external (frontpanel BNC)		
Modulated Wave	Sine, Square wave, rising oblique wave, falling oblique wave, noise, Arbitrary wave		
Modulation Frequency	2mHz~50kHz		
Frequency offset	2.5MHz	5MHz	10MHz
PM Modulation(CHA)			
Carrier Wave	Sine wave, Square wave, Ramp wave, Arbitrary wave		
Source	Internal / external (frontpanel BNC)		
Modulated Wave	Sine, Square wave, rising oblique wave, falling oblique wave, noise, Arbitrary wave		
Modulation Frequency	2mHz~50kHz		
Phase offset	0~360°		
ASK/FSK/PSK Modulation(CHA)			
Carrier Wave	Sine wave, Square wave, Oblique wave, Arbitrary wave		
Source	Internal / external (frontpanel BNC)		
Modulated Wave	50% duty cycle of Square wave		
Modulation Frequency	2mHz~100kHz		
PWM Modulation(CHA)			
Carrier Wave	Pulse wave		
Source	Internal / external (frontpanel BNC)		
Modulated Wave	Sine, Square wave, rising oblique wave, falling oblique wave, noise, Arbitrary wave		
Modulation Frequency	2mHz~20kHz		
Width Offset	0~49.99% of Pulse width		
Sweep frequency(CHA)			
Carrier Wave	Sine wave, Square wave, Oblique wave		
Type	Linear and logarithmic		
Scan time	1ms~500s \pm 0.1%		
Trigger Source	Manual, internal and external		
Frequency meter			
Input Level	Compatible with TTL		
Input frequency	100mHz~100MHz		
Frequency Resolution	6Bit / second		
Coupling Mode	DC		
Power supply	100V~240VACrms, 50Hz/60Hz		
Dimensions (W×H×D)	265mm×110mm×320mm		
Weight	4.1kg		

HG1503

NEW

Feature

- .Frequency cover 100kHz~150MHz, harmonic up to 450MHz
- .Output level continuously adjustable
- .AM and FM function
- .Four digits output frequency display
- .High amplitude stability with output ALC
- .Microprocessor control, multiple functions, easy to use
- .Compact and high reliability, MTBF≥3000 hour



HG1503

Technical Data	HG1503
Output frequency	100Hz~150MHz (450MHz), 6 ranges
Output amplitude	0~60mVrms, 2 ranges
Output impedance	50 Ω
Modulation	AM, FM
Int. modulation	1kHz
Ext. modulation	50Hz~20kHz
Audio signal output	>1.5Vrms, 1kHz, sine (<3% distortion)
Power supply	110 ~ 127VAC±10%/220 ~ 240VAC±10%, 50Hz±2Hz/60Hz±2Hz
Dimensions (W×H×D)	295 × 110 × 280 mm
Weight	3kg

HG1500 RF GENERATOR

Feature

- . Composed with RF signal generator, high-quality audio signal generator and FM stereosignal generator
- . Internal/External AM (0 ~ 30%), FM(0~10%), FM stereo
- . Frequency monitor output for EXT frequency counter (HG1500)
- . Built-in frequency counter (HG1500D)



HG1500

Technical Data	HG1500	
	Frequency 100kHz ~ 150MHz (Harmonic 450MHz)	
RF signal generator	Range & accuracy	100 ~ 330kHz 5% 3.3 ~ 11MHz 6% 320 ~ 1060kHz 5% 10 ~ 35MHz 6% 1 ~ 3.5MHz 5% 34 ~ 150MHz 8%
	Int. & Ext. modulation	AM, FM
	Internal modulation	1kHz audio signal
	External modulation	Input resistance less than 600 Ω Input amplitude less than 2.5V
Audio signal generator	Output amplitude	0 ~ 50mVrms, attenuation 20dB
	Frequency	1kHz±10%
	Distortion	<1%
FM stereo signal generator	Output amplitude	Micro-volt to 1Vrms
	Frequency	88 ~ 108MHz
	External modulation	Input resistance less than 600 Ω Input amplitude less than 15mV
Frequency monitor output	Frequency	Same as RF signal generator
	Level	≥50mVrms
	Frequency range	10Hz ~ 100MHz (EXT L) 100MHz ~ 1.3GHz (EXT H)
	Sensitivity	≤100mVrms
	Max. input voltage	3Vrms
	Accuracy	±(0.005%Rdg±1digit)
	Input impedance 1MΩ (Ext. L) 50Ω (Ext. H)	
Power source	110 ~ 127VAC±10%/220 ~ 240VAC±10%, 50Hz±2Hz/60Hz±2Hz	
Dimension(W×H×D)	220 × 160 × 240mm	
Weight	4kg	

BR3812C



Features

- .Max. Testing frequency 7.8kHz
- .Measuring parts type auto detect
- .Serial and parallel connection
- .Compact casing design



BR3812C

Technical Data		BR3812C			
Measuring range	L	100Hz 1kHz	1 μH~9999H 0.1 μH~999.9H	7.8kHz	0.01 μH~99.99H
	C	100Hz 1kHz	100pF~200mF 10pF~20mF	7.8kHz	0.5pF~2mF
	R	N/A	0.1mΩ~19.99MΩ		
	Q	N/A	0.01~999		
	D	N/A	0.01%~999%		
	Measuring accuracy	L	100Hz 1kHz 7.8kHz	±[1i H+0.5%(1+L/2000H+2mH/L)](1+1/Q) ±[0.1i H+0.5%(1+L/200H+0.2mH/L)](1+1/Q) ±[0.01i H+0.5%(1+L/10H+0.04mH/L)](1+1/Q)	
C		100Hz 1kHz 7.8kHz	±[1pF+0.5%(1+1000pF/Cx+Cx/1000i F)](1+Dx) ±[0.1pF+0.55%(1+100pF/Cx+Cx/100i F)](1+Dx) ±[0.01pF+0.5%(1+20pF/Cx+Cx/4i F)](1+Dx)		
R		N/A	±[1 MΩ+0.5%(1+R/2MΩ+2Ω/R)](1+Q)		
Q		100Hz, 1kHz	±[0.5+0.25(Qx+1/Qx)]%	7.8kHz	±[0.5+0.30(Qx+1/Qx)]%
D		100Hz, 1kHz	±0.010(1+Dx ²)	7.8kHz	±0.015(1+Dx ²)
Measuring signal level			0.4Vp-p±10% (no load)		
Measuring speed		200ms			
Working temperature and relative humidity		0°C~40°C, ≤85%RH			
Power supply		220V±10%, 50Hz±5%			
Dimensions (W×H×D)		330×100×310 mm ³			
Weight		3.3kg			

BR4822



Features

- .Max. Testing frequency 10kHz
- .Measuring parts type auto detect
- .Serial and parallel connection
- .Compact casing design



BR4822

Technical Data		BR4822			
Measuring range	L	100Hz/120Hz 1kHz	0~1000.0H 0~100.00H	10kHz	0~999.99mH
	C	100Hz/120Hz 1kHz	0~20.000mF 0~999.99 μF	10kHz	0~100.00 μF
	R	N/A	0~999.9Ω		
	Q	N/A	0~9999		
	D	N/A	0~9.999		
	θ	N/A	-179.9° ~179.9°		
Measuring accuracy		0.2%			
Equivalent mode		Series, Parallel			
Auto LCR function		Manual, Auto			
Correction		Short, Open			
Tolerance mode		1%,5%,10%,20%			
Output Impedance		100 Ω			
Measuring signal level		0.1Vrms,0.3Vrms,1.0Vrms			
Measuring speed		10meas/sec, 5meas/sec,2meas/sec			
Working temperature and relative humidity		0°C~40°C, ≤75%RH			
Power supply		220V±10%, 50Hz±5%			
Dimensions (W×H×D)		215mm×88mm×232mm			
Weight		1.5kg			