

S7-1502A FREQUENCY ADJUSTABLE AC POWER SUPPLY

MULTI-FUNCTION DISPLAY

Normal state: Output value display
Setup state: Setup value display



Max. 15V, 1.5AAC Output



AC POWER FREQUENCY ADJUST

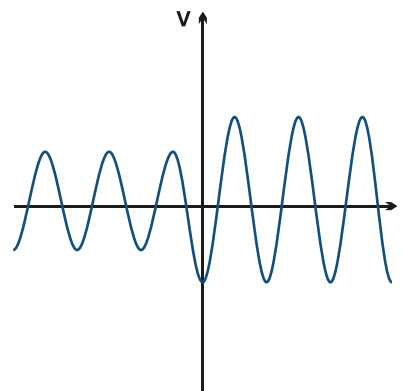
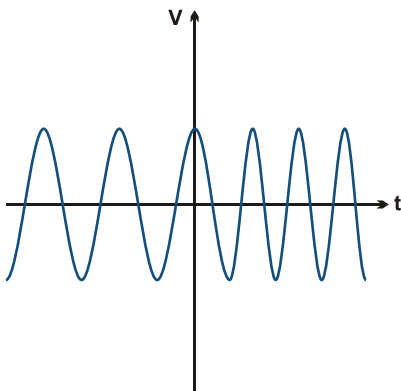
Rotate: Frequency adjust (0 ~ 400Hz)
Press: Frequency preset (50Hz, 60Hz, 100Hz, 400Hz)

FREQUENCY

AC POWER VOLTAGE ADJUST

Rotate: Voltage adjust (1~15Vrms)
Press: Over current reset

VOLTAGE



S7-1502A [AC ADJUSTABLE F & V]

Specifications

- . Output voltage: 1V~15Vrms
- . Output frequency: 0~100Hz (1Hz step)
100~400Hz (5Hz step)
50Hz, 60Hz, 100Hz, 400Hz
- . Output current: 1.5A
- . Line regulation: 1%
- . Load regulation : 1% @50Hz
- . Output accuracy: Voltage: 0.5%@50Hz
Frequency: 2% (<20Hz), 1% (20Hz~400Hz)
- . Input voltage: 85~265VAC 50/60Hz
- . Dimensions: 110(W)×75(H)×140(D)mm
- . Weight: 350g



S7-1502A

S7-1203 [6 VOLTAGES]

Specifications

- . Output voltage: 2V, 4V, 6V, 8V, 10V, 12V
- . Output current: 3A
- . Line regulation: 15mV
- . Load regulation : 25mV
- . Ripple & Noise: 1.5mVrms, 5mVpp
- . Output accuracy: 5%
- . Input voltage: 85~265VAC 50/60Hz
- . Dimensions: 110(W)×75(H)×140(D)mm
- . Weight: 300g



S7-1203

S7-3001 [ADJUSTABLE VOLTAGE]

Specifications

- . Output voltage: 0~30V
- . Output current: 1A
- . Line regulation: 15mV
- . Load regulation : 100mV
- . Ripple & Noise: 70mVrms
- . Display accuracy: ±(0.5% Rdg + 2 digital)
- . Input voltage: 85~265VAC 50/60Hz
- . Dimensions: 110(W)×75(H)×140(D)mm
- . Weight: 300g



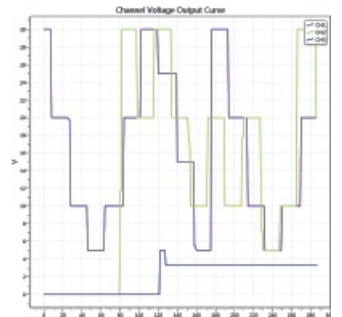
S7-3001

M5000 SERIES PROGRAMMABLE DC POWER SUPPLY



CH1	CH2	CH3
30.000	30.000	5.000
5.000	5.000	3.000
150.000	150.000	15.000
0.000	0.000	0.000
0.000	0.000	0.000
0.000	0.000	0.000

MAIN CONTROL PANEL



OUTPUT CURVE RECORD

M5000 SERIES



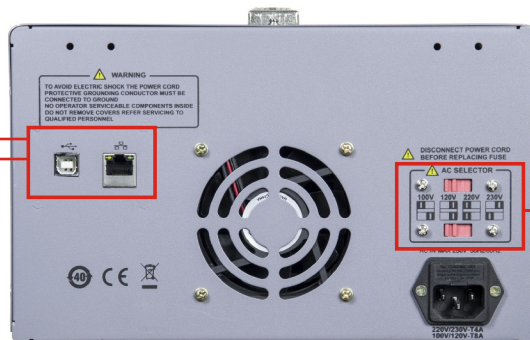
LAN remote control

USB remote control

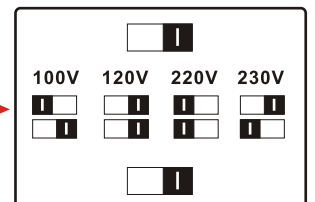
M5000 SERIES



BACK VIEW



AC SELECTOR FOR DIFFERENT COUNTRY



M5000 SERIES



Features

- . 4.3" TFT color display, WVGA (480*272)
- . Graphical user menu
- . Two independent channels 0~30V/0~3,0~5A
- . Fixed voltage output 2.5V,3.3V,5V/1A
- . High output resolution 1mV/1mA
- . Low ripple noise
- . Over voltage, over current and over heat protection










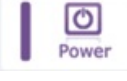




M5005

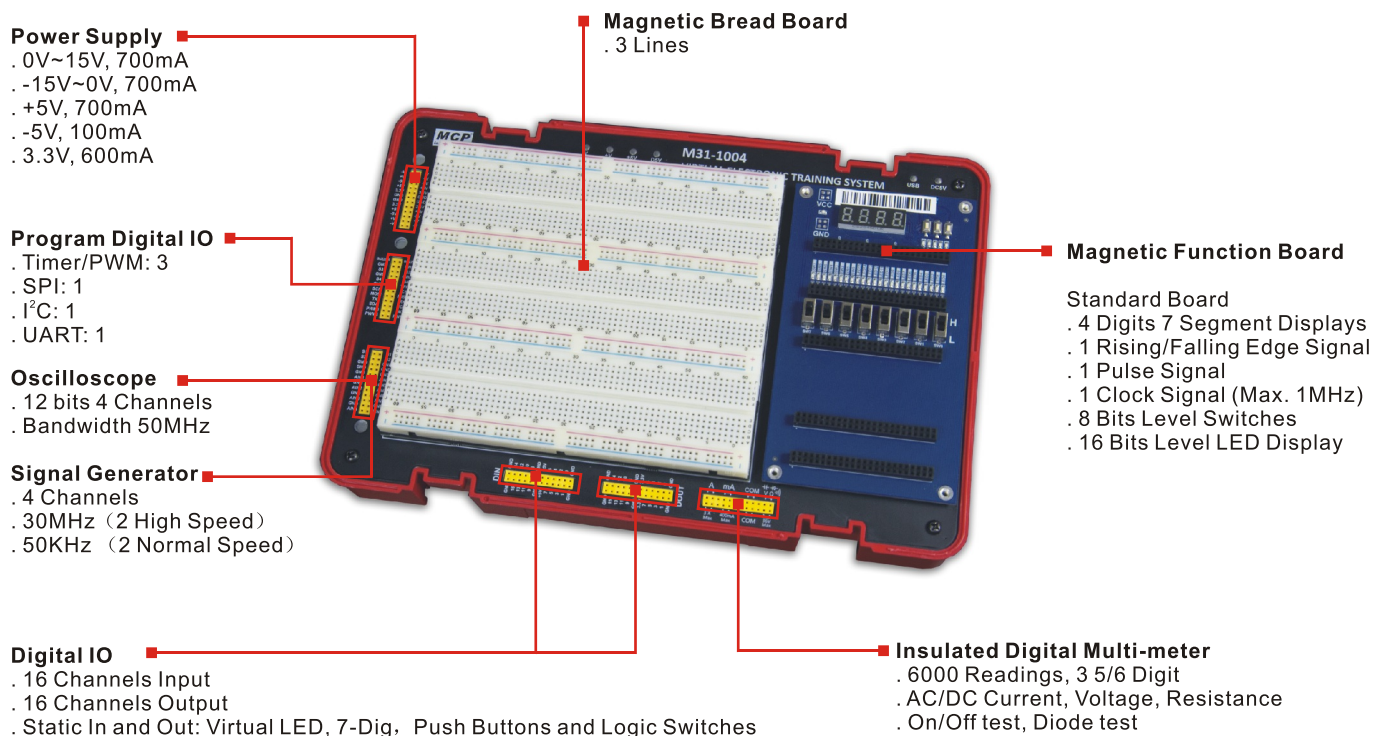
M5000 Series Technical Data			M5003	M5005
Output	Voltage		CH1&CH2: 0~30V CH3: 2.5V/3.3V/5V	CH1&CH2: 0~30V CH3: 2.5V/3.3V/5V
	Current		CH1&CH2: 0~3A×2 CH3: 0~3A	CH1&CH2: 0~5A×2 CH3: 0~3A
CV mode	Regulation	source	≤0.01%+2mV	
		load	≤0.01%+2mV	
	Ripple & noise		≤1.0mVrms/350 μVrms (5Hz~1MHz)	
	Response time		≤50 μs(50% load change & min. load 0.5A)	
	Order processing time		<100ms	
	Output range		0 to set voltage continuously adjustable	
CC mode	Regulation	source	≤0.01%+250 μA	
		load	≤0.01%+250 μA	
	Ripple current		≤2mArms	
	Output range		0 to set voltage continuously adjustable	
Trace mode	Parallel	source regulation	≤0.01%+2mV	
		load regulation	≤0.01%+2mV	
	Series	source regulation	≤0.01%+3mV	
		load regulation	≤300mV	
	Tracking error		≤0.5%+100mV(with load +300mV)	
Measurement	Display	voltage full range	5 digits	
		current full range	4 digits	
	Programming resolution	voltage	1mV	
		current	1mA	
	Read back resolution	voltage	0.1mV	
		current	0.1mA	
	Display resolution	voltage	1mV	
		current	1mA	
	Programming accuracy (25±5°C)	voltage	±(0.05%+10mV)	
		current	±(0.2%+10mA)	
Reading accuracy (25±5°C)	voltage	±(0.05%+5mV)		
	current	±(0.15%+5mA)		
Voltage programming time	CH1		UP: FL<50ms,NL<30ms DOWN: FL<45ms,NL<400ms	
	CH2		UP: FL<50ms,NL<30ms DOWN: FL<45ms,NL<400ms	
	CH3		UP: FL<15ms,NL<13ms DOWN: FL<20ms,NL<100ms	
Temperature coefficient per°C	CH1	voltage full range	0.01%+5mV	
		current full range	0.01%+2mA	
	CH2	voltage	0.01%+5mV	
		current	0.01%+2mA	
	CH3	voltage	0.01%+2mV	
		current	0.01%+2mA	
Channel 3	output voltage		2.5V/3.3V/5V±8%	
	output current		0~3A	
	Regulation	source	≤0.01%+3mV	
		load	≤0.01%+3mV	
	Ripple & noise		≤1.0mVrms (5Hz~1MHz)	
Interface			USB Host & Device	
Power Source			AC 100V~240V, 50Hz/60Hz	
Weight			8kg	9.5kg
Dimension (W×H×D)			260mm×270mm×300mm	

M31-1000 SERIES VIRTUAL ELECTRONIC TRAINING SYSTEM



12 Main Functions All in One

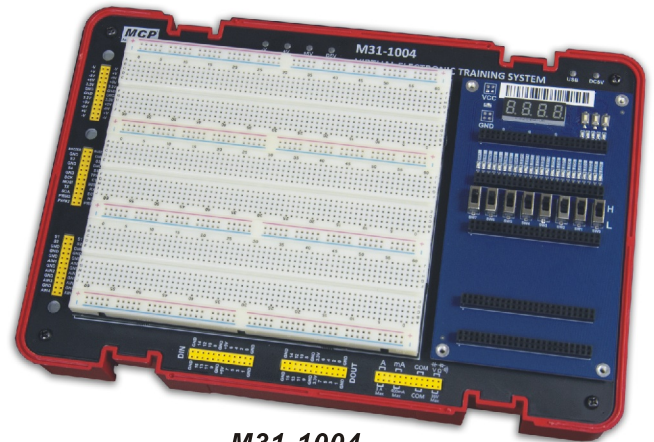
- | | | | |
|---|--|---|---|
|  DMM | Insulated 3 5/6 Digit Multi-meter |  Bode | Bode Analyzer |
|  Scope | 4 Channels Oscilloscope |  DigIn | 16 Channels Logical Analyzer |
|  FGEN | 4 Channels Signal Generator |  DigOut | 16 Channels Pulse Signal Generator |
|  DAQ | Data Acquisition Card |  Power | $\pm 3V \sim \pm 15V, \pm 5V, 3.3V$ |
|  FFT | Spectrum Analyzer |  PI2All | PI2All-USB to SPI, I ² C, UART, PWM & GPIO |
|  StaIn | Static In and Out: Virtual LED, 7-Dig, Push Buttons and Logic Switches |  StaOut | |



M31-1000 SERIES

Features

- .Max. 50MHz bandwidth, 200MSa/s sampling rate (Oscilloscope)
- .Max. 30MHz sine wave output (Signal generator)
- .Arbitrary waveform output
- .16 channel digital input output
- .Digital multimeter
- .Office report, source data save
- .USB2.0 interface, no external power source required,easy to use
- .Operating system: Windows XP or above
- .Easy to carry



M31-1004

Technical Data		M31-1004		M31-1002
Oscilloscope	Channels	4		2
	Sampling rate	100MSa/s@4CH	200MSa/s@2CH	100MSa/s
	Bandwidth	50MHz		
	ADC resolution	12bit		
	Time base range	10ns~10s		
	Vertical resolution	10mV/div~5V/div		
	Input coupling	AC/DC		
	Max. input voltage	±25V		
	Vertical resolution(Accuracy)	10mV/div ~ 5V/div (±1%)		
	Trigger mode	Auto, normal and single		
	Trigger source:	CH1~CH4		
	Trigger level adjustable	Yes		
Math	+, -, ×, ÷, FFT			
Signal generator	Channels	4 (2 Main channel, 2 secondary channel)		2
	DAC resolution	12bit		
	Max. frequency (sine)	30MHz (Main channel)	50KHz (Secondary channel)	30MHz
	Wave form	Sine, Triangle, Square, DC, Arbitrary		
	Output range	±0.5mV~±5V		
Spectrum analyzer	Channel	1		
	ADC resolution	12bit		
	Bandwidth	50MHz		
	Sampling rate	100MSa/s		
	Voltage range	±25V		
	Auto measuring	Frequency, SNR, THD, V-Peak		
Other measuring	Hanning, B-H, RMS, Peak Hold			
Logical analyzer	Channels	16		
	Max. Input voltage	5V		
	Max. Sampling rate	50MSa/s@4CH	20MSa/s@8CH	10MSa/s@16CH
	Max. Sampling depth	1000 points / 500s		
Pulse generator	Channels	16		
	Refresh rage	10MSa/s		
	Output signal level	3.3V, 5V		
	Inner/Ext. Trigger select	Yes		
Digital multimeter	Voltage range / Accuracy	0.1mV~36V / 1%		
	Current range / Accuracy	0.1uA~600uA / 1%	0.1mA~400mA / 1%	100mA~3A / 1%
	Resistance range / Accuracy	0.1Ω~40MΩ / 1%		
	Capacitor range / Accuracy	0.1nF~4mF / 2%~5%		
	On/Off test	Yes		
Power output	Output range	±1.8V~±15V, fixed ±5V, fixed 3.3V		
	Rated current	±700mA (±1.8V~±15V), 700mA (fixed+5V), -100mA (fixed-5V), 600mA (fixed 3.3V)		
	Protection	Shout cut / over current		

Interface: USB 2.0
 Power source: USB
 Dimensions (W×H×D): 290×40×195 mm
 Weight: 1.5kg

LB-300 SERIES

Features

- .Max. 50MHz bandwidth, 200MSa/s sampling rate (Oscilloscope)
- .Max. 30MHz sine wave output (Signal generator)
- .Arbitrary waveform output
- .16 channel digital input output
- .Office report, source data save
- .USB2.0 interface, no external power source required, easy to use
- .Operating system: Windows XP or above
- .Easy to carry



LB-304

Technical Data	LB-304	LB-302	
Oscilloscope	Channels	4	2
	Sampling rate	100MSa/s@4CH 200MSa/s@2CH	100MSa/s
	Bandwidth	50MHz	
	ADC resolution	12bit	
	Time base range	10ns~10s	
	Vertical resolution	10mV/div~5V/div	
	Input coupling	AC/DC	
	Max. input voltage	±25V	
	Vertical resolution(Accuracy)	10mV/div ~ 5V/div (±1%)	
	Trigger mode	Auto, normal and single	
	Trigger source:	CH1~CH4	
	Trigger level adjustable	Yes	
Math	+, -, ×, ÷, FFT		
Signal generator	Channels	4 (2 Main channel, 2 secondary channel)	2
	DAC resolution	12bit	
	Max. frequency (sine)	30MHz (Main channel) 50KHz (Secondary channel)	30MHz
	Wave form	Sine, Triangle, Square, DC, Arbitrary	
Output range	±0.5mV~±5V		
Spectrum analyzer	Channel	1	
	ADC resolution	12bit	
	Bandwidth	50MHz	
	Sampling rate	100MSa/s	
	Voltage range	±25V	
Auto measuring	Frequency, SNR, THD, V-Peak		
Other measuring	Hanning, B-H, RMS, Peak Hold		
Logical analyzer	Channels	16	
	Max. Input voltage	5V	
	Max. Sampling rate	50MSa/s@4CH 20MSa/s@8CH 10MSa/s@16CH	
	Max. Sampling depth	1000 points / 500s	
Pulse generator	Channels	16	
	Refresh rage	10MSa/s	
	Output signal level	3.3V, 5V	
	Inner/Ext. Trigger select	Yes	
Power output	Output range	±1.8V~±15V, fixed ±5V, fixed 3.3V	
	Rated current	±700mA (±1.8V~±15V), 700mA (fixed+5V), -100mA (fixed-5V), 600mA (fixed 3.3V)	
	Protection	Shout cut / over current	

Interface: USB 2.0
 Power source: USB
 Dimensions (W×H×D): 150×20×100 mm
 Weight: 0.25kg

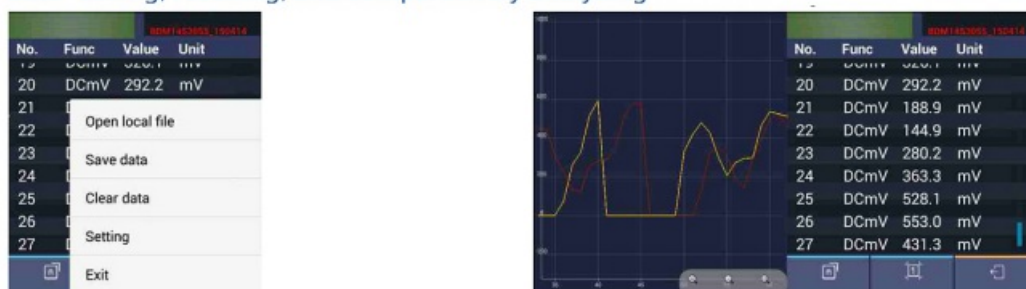
MU16A/B and MU18A/B BLUETOOTH DIGITAL MULTIMETER

- . BLE 4.0 wireless transmission, more stable, less power consumption
- . Chart and Diagram mode helps to analyze the data tendency
- . 3 5/6 bit resolution, LCD 69x52 / 47x27 mm
- . Data Logger + Multimeter + Thermometer
- . Support NCV non-contact voltage sense
- . True RMS test supported
- . Widely supported on Android, iOS and Windows
- . Build-in offline record function supports non-stop up to 7 days non-stop recording

functioning as multimeter + datalogger



data- saving, recalling, and comparatively analyzing



MU16A / MU16B



Features

Auto ranging
Auto/Manual Scale Switch
LCD Backlight
Diode Test
Sleep Mode
Auto Power-off
Continuity Test

Bluetooth Module for MU16B

Data Hold
Audion Test
True RMS
Input Protection
Relative Measurement
Low-battery Indicator



MU16B

Technical Data	Measurement Range	Resolution	Accuracy
DC voltage	600.0mV/6.000V/60.00V/600.0V	0.1mV	±(0.5%+2 dig)
	1000V	1V	±(0.8%+2 dig)
AC voltage	600.0mV	0.1mV	±(2.0%+5 dig)
	6.000V/60.00V/600.0V	1mV	±(0.8%+3 dig)
DC current	750V	1V	±(1.0%+3 dig)
	600.0uA/6000uA	0.1uA	±(0.8%+2 dig)
	60.00mA/600.0mA	0.01mA	±(0.8%+2 dig)
AC current	10.00A	0.01A	±(1.2%+3 dig)
	600.0uA/6000uA	0.1uA	±(1.0%+3 dig)
	60.00mA/600.0mA	0.01mA	±(1.0%+3 dig)
Resistance	10.00A	0.01A	±(1.5%+3 dig)
	600.0Ω/6.000kΩ/60.00kΩ/ 600.0kΩ/6.000MΩ	0.1Ω	±(0.8%+2 dig)
Capacitance	60.00MΩ	0.01MΩ	±(2.0%+3 dig)
	60.00nF/600.0nF/ 6.000μF/60.00μF	0.01nF	±(3.0%+3 dig)
Frequency	600.0μF/6.000mF/60.00mF	0.1μF	±(3.0%+5 dig)
	9.999Hz/99.99Hz/999.9Hz/ 9.999kHz/99.99kHz/ 99.9kHz/9.999MHz	0.001Hz	±(0.8%+2 dig)
Duty Ratio(%)	0.1%~99.9% (Typical: Vrms=1V,f=1kHz)	0.1%	±(1.2%+3 dig)
	0.1%~99.9% (≥1kHz)	0.1%	±(2.5%+3 dig)
Temperature	- 50 °C~400 °C	1°C	±(2.5%+3 dig)
	- 58 °F ~ 752 °F	1 °F	±(4.5%+5 dig)
Display		5999	
Frequency Response		40Hz-1000Hz	
Shift Rate		3 times/s	
Input Impedance		≥10MΩ	
Battery		3V (1.5V x 2) AA	
Dimension (W x H x D)		74 x 154 x 49 mm	
Weight		290g	

MU18A / MU18B

Features

Auto ranging	Bluetooth Module Only for MU18B
True RMS	LCD Backlight
Diode Test	Automatic-manual Range Selection
Auto Power-off	Input Protection
On-off Warning	Relative Measurement
Low-battery	Indicator Flashlight
Data Hold	NCV
Safety Compliance 600V CAT IV, 1000V CAT III	



MU18B

Technical Data	Measurement Range	Resolution	Accuracy
DC voltage	60.00mV/600.0mV	0.01mV	±(0.5%+2 dig)
	6.000V/60.00V/600.0V	0.1mV	±(0.5%+2 dig)
	1000V	1V	±(0.8%+2 dig)
AC voltage	60.00mV/600.0mV	0.01mV	±(0.8%+3 dig)
	600.0mV	0.1mV	±(2.0%+5 dig)
	6.000V/60.00V/600.0V	1mV	±(0.8%+3 dig)
DC current	750V	1V	±(1.0%+3 dig)
	600.0uA/6000uA	0.1uA	±(0.8%+2 dig)
	60.00mA/600.0mA	0.01mA	±(0.8%+2 dig)
AC current	20.00A	0.01A	±(1.2%+3 dig)
	600.0uA/6000uA	0.1uA	±(1.0%+3 dig)
	60.00mA/600.0mA	0.01mA	±(1.0%+3 dig)
Resistance	20.00A	0.01A	±(1.5%+3 dig)
	600.0Ω/6.000kΩ/60.00kΩ/ 600.0kΩ/6.000MΩ	0.1Ω	±(0.8%+2 dig)
	60.00MΩ	0.01MΩ	±(2.0%+3 dig)
Capacitance	60.00nF/600.0nF/ 6.000μF/60.00μF	0.01nF	±(3%+3 dig)
	600.0μF/6.000mF/60.00mF	0.1μF	±(3.0%+5 dig)
Frequency	9.999Hz/99.99Hz/999.9Hz/ 9.999kHz/99.99kHz/ 99.9kHz/9.999MHz	0.001Hz	±(0.8%+2 dig)
Duty Ratio(%)	0.1%~99.9% (Typical: Vrms=1V,f=1kHz)	0.1%	±(1.2%+3 dig)
	0.1%~99.9% (≥1kHz)	0.1%	±(2.5%+3 dig)
Temperature	- 50 °C~400 °C	1°C	±(2.5%+3 dig)
	- 58 °F ~ 752 °F	1 °F	±(4.5%+5 dig)
Display		5999	
Frequency Response		40Hz-1000Hz	
Shift Rate		3 times/s	
Input Impedance		≥10MΩ	
Battery		3V 6F22	
Dimension (W x H x D)		90 x 190 x 56 mm	
Weight		320g	

CQ5003 

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:0~5MHz 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 power cable

SDO1000 SERIES

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



SDO1022

Technical Data	SDO1022	SDO1102
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 ΔV	
Probe Attenuation Factor	1X, 10X, 100X, 1000X	
LF Respond (AC, -3dB)	10Hz (at input, AC coupling, -3dB)	
Sample Rate	\pm 100ppm	
Relay Time Accuracy	\pm 100ppm	
Interpolation	sin (x) / x	
Interval (ΔT) 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	ΔV , and ΔT 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 \int , Delay A->B \int , 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	

SG300A SERIES

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



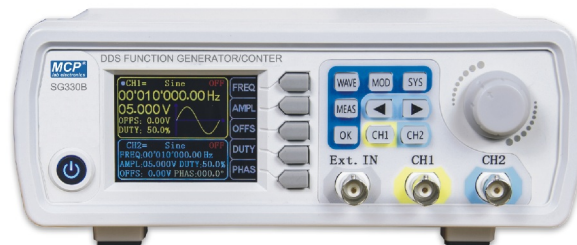
SG325A

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), TTL IN (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

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



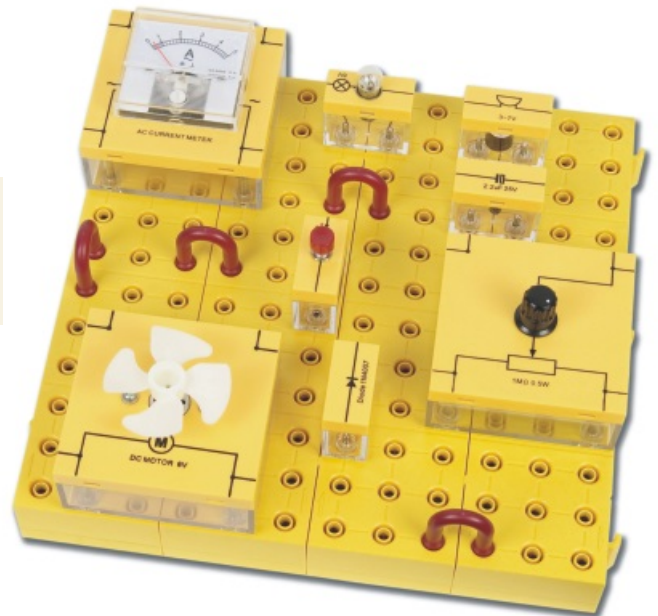
SG330B

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	$\geq 45\text{dBc}$ ($<1\text{MHz}$) $\geq 40\text{dBc}$ (1MHz~20MHz)		
	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), TTL IN (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			

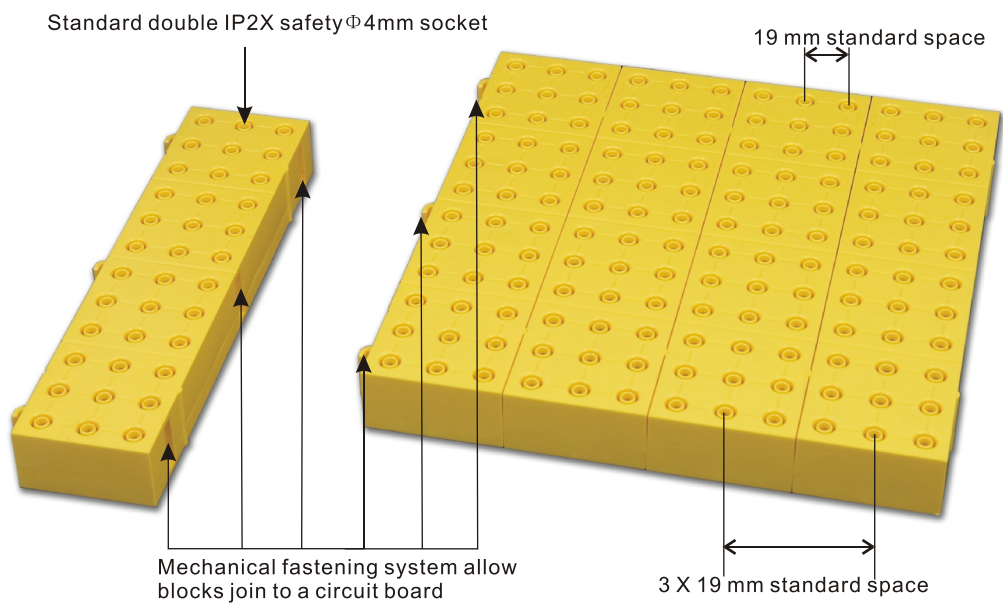
MSC MODULAR SAFETY CIRCUIT SYSTEM

Features

- .Safety and easy to creat your circuit quickly
- .Over 60 preset modules and custom made module is available
- .Standard double IP2X safety Φ 4mm socket connection



SAFETY CIRCUIT BOARD-MSC1



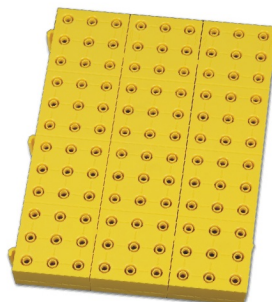
Model	Block	Unit	Socket
MSC1.1	1	4	36
MSC1.2	2	8	72
MSC1.3	3	12	108
MSC1.4	4	16	144
MSC1.9	1	26	219



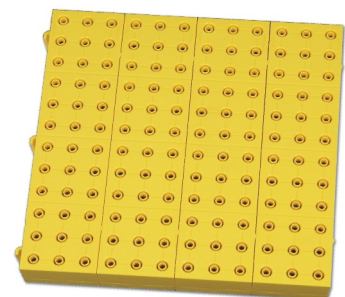
MSC1.1



MSC1.2



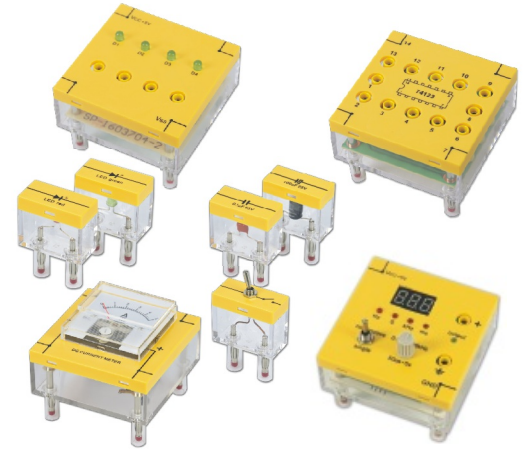
MSC1.3



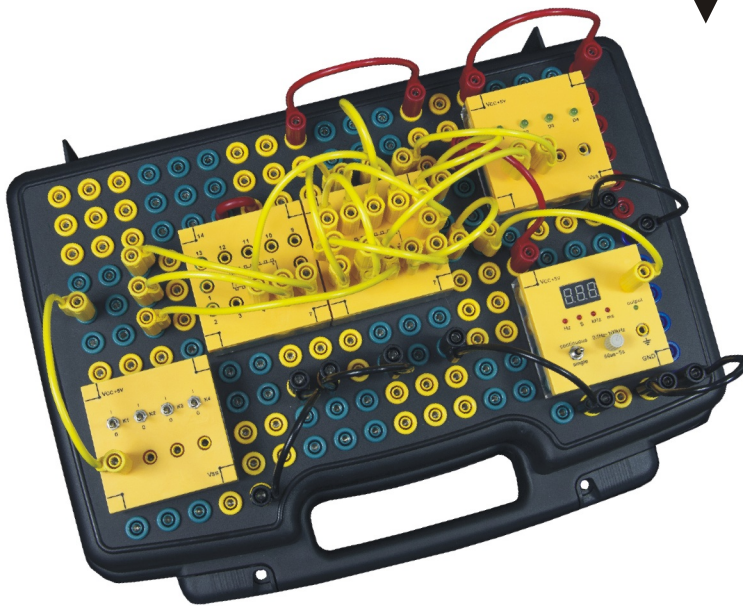
MSC1.4



MSC1.9



STANDARD MSC MODULES



Carry your lab everywhere

MSC ADVANCED LOGIC GATE TRAINING SET MSC-03

SET CONTAIN

1. Safety circuit board MSC1

MSC1.1 6pcs

2. Safety visible component module MSC2

Resistor 5.6k Ω , 1/2W, 1% 2pcs

Resistor 1k Ω , 1/2W, 1% 2pcs

Resistor 27k Ω , 1/2W, 1% 2pcs

Resistor 820 Ω , 1/2W, 1% 2pcs

Capacitor 0.01 μ F, 250V 2pcs

Capacitor 0.033 μ F, 250V 2pcs

Capacitor 0.022 μ F, 250V 1pc

Diode 1N4007 1pc

Transistor BC108 2pcs

Toggle switch 1 \times 2 1pc

4-digit data switch 2pcs

4-digit level display 2pcs

Pulse generator 0.1Hz~10kHz 1pc

4-digit data switch 2pcs

4-digit level display 2pcs

Pulse generator 0.1Hz~10kHz 1pc

Quad 2-input NAND gates 7400 1pc

Quad 2-input NOR gates 7402 1pc

Hex NOT gates 7404 1pc

Quad 2-input AND gates 7408 1pc

Quad 2-input OR gates 7432 1pc

Quad 2-input EXCLUSIVE OR gates 7486 1pc

Quad 2-input EXCLUSIVE NOR gates CD4077 1pc

Dual AND-OR-INVERT gates 7451 1pc

Hex NOT gates Open-collector 7405 1pc

Dual 4-input NAND gates 7420 2pcs

Triple 3-input NAND gates 7410 1pc

4-bit Binary Adder Carry 7483 1pc

AND-gated J-K flip-flop 7472 4pcs

Decade/Binary counter 7490 4pcs

Dual J-K **Flip-Flop** 7476 3pcs

5-bit S-R **Flip-Flop** 7496 1pc

Quad 2-input NAND gates Open-collector 7403 1pc

Hex Schmitt trigger inverter 7414 1pc

3. Safety leads MSC3

MSC3.25R 4pcs

MSC3.25K 4pcs

MSC3.25R 6pcs

MSC3.25G 6pcs

MSC3.25Y 6pcs

MSC3.1 6pcs

4. Plastic case

TPC006 1pc



EXPERIMENT CONTAIN

I Basic Logic Function

- 1 OR logic gate
- 2 INVERT logic gate
- 3 OR + INVERT = NOR logic gate
- 4 NOR logic gate
- 5 2-input NAND logic gate
- 6 4-input NAND logic gate
- 7 AND - OR - INVERT logic gate

II Boolean Algebra

- 1 $A = \overline{\overline{A}}$
- 2 $A + 1 = 1, A + 0 = A, A + A = A, A + \overline{A} = 1$
- 3 $A \cdot 1 = A, A \cdot 0 = 0, A \cdot A = A, A \cdot \overline{A} = 0$
- 4 Logic equation

III De Morgan's Theorem

$$\overline{A+B} = \overline{A} \cdot \overline{B}, \overline{A+B} = \overline{A} \cdot \overline{B}, \overline{A \cdot B} = \overline{A} + \overline{B}, \overline{A+B+C} = \overline{A} \cdot \overline{B} \cdot \overline{C},$$

$$\overline{\overline{A} \cdot \overline{B} \cdot \overline{C}} = A+B+C, \overline{A \cdot C+B \cdot C} = (\overline{A+B}) \cdot C$$

IV Exclusive-OR and Its Applications

- 1 Exclusive-OR
- 2 Half-Adder, Half-Subtractor
- 3 Binary Comparator
- 4 Parity Generator

V Adder and Subtractor

- 1 Half-Adder, Half-Subtractor
- 2 SUM in Full-Adder and DIFFERENCE in Full-Subtractor
- 3 Co for X+Y+ Ci
- 4 Full-Adder with Half-Adders
- 5 2-Bit Parallel Binary Adder
- 6 4-Bit Binary Full-Adder/2's-complement 4-Bit Binary Full-Subtractor

VI Bistable or Flip-Flop

- 1 R-S Flip-Flop with NAND Gates
- 2 Gated R-S Flip-Flop
- 3 D Flip-Flop
- 4 AND-Gated J-K Master-Slave Flip-Flop

VII Binary Counters

- 1 Binary ripple counter
- 2 Synchronous counter

VIII Divide-by-N Counters and Decade Counters

- 1 Modulus 3 Counter
- 2 Modulus 6 Counter
- 3 Decade Counter 2421
- 4 Decade Counter 8421
- 5 IC Decade Counter
- 6 IC Divide-by-10 Counter

IX Shift Registers and Ring Counter

- 1 Shift Register
- 2 IC Shift Register
- 3 Quinary ring counter
- 4 Twisted-ring or Johnson Counter

X Pulse Forming and Shaping/ Schmitt Trigger

- 1 Transistor Astable
- 2 IC Astable
- 3 Pulse Stretchers
- 4 Schmitt Trigger