1510A
Precision Signal/Function Generator

DUAL CHANNEL OUTPUT

RUGGED

BACKLIT LCD SCREEN

BUILT-IN USB CONTROL PORT

SPILL-PROOF KEYPAD

PROVIDER OF MEASUREMENT SOLUTIONS FOR MORE THAN 50 YEARS

RECHARGEABLE BATTERY
(up to 6 hrs. of continuous use per charge)

COMPACT SIZE

1510A Precision Signal Simulator
Direct Digital Synthesis

A5.2500V P-P Sqr
0.0000VDC
0025 0.0Hz   000°
Amp Frq Func Up△

mti instruments

Albany, NY USA

Portable signal source for calibrating electronic equipment and machinery monitoring systems

Remarkable Functionality

- **Signals** - Voltage, Charge and Machinery Speed Signals
- **Waveforms** - SINE, SQUARE, TRIANGLE and PULSE from 0.1Hz to 100kHz in 0.1 Hz increments
- **Automatic Thermal Compensation** - ensuring accuracy in different environments from laboratory, control room to factory environments
- **Jog Function** - slowly vary the signal frequency to determine filter response or vary the signal amplitude in increments to determine system gain
- **Low Voltage Bridge Simulation** - easily command microvolts with its 24-bit closed loop control to simulate strain gauges
- **High Accuracy** - Voltage and charge signals with accuracies to 0.05%

Applications

- Cabling and wiring troubleshooting
- Audio signal simulation
- Vibration signal simulation - accelerometers and velocity probes
- Machinery speed signal simulation
- Low-voltage bridge sensor signal simulation
- Calibration of:
  - Monitoring systems
  - Charge amplifiers
  - Avionics equipment

mti instruments

A worldwide leader in precision measurement solutions

Technical Specifications

Waveform: Sine Wave	Channel A	Channel B Standard Signal Types *(for speed synthesizers signals, refer to table on the right)*
Voltage Range (0.1 Hz to 100 kHz)	0 to 9.9999 Volts pk	
Voltage Accuracy (of setting, 10mV to 10V)		
(10Hz to 20Hz)	0.15%±0.1mV	
(20Hz to 30kHz)	0.05%±0.1mV	
(30kHz to 50kHz)	0.07%±0.1mV	
(50kHz to 80kHz)	0.08%±0.1mV	
(80kHz to 100kHz)	0.10%±0.1mV	
Charge Range (10 Hz to 100 kHz)	1 to 9,999.9 pC pk	
Charge Accuracy (of setting) (10pC to10,000pC, 10Hz to 30kHz)	0.20%±0.1pC	
Resolution	0.1mV	
Level Types	RMS, peak or pk-pk units	
Frequency Range	0.1 Hz - 99,999.9 Hz	
Chan. B frequency can also be set and locked to any ratio of Chan.A.		
Refer to Speed synthesizer specifications.		
Distortion		
(10 Hz to 50 kHz)	<0.5%	<0.75%
(50 kHz to 100 kHz)	<3.0%	
Frequency Accuracy (of setting) (3 Hz to 100 kHz)	±0.005%	
Variable phase (all waveform types)	0 to 360°	
Chan A phase on any waveform type can be synchronized and locked to Chan B phase, at any phase setting 0-360°, Step 1°.		
In Sweep mode, Chan A & Chan B can be swept together, preserving phase relationship.		

Waveform: Square Wave		
Voltage Range	0 to 9.9999 Volts pk	
Charge Range	0 to 9,999.9 pC pk	
Resolution (voltage & charge)	0.1mV or 0.1 pC	
Level Types	RMS, peak or pk-pk units	
Frequency Range	0.1 Hz - 20 kHz	
Frequency Accuracy (of setting) (3 Hz to 100 kHz)	±0.005%	
Rise/Fall Time (10% to 90%)	=3.0 µsec.	
Asymmetry	Less than 3% at 10 kHz	
Overshoot	Less than 2%	
Voltage Accuracy (of setting)	0.1% typical, 0.25% max	

Waveform: Triangle Wave Waveform: Saw-Tooth Wave		
Voltage Range	0 to 9.9999 Volts pk	
Charge Range	0 to 9,999.9 pC pk	
Resolution (voltage & charge)	0.1mV or 0.1 pC	
Level Types	RMS, peak or pk-pk units	
Frequency Range	0.1 Hz to 20 kHz	
Frequency Accuracy (of setting) (3 Hz to 100 kHz)	±0.005%	
Voltage Accuracy (of setting)	0.1% typical, 0.25% max	

Output Connectors		
Impedance	50 ohms	
Connector	BNC coaxial	
Differential Charge (DE)	MS3102A-10SL-3P	
Single-ended Charge (SE)	50 Ohm 10-32 MicroDot coaxial	

DC Output (and DC offset)		
Voltage Range	±9.9999 VDC	
Voltage Accuracy (of setting)	0.05%±0.1mV	
Resolution	0.1 mV	
DC voltage can be generated alone or simultaneously with AC signal to simulate offsets		

Microvolt DC Output – Bridge Mode		
Voltage Range	±1 µvolt to ±99.999 mVDC	
Voltage Accuracy (of setting)	0.05% ±5 µvolt	
Resolution	0.1 µvolt	
Bridge mode operates under 24-bit closed-loop control to ensure accuracy for testing of strain gage and other low-level bridge circuits.		

Channel B
Speed Synthesizers Signals

Ratio Speed Signal Function	
Signal Type	Sine, Square, Single pulse, Odd Pulse
Signal Range	0 to 9.9999 Volts Pk
Resolution	0.1 mV
Frequency Range (ratio)	0.1 to 100X Chan A frequency, Step 0.1
Units	RMS, peak, or pk-pk

Single Pulse Signal Function	
Signal Type	1-cycle sine or ½ cycle square (TTL)
Signal Range	0 to 9.9999 Volts Pk
Resolution	0.1 mV
Pulse Duty Cycle	3% to 100%
Frequency Range (ratio)	0.1x to 100x Ch. A frequency, Step 0.1
Frequency Range (fixed)	1Hz to 100kHz
Units	RMS, peak, or pk-pk

Odd Pulse Signal Function	
Odd Pulse Type	Long or Short
Odd Pulse Size	0 to 999% of Base Pulse
Number of Base Pulses between Odd Pulse	1 - 100
Frequency Range (ratio)	0.1x to 100x Ch. A frequency, Step 0.1
Frequency Range (fixed)	1 Hz to 99,999.9 Hz
Range	0 to 9.9999 Volts Pk
Resolution	0.1 mV
Voltage Units	RMS, peak, or pk-pk
Waveform	Sine wave

Sweep Function (Channels A & B)	
Sweep time	1 to 999 sec (16.67 min)
Sweep time Step	1 Second
User Controls	Set START Frequency
	Set STOP Frequency
	Set SWEEP time (seconds)
	GO
	PAUSE
	CANCEL
Channels	A alone or A & B together
Chan B can be swept synchronously with Chan A, if Chan B frequency is set to any Ratio of Chan A frequency.	
Phase between Chan A and Chan B is preserved during sweep.	

Controls and Features	
User Display	Graphical, 128x64 pixel
	B&W transflective
	LCD white backlight
Computer Port	USB-A Connector
	USB 1.0 for remote control
	programming and calibration
Battery Charger Port	For battery charging and operation
	115/230VAC power
Key Pad Functions	
Numbers	0 through 9
Function Keys (soft keys)	4 - *functions change depending upon operating mode*
On/Off	Momentary Hold "soft" button
Set-Up Memory	40 locations to save settings
	for all outputs and functions
Memories (non-volatile)	Save program setups - *any combination of instrument settings*
Dimensions	7.5"H x 4.25W x 2.25"D
	19cm x 11cm x 5.7cm
Power	External charger operates from
	115/230VAC, 50-60Hz
	Approx 5 watts.
	Battery Pack – NiMH, 2500mAH
	Size AA (Qty 4)