

mti instruments

1510A Portable Signal Simulator

DUAL CHANNEL OUTPUT

BACKLIT LCD SCREEN

SPILL-PROOF KEYPAD

CHARGE OUTPUT & ACCELEROMETER SIGNAL SIMULATION

RUGGED

BUILT-IN USB CONTROL PORT

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

COMPACT SIZE

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

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) (1Hz 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 (1 Hz to 100 kHz)	1 to 9,999.9 pC pk	
Charge Accuracy (of setting) (10pC to 10,000pC, 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	
<i>Chan. B frequency can also be set and locked to any ratio of Chan.A.</i>		
<i>Refer to Speed synthesizer specifications.</i>		
Distortion		
(10 Hz to 50 kHz)	<0.5%	<0.5%
(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°	
<i>Chan A phase on any waveform type can be synchronized and locked to Chan B phase, at any phase setting 0360°, Step 1°.</i>		
<i>In Sweep mode, Chan A & Chan B can be swept together, preserving phase relationship.</i>		
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 / 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 - 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	0.1mV	
<i>DC voltage can be generated alone or simultaneously with AC signal to simulate offsets</i>		
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	
<i>Bridge mode operates under 24-bit closed-loop control to ensure accuracy for testing of strain gage and other low-level bridge circuits.</i>		

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 99% 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
<i>Chan B can be swept synchronously with Chan A, if Chan B frequency is set to any Ratio of Chan A frequency.</i>	
<i>Phase between Chan A and Chan B is preserved during sweep.</i>	
Controls and Features	
User Display	Graphical, 128x64 pixel B&W transfective 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)

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