1500CS PRECISION CALIBRATOR

A portable signal source for calibrating electronic equipment and machinery monitoring systems.

- Voltage Signals
- Charge Signals
- Machinery Speed Signals
- Dual outputs
- Direct Digital Synthesis
- Wide Frequency range
- 40 Built-in memories
- Sweep Generator
- Battery powered

Never before have all these features been available in a single instrument

MTI Instruments Inc.
**Achieve the highest accuracy with the most advanced calibrator ever offered**

The New 1500CS Precision Calibrator from MTI Instruments is the first instrument to combine high precision voltage and charge mode signal generation in a single portable device. Use the 1500CS in the laboratory, in test cells, on the flight line, in the factory, or any place that precision signals are required for equipment maintenance or system calibration in the test lab. Initially designed for machinery and gas turbine maintenance, the 1500CS produces accurate and precise voltage, charge, and speed signals necessary for system testing and calibration. In addition to being easy to use, the portable 1500CS has a large internal memory to store and recall frequently used settings. The 1500CS also features an RS-232 interface to allow remote control and programming of the unit.

**DIRECT DIGITAL SYNTHESIS** - The 1500CS combines the precision of Direct Digital Synthesis with 16 bit digital-to-analog accuracy to provide state-of-the-art performance.

**PRECISION SIGNALS** - The 1500CS provides voltage and charge signals with 0.05% accuracy - rarely found even in high-cost laboratory instruments.

**DUAL CHANNEL OUTPUT** - The 1500CS features two independent signal output channels. Set them for different output levels, wave shapes, frequencies, and phase. For other testing needs you can synchronize the two channels. This unique capability and flexibility makes testing and calibration fast and easy.

**FULL FUNCTIONALITY** - The 1500CS produces SINE, SQUARE, TRIANGLE, and PULSE waveforms from 0.1 HZ to 100KHz in 0.1 Hz increments. Output levels can range to 10 volts peak and can also include programmable DC offsets in 0.1 millivolt steps.

**PRECISION CHARGE SIGNALS** are produced by the 1500CS. Differential and single-ended signals are available to simulate accelerometers and other charge mode devices.

The 1500CS provides unsurpassed features and capabilities for calibration and repair personnel.
Special functions for machinery and instrumentation systems

Testing and calibrating machinery monitoring and control systems is difficult when vibration, speed and other signals must be simulated simultaneously. The 1500CS has two output channels to simplify the testing and calibration process, and they may be synchronized or run independent of each other. Special tachometer and signal phase functions enable versatile test strategies to check balancing systems, gas turbine engine monitoring systems, and other machinery support equipment.

**SPEED SIGNAL GENERATION** is a snap with the 1500CS. Machinery speed signals from tachometer generators, multi-tooth gears and even odd tooth generators are easily produced. The signals can also be generated at a fixed ratio of the other signal channel to produce true machinery vibration and speed signals.

**SYNCHRONIZED SWEEPS** are useful when testing a variety of system performance parameters. Sweeps are produced by the 1500CS between a user specified range of frequencies and over a user programmed period of time. Set the SWEEP TIME, the START and STOP frequencies, and then press GO.

**VARIABLE PHASE** between the two outputs signals is easily adjusted using the 1500CS controls. Use this feature to calibrate balancing and other data acquisition systems.

**CHARGE OUTPUT** is used to simulate the signals from piezoelectric accelerometers. Either Single-ended or Differential signals are available to calibrate and test vibration circuits in machinery monitoring systems. A wide range of charge signals may be produced at constant and varying frequencies.

**THE JOG FUNCTION** is a unique feature of the 1500CS that permits small changes to many of the control parameters. Use the JOG feature to slowly vary the signal frequency to determine filter response or vary the signal amplitude in increments to determine system gain.

Remarkable functionality and accuracy in an easy to use instrument
Designed to improve productivity

The 1500CS is a tool that improves productivity as well as ensuring equipment and system accuracy. From the high visibility protective boot and the internal signal setting memory to the easy to use keyboard interface, the 1500CS has features to make the job easier.

MEMORY for PRODUCTIVITY - All signal settings can be saved and retrieved from the 1500CS's 40 location memory to reduce programming and test time, and to ensure test repeatability.

PORTABLE - The 1500CS can be used anywhere. It is small, lightweight, portable, and operates from internal NiMH batteries or the included charger/power supply.

DESIGNED FOR RUGGED USE - The 1500CS is designed for the factory and shop environment. The spill-proof keypad, the bright protective boot and the back-lit display all make the 1500CS reliable in the toughest working environments.

EASY TO USE - The 1500CS guides users through the process of programming the instrument. All settings including signal type, amplitude, and frequency are defined using the keypad. "Soft" function keys on the keypad assume different functions depending upon the mode of operation lending added flexibility to the instrument.

Support Accessories

The 1500CS is complemented by a number of accessories designed to ease the task of calibrating and testing your equipment. Included in the list of accessories is software package specifically developed to help you program, control and realize the most benefit from your 1500CS.

DIGITAL CONTROL INTERFACE - The 1500CS includes an RS-232 interface. Optional software allows setup, operation, maintenance and calibration of the unit via this port.

CONNECTION CABLES - Several different cables are available for connecting directly to charge amplifiers, and other machinery monitoring equipment. Consult with your MTI Instruments representative for all available options.
1500CS Specifications

### Waveform: Sine Wave
- **Voltage Range**: 0 to 9.9999 Volts pk
- **Resolution**: 0.1 mV
- **Level Types**: RMS, peak or pk-pk units
- **Freq. Range**: 0.1 Hz to 99999.9 Hz
- **Distortion**: 0.1 Hz to 10 kHz: 0.25%
- **Level Set Accuracy of setting**: ±0.0010%

### Waveform: Square Wave
- **Voltage Range**: 0 to 9.9999 Volts pk
- **Resolution**: 0.1 mV
- **Level Types**: RMS, peak or pk-pk units
- **Freq. Range**: 0.1 Hz - 20 kHz
- **Rise/Fall Time**: ±1.5 µsec.
- **Asymmetry**: Less than 5% at 10 kHz
- **Overshoot**: Less than 5%
- **Level Set Accuracy of setting**: ±0.01%

### Waveform: Saw-Tooth Wave
- **Voltage Range**: 0 to 9.999 Volts pk
- **Resolution**: 0.1 mV
- **Level Types**: RMS, peak or pk-pk units
- **Freq. Range**: 0.1 Hz - 20 kHz
- **Level Set Accuracy of setting**: ±0.01%

### DC Output
- **Voltage Range**: 0 to 9.9999 mV DC full scale
- **Level Set Accuracy of setting**: ±0.01% max
- **Resolution**: 0.1 mV

### Output Connectors
- **Connector Impedance**: 50 ohms
- **Voltage Connector**: BNC
- **Full Differential Charge Connector**: MS3102A-10SL-3P
- **Single Ended Charge Connector**: 50 Ohm MicroDot

### Other Features
- **User Display**: 4 Line x 16 character LCD
- **Computer Port**: RS232 for remote control, programming, and calibration
- **Battery Charger Port**: For battery charging and operation. 115 VAC power
- **Key Pad Functions**: Numbers 0 through 9, Functions 4 (functions change depending upon operating mode)
- **Dimensions**: 3.5"H, 19"W, 13"D
- **Power**: Operates from 115 VAC, 50-60Hz. Approx 5 watts. Battery Pack - NiMH, size AA (qty 4)

### Key pad functions
- **On/Off**: Momentary Hold “soft” button
- **Set-Up Memory**: 40 locations to save settings for all outputs and functions
- **Save Settings**: Save program setups (40 max)

### Contact Information
MTI Instruments is a world leader in advanced technology products for manufacturing, computer and aerospace industries. MTI has gained world-wide recognition with over 40 years of experience designing and manufacturing leading-edge products.

Contact MTI Instruments for more information about the 1500CS.
E-mail: pbs@mtiinstruments.com
Tel: +518-218-2550
FAX: +518-218-2506

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