Ectron CORPORATION

Specializing in ruggedized, reliable metrology instrumentation designed to provide highly accurate data, even in harsh environmental conditions.

PRODUCTS:

- Thermocouple Simulator-Calibrator
- Frequency-to-Voltage Converter

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Ectron Corporation is an 8(a) certified, woman-owned, small business

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THE MOST ACCURATE THERMOCOUPLE SIMULATOR-CALIBRATOR ON THE MARKET

THERMOCOUPLE SIMULATOR-CALIBRATOR—MODEL 1140A

The Model 1140A provides four calibration functions: precise simulation of thermocouple signals, precise measurement of thermocouple signals, generation of accurate dc voltages from microvolt level to ±11 volts, and measurement of dc voltages over the same range. The thermocouple simulation and measurement accuracies are the highest in the industry, affording a margin of calibration accuracy heretofore unavailable.

Using a high-speed microcontroller, the 1140A offers such unique features as an autozero function to correct the zero reading of a non-ideal thermocouple. For repetitive operations, 100 sets of operating conditions can be committed to memory for future retrieval, including automatic sequencing from one condition to the next. Using one of the several interfaces, all functions can be programmed and executed under computer control.

With an output impedance of less than 0.05 Ω on all ranges, high accuracy is maintained with an absolute minimum of loading error.

FEATURES

- 0.06°C Accuracy for Common Thermocouple Types, including cold junction compensation (not including temperature extremes)
- Simulate and Measure Thermocouples
- Source and Measure dc Microvolts to Volts, nV Resolution
- Dc Accuracy of 0.0025% + 2.0 µV for Six Months, for both source and measure modes
- Output Impedance of 0.05 Ω, All Ranges
- USB Remote Interface Included

OPTIONS AND ACCESSORIES

- IEEE-488-2, Ethernet, and RS-232 interfaces
- Rechargeable battery
- Rack Mounting
- Carrying Case
- Calibration Kit

ALIGNMENT AND CALIBRATION

Calibration of the 1140A is a simple procedure that can be completed with a minimum of test equipment. In fact the majority of the instrument's alignment can be accomplished with only a short across the front-panel terminals.

Alignment is performed by the instrument's firmware and the user is guided by front panel instructions. There are no potentiometers or other internal controls to adjust. A switch inside the unit enables the alignment function.

Alignment is carried out in several steps, allowing alignment of all functions or a subset to be performed separately. Full alignment calibration requires a known 10 V reference, a null meter with microvolt resolution, and a shorting jumper. These accessories are available from Ectron Corporation.

DATA SHEET

PRODUCT DEMO

FREQUENCY-TO-VOLTAGE CONVERTER—MODEL 441AL

The Model 441AL Frequency-to-voltage Converter produces an analog output that precisely represents the frequency of an applied input signal. Adjustable input frequency to output voltage set points allow the user to closely bracket the frequency of interest. The unique crystal-controlled microcontroller design assures fast response, high conversion accuracy, and low output noise that is independent of frequency. The front-panel display shows the input frequency with up to five-digit resolution. All operating parameters are set using the display and the front-panel controls. These settings are retained in non-volatile memory.

The Model 441AL, designed for logic level signals, offers almost instantaneous response for fast acceleration and deceleration systems.

The Model 441AL combines the latest electronic microcontroller technology with surface-mount construction to produce a true breakthrough in frequency-to-voltage products. Indeed, these instruments represent a worthy addition to the Ectron line of 400 Series products that have provided exceptional performance and reliability in rugged applications for the past 25 years.

Designed into this model is rapid response to any change in frequency, low output noise that is independent of input frequency, and input-signal conditioning that automatically provides correct operation for a great variety of input signals, both in wave shape and amplitude.

Gone is the clutter of switches, knobs, pots, etc. associated with other frequency-to-voltage converters. All has been replaced with two easy-to-use, front-panel controls: the display and the encoder knob.

The backlit digital display/push-button has the dual function of display and screen selection. Seven easy-to-use, setup screens, six less frequently used screens, and the operate screen are accessible at the touch of the display.

The encoder, a rotary/push-button control, has the dual function of character selection and change. The user can easily configure the Model 441AL to any specific application desired.

With an input frequency range of 1 Hz to 50 kHz and an output voltage range of −10 V to +10 V, the Model 441AL offers precise frequency-to-voltage conversion for almost any application.

The Digital Periodic Filter virtually eliminates output noise that originates from cyclic variation caused by irregularly spaced wheel cogs or vanes of a flow meter. The user simply sets the filter to the number of pulses per revolution of the device under test and the Digital Periodic Filter stops the periodic variation on the output. Selectable filter settings are from 1 to 999 pulses per revolution.

Because the Model 441AL operates from any dc power from 10.5 V to 32 V, uses the same connector, and has the same pin assignments for signal input, output, and power as all other Ectron 400 Series products, it can be used – even intermixed – with Models 352, 418, T418, 428, 441A, and 451 Amplifier / Conditioners in all standard Ectron enclosures designed for these products.

FEATURES

- For very fast start-up applications
- Logic level signals 0 V to 5 V
- Follows fast frequency changes
- 1 Hz to 50 kHz Frequency Range
- Millisecond Response to Frequency Change (for input frequencies over 1 kHz)
- Adjustable Input Filtering and Sensitivity
- Front-panel Display of Frequency to 5 Digits
- Digital Periodic Filter
- Crystal-controlled Accuracy
- Precise Control of Output Voltage vs. Input Frequency
- Miniature size
- Rugged construction

APPLICATIONS

- Turbomachine Analysis/Control
- Drive-line Analysis
- Fast Response Governor Studies
- Engine Overspeed Monitor/Controller
- Accurate Flow Meter Monitoring
- Precise Tachometer
- ABS Evaluation
- Analysis of Synchro Gear Box Problems
- Clutch Response Evaluation