Strain Indicator Calibrator

FEATURES

- True Wheatstone bridge circuitry
- Simulates quarter, half, and full bridge both 120/350 Ω or 350/1000 Ω (-S1 version)
- Three decades of push buttons
- Strain range direct reading: ±99 900 με in increments of 100 με
- Transducer range: ±49.95 mV/V in increments of 0.05 mV/V
- Reversing switch for plus and minus calibration
- High precision resistors used throughout to ensure excellent stability
- Accuracy 0.025 % traceable to the U.S. National Institute of Standards and Technology

A laboratory standard for verifying the calibration of strain and transducer indicators.

DESCRIPTION

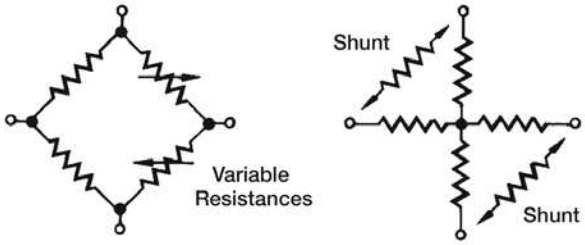
Sound engineering and laboratory practices require that the instrumentation used to make critical strain measurements be periodically calibrated to verify that it is within the manufacturer's original specifications. Additionally, each type of strain indicator exhibits some degree of nonlinearity, especially for large strains during quarter-bridge operation. Since this is the most common stress analysis application of strain gages, it is important that the strain indicator be calibrated in this mode. Instrumentation span should also be checked at a number of points before each important test to avoid inaccurate data.

The 1550B calibrator is a Wheatstone bridge and generates a true change of resistance in one or two arms of the bridge. It simulates the actual behaviour of a strain gage in both positive and negative strain.

The 'star network' used in certain other commercial calibrators provides a substantially lower cost instrument design, because component specifications are less critical, and fewer components are required. However, the 'star network' cannot simulate quarter-bridge strain gage behaviour, and cannot simulate positive strain. Another serious problem with this circuit is that the bridge input and output resistances change in an abnormal manner, leading to inaccuracies in calibration under some conditions.

A calibrator based on the Wheatstone bridge principle requires stable components. A total of 66 ultra-stable precision resistors are used in the 1550B calibrator to provide the stability, repeatability, accuracy and incremental steps required in a laboratory standards instrument.

WHEATSTONE BRIDGE / STAR NETWORK



SPECIFICATIONS

All specifications are nominal or typical at +73°F (+23°C) unless noted.

PARAMETER	SPECIFICATIONS
ACCURACY	0.025% of setting ±1 με (0.0005 mV/V), maximum, traceable to NIST.
REPEATABILITY	±1 με (0.0005 mV/V), maximum
STABILITY	(0.001% of setting ±1 με)/°C, maximum
THERMAL EMF	0.5 μV/V of excitation, maximum

MICRO MEASUREMENTS
A VPG Brand

Strain Indicator Calibrator

PARAMETER	SPECIFICATIONS
BRIDGE RESISTANCES	
1550B	120/350 Ω
1550B-S1	350/1000 Ω
INPUT RESISTANCE CHANGE	±0.05%, maximum, from nominal at all output settings
OUTPUT RESISTANCE CHANGE	±0.05%, maximum, from nominal at “000” με to ±0.25% at ±99 900 με
CIRCUIT	True ±ΔR in two adjacent arms (opposite signs), plus two fixed arms for bridge completion
SIMULATION	• Quarter bridge, one active arm • Half bridge, one or two active arms • Full bridge, two active arms
RANGE	
Two Active Arms:	• 0 to ±99,900 με in steps of 100 με @ GF = 2.00 • 0 to ±49.95 mV/V in steps of 0.05 mV/V
One Active Arm:	0 to ±49,950 με in steps of 50 με @ GF = 2.00
EXCITATION	
Recommended:	• 120 Ω: up to 10 VDC • 350 Ω: up to 15 VDC • 1000 Ω: up to 25VDC
Absolute maximum:	• 120 Ω: 25 VAC or VDC • 350 Ω: 25 VAC or VDC • 1000 Ω: 25 VAC or VDC
OUTPUT @ 000	50 με (0.025 mV/V), maximum in full-bridge mode
ENVIRONMENTAL	
Temperature:	+50°F to +100°F (+10°C to +38°C)
Humidity:	Up to 70%, non-condensing
CASE	Separable lid
Material:	Aluminum case
Size:	5-3/4 H x 8-1/4 W x 7-3/4 D in (145 x 210 x 195 mm)
WEIGHT	4.8 lb (2.2 kg)

A certificate of calibration is provided with each Model 1550B Calibrator

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