



DC Standards

- 4901 Bridge and Lead Compensator
- 4902S Reference Divider
- 4903 DC Calibration Unit
- 4904 Standard Cell Buffer

4902S Reference Divider and 4901 Calibration Bridge

The design and construction of the 4902S Divider and its companion Calibration Bridge (4901) significantly reduces or eliminates the sources of error in traditional divider designs, and is fully capable of providing 10:1 and 100:1 ratio accuracies, with a 100V or 1000V input, to within 0.2 ppm.

The 4902S is a true 4 wire, 5 terminal resistive divider. Each tapping is fully guarded by a companion guard chain, eliminating leakage errors. The guard shield for each tapping is accessible to the user on the front panel, so that effective guard connections can be made to the source of the measured signal. Each resistor element has a maximum of 10V applied across it, so that voltage coefficients, self and mutual heating effects are negligible and ensuring rapid settling times.

The 4901 Calibration Bridge and Lead Compensator is used to calibrate each section of divider to the very highest precision, using ratio techniques approved by National Standards authorities. Calibration of the individual elements of the 4902S at the voltage used during normal operation takes self heating,

power and voltage coefficients into account, enabling the unit's ± 0.2 ppm ratio accuracy.

SPECIFICATIONS (4902S)

Ratio Accuracy: 24 hours, $\pm 1^\circ\text{C}$, assuming calibration with model 4901 Calibration Bridge: ± 0.2 ppm (1000:10 and 100:10).

Temperature Coefficient: $< \pm 0.5$ ppm/C.

Environmental: As 4904.

Dimensions: 132 mm (5.25 in.) high; 433 mm (17 in.) wide; 327 mm (12.9 in.) deep.

Weight: 5 kg (11 lb).

SPECIFICATIONS (4901)

Environmental: As 4904.

Dimensions: Same as 4902S.

Weight: Same as 4902S.

4904 Standard Cell Buffer

This device allows the user to take the accuracy of his sensitive Weston Standard Cells out of the standards laboratory, even onto the production floor, while providing protection against accidental damage by inexperienced operators. It is a low noise, low drift, unity gain amplifier with a 4-wire remote sense output stage so that it may drive Kelvin-Varley type dividers. During operation, it performs a comprehensive sequence of self tests to ensure that all of the internal circuitry is functioning correctly. On detection of an error condition it immediately disconnects the Standard Cell and audible and visual alarms notify the user of this fact.

SPECIFICATIONS (4904)

Input Voltage Range: 1 to 10 Standard Cell outputs (1.0V to 10.2V).

Offset Voltage: $< 0.1 \mu\text{V}$.

Noise: $0.3 \mu\text{V}$ pk-pk.

Input Current: $< 5 \text{ pA}$.

Output Current: 15 mA.

Output Resistance: $< 0.1 \text{ m}\Omega$.

Environmental:

Operating temp: 0° to $+30^\circ\text{C}$.

Storage temp: -40° to $+70^\circ\text{C}$.

Relative Humidity: $< 75\%$ (0° - 30°C).

Dimensions: 132 mm (5.25 in.) high; 222 mm (8.75 in.) wide; 327 mm (12.9 in.) deep.

Weight: 5 kg (11 lb).

Power: 100/120/220/240 Vac $\pm 10\%$, 50 Hz or 60 Hz. Consumption 8VA.

4903 DC Calibration Unit

This unit is designed for, but not limited to, the calibration of the DCV functions of Datron calibrators. Primarily a switching matrix and precision low voltage divider, it is specifically designed for use with the 4902/S Reference Divider. It provides a convenient method of referencing DC voltages at levels between 10 mV and 1kV to prime standards without the time consuming and error-prone requirement of constantly changing lead connections.

SPECIFICATIONS (4903)

Output Voltage Accuracy: Relative to standards, within 24 hours of calibration using 4901 Calibration Bridge, $\pm 1^\circ\text{C}$ and use of 4902S Divider.

10mV $\pm 0.4 \mu\text{V}$

100 mV ± 4.3 ppm

1V ± 0.7 ppm

10V ± 0.1 ppm

100V ± 0.7 ppm

1000V ± 0.3 ppm

Environmental: As 4904.

Dimensions: Same as 4902S.

Weight: 7 kg (16 lb).

Power: 100/120/220/240V $\pm 10\%$, 50 Hz or 60 Hz. Consumption 8VA.

OPTIONS

90: Rack Mounting Kit. Specify model being mounted.

30: System Lead Kit for 4902S

10: System Lead Kit for 4903

20: System Cabinet (9U) for 4903

FACTORY/FOB

Indianapolis, IN
Norwich, England