DCV References

- **The First Real Alternatives to the Weston Cell**
- **Four Truly Independent 10 Volt Output "Cells"**
- **Hardware Averaging yields 1ppm/year Stability**
- **Overall <0.05ppm/°C for 0° to 40°C Operation**
- **4910 offers Divided Outputs, Buffered Output**
- **7 Day, Protected Battery Backup Transit Mode**

The models 4910 and 4911 are the ultimate in Electronic DC Voltage Reference Standards, establishing a performance benchmark for the assessment of other devices. Offering the traditional benefits of electronic references - ruggedness and ease of use - they are the first solid state devices available featuring sufficient stability to replace the Weston Cell as a company prime DC Voltage Reference Standard.

Versatile Architecture
Both the 4910 and 4911 offer four truly independent 10V output "cells", each possessing its own power supplies and control circuits, allowing direct intercomparison between the output terminals in order to detect and evaluate drift in any cell. Each cell's total independence means that errors arising from circuit elements are uncorrelated and therefore detectable. The output of each cell is adjustable with <0.1 ppm resolution, so that they may be calibrated to nominal to allow intercomparisons with a very high level of accuracy.

The four 10V cells may be selectively averaged in hardware giving a significant benefit in long term stability and short term noise when compared with the output of just one cell. The 10V average output provides the ideal low noise reference against which individual cells may be compared, and in the 4910, is permanently connected to the input of a four wire sensed buffer capable of sourcing 15 mA for driving an accurate voltage into a load without compensations. Cells included within the average group are identified by a front panel LED indicator.

Each cell's independence also allows higher voltages to be obtained by "stacking" cells, to provide up to 40V from one unit.

Model 4910 also offers adjustable outputs at the 1V and 1.018V levels.

Transit Mode
4910/11 feature fully monitored and protected battery backup systems, which can maintain integrity for 7 days. Charging circuitry is integral. Auxiliary inputs allows the use of 10 - 40VDC power.

SPECIFICATIONS

Stability, ppm (±1°C)

	30 days	90 days	1 year
10V Average	0.3	0.8	1.0
10V Cell	0.3	1.0	1.5
4-wire buffer*	0.3	1.0	1.5
1.018V*, 1V*	0.6	1.5	2.0

Temperature Coefficient (0°C - 50°C)

10V Average & Cell	0.05 ppm/°C
4-wire buffer*	0.06 ppm/°C
1.018V*	0.10 ppm/°C
1V*	0.12 ppm/°C

Noise, 0.01Hz - 2Hz

10V Average	0.02 ppm RMS
10V Cell	0.04 ppm RMS
4-wire buffer*	0.03 ppm RMS
1.018V*, 1V*	0.10 ppm RMS

Output Resistance/Protection

4-wire buffer*	<100 μΩ

4-wire buffer* will drive to 15 mA

Other outputs	100Ω

Outputs withstand indefinite shorts, transients to 1100V (to 25 mA).

Setting Resolution

10V Cell	<±0.1 ppm
1.018V*, 1V*	<±0.2 ppm

GENERAL

Environmental
Operating temperature: 0°C to +40°C
Storage temperature: -40°C to +50°C

Dimensions
177 mm (7") high 214 mm (8.5") wide, 591 mm (23.3") depth

Weight: 20Kg (44 lbs)

Power
Line: 100V, 120V, 220V, 240V ±10%, 47-63 Hz, consumption <40VA.
Low voltage input: 10V - 40 Vdc.
Battery Backup, Transit Mode, 7 days at 25°C, to 4 days at 0°C, ambient.

*(*Not applicable to 4911)*

OPTIONS

- **10: Calibration and hot shipment**
- **20: Drift rate characterization (must be ordered with Option 10)**
- **30: 1.018V set to requested level (must be ordered with Opt. 10)**
- **40: Ruggedized Transit Case**
- **50: Soft Carrying Case**
- **90: Rack Mount Kit**

FACTORY / FOB
Indianapolis, IN &
Norwich, England

ORDER INFORMATION
Model 4910
Model 4911
Option 10
Option 20
Option 30
Option 40
Option 50
Option 90