TECHNICAL DATA

7004N/7010N Nanoscan Volt Maintenance System

Product overview: 7004N/7010N Nanoscan Volt Maintenance System

Between 4 and 10 reference modules

Each Nanoscan system consists of one or more Model 7000 solid-state zener reference modules that plug into a mainframe chassis. The 10-Volt ouputs from these modules are routed via an analog signal backplane to the Nanoscan module where they are averaged to produce an ultra low-noise hardware Average 10 Volt output.

High sensitivity null detector

The Nanoscan module also contains a high-sensitivity (0.01ppm resolution) null detector that compares individual 10-Volt reference outputs with the Average output, enabling you to verify the stability of each reference to a very high confidence level. Individual references can also be switched in and out of the hardware average to evaluate their overall contribution.

Simple integration of external reference standards

In addition to intercomparing individual internalreferences to the system average, the null detector can also be used to measure external reference standard, providing an easy method of importing or exporting traceability from the Nanoscan system.

10-Volt Average, Buffered 10-Volt Average and Average 1.018-Volt Outputs

The Nanoscan module also generates a buffered 10V output to drive resistive loads such as Kelvin Varley dividers, and a 1.018V output for comparison with Weston cells.

Automatic intercomparison using 7050 volt maintenance software

Although the Nanoscan can be driven manually via its front panel controls, the full benefits of process automation is achieved when you use it with the 7050 Volt Maintenance Software. This software, which runs under WindowsTM95 or NT, enables you to initiate scan sequences and log all the results into an ExcelTM spreadsheet for later analysis.

Specifications: 7004N/7010N Nanoscan Volt Maintenance System

10V Output	
Stability	7004N: 90 days: 0.8ppm 1 year: 1.2ppm 7010N: 90 days: 0.7ppm 1 year: 1.0ppm
Predictability	7004N: ±0.2 ppm/year typicalAfter 5 points, 3 mo. apart 7010N ±0.1 ppm/year typical After 5 points, 3 months apart
Temperature Coefficient (15 - 35°C)	7004N: < 0.03 ppm/° 7010N: < 0.02 ppm/°
Noise (rms)	7004N: 0.05 to 10Hz: < 0.05 ppm RMS Standard deviation of 90 day regression: < 0.06 ppm 7010N: 0.01 to 10Hz: < 0.03 ppm RMS Standard deviation of 90 day regression: < 0.04 ppm
Hysteresis recovery	7004N: < 0.1 ppm (after conditioning cycle and baery discharge) 7010N: < 0.07 ppm (after baery discharge)
Output Resistance	7004N/7010N: 500/n Ohm Where n = number of modules fied
10V 4 wire Output (relative to Average)	
Offset	< ±1µV
Output Current	12mA max.
Load Regulation	Zero to 2mA: < 0.1 ppm 2mA to 12mA: < 0.5 ppm
Exteal Standard Input	Range: +9.990 to +10.010V Input Impedance: 100 Mohm + 10pF (typic)
Null Detector	
Range	-9999.9 µV to +9999.9 µV
Measurement Errors	Chan. to Average: ± 0.3% of difference Chan.to out of Average: ± 0.1% of difference Exteal Standard: ± 0.001% Chan. to Chan.: ± 0.1 µV

Oven Temperature Monitor	Accuracy: ± 3°C Stability/Repeatability: : ± 0.1°C/year
Baery	
Type	NiMH
Backup Period	16 hrs from fully charged
Recharge time (typical)	2 hours
Half Life	5 yrs
Environment	
Temperature	Operating: +15°C to 35°C Transit: -18°C to 45°C Warm-up period: 20 min to ±0.2 ppm 2 hours to final value
General Specifications	
Power, baery life	7004N: < 6W 7010N: < 12W
12V DC Connection	Yes
Dimensions	7004N: 133 x 449 x 355 mm (5.24 x 17.68 x 13.19 inch) 7010N 265 x 449 x 355 mm (10.43 x 17.68 x 13.19 inch)
Weight	7004N: 9.6kg (21.2Ibs) 7010N: 20kg (44.1Ibs)
Safety	UL3111, CE marked EN61010-1-1:1993/A2:1995 CETL

Ordering information

7004N

4-Reference 'Nanoscan' Volt Maintenance System

All models include:

- Low-Thermal Lead Set
- Interface Cabling for a second 'Nanoscan'/'Transref' unit
- Fibre-Optic Cabling for connection to a PC
- 12V DC Power Supply
- (requires at least one Model 7000 10-volt Solid State DC Voltage Reference Module)

7010N

10-Reference 'Nanoscan' Volt Maintenance System

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