

10-Volt Solid-State DC Voltage Reference Module

Owning a precision DC Voltage Reference Standard needn't be expensive or inconvenient. Wavetek's Model 7001 is a complete self-contained Solid-State 10-Volt DC Voltage Reference in portable unit measuring only xx x xx x xx mm and weighing a mere xx kg (including batteries). Yet it's capable of delivering 1-year stabilities of better than 1 ppm, at a cost around half that of its nearest competitor.

Utilizing a low-temperature oven that minimizes the ageing rate of its zener reference diodes, plus thin-film resistor arrays that dramatically reduce the drift and temperature coefficient of its gain defining networks, the Model 7001 gives you a drift predictability after 2 years of better than 0.3 ppm/year and a temperature coefficient better than 0.05 ppm/°C. And because it utilizes a unique new DC/DC isolation technique, you won't find that the output voltage shifts when you switch between back-up battery and AC

line supply power.

Unlike other solid-state DC voltage references on the market, the Model 7001 isn't solely reliant on its batteries during transportation. Although it's an advantage to keep the zener diode oven up to temperature during transportation, Wavetek's patented zener reference conditioning guarantees that both the 10 V and 1.018 V outputs return to within ± 0.5 ppm of their previous values if deep discharge of the battery caused oven control to be lost. As a result, unpredicted delays during shipment won't mean that your 10-Volt reference needs complete recalibration.

The optional ruggedized transit case not only protects the unit, it also includes a temperature monitor that tracks environmental conditions during shipment.

- ◆ *Compatible with Wavetek Nanoscan and Transref Systems*
- ◆ *Self-Contained DC Voltage Reference*
- ◆ *Better Than 1 ppm/Year Stability*
- ◆ *10-Volt and 1.018-Volt Outputs*
- ◆ *Low-Cost Entry Point into 10-Volt Metrology*
- ◆ *Suitable for Unpowered Shipment*



solid state

Specifications

(Total Uncertainties for 1 year, $\pm 1^\circ\text{C}$)

10V Output

Stability:	- 0.8 \pm 0.7 ppm
Drift Predictability:	
After 1 year:	\pm 0.5 ppm/year
After 2 years:	\pm 0.3 ppm/year
Temperature Coefficient:	
+15°C to +35°C:	< 0.05 ppm/°C
Noise:	
White Noise (< 1MHz):	< 100ppm rms
0.01Hz to 10Hz:	< 0.040 ppm rms
DC to 0.02Hz (24hr):	< 0.025 ppm rms
Hysteresis:	
After conditioning:	< 0.5 ppm
Output Current:	12 mA max.
Output Resistance:	< 10 m Ω
Load Regulation:	
Zero to 2 mA:	< 1.2 ppm
2 mA to 12 mA:	< 12 ppm
Line Regulation:	
Ext. DC Supply	
11.8 V to 14.5 V:	< 0.05 ppm
Int. Battery Supply	
25% to 100% Charge:	<0.05 ppm
Protection:	
Short Circuit:	indefinite
220 V DC:	< 50 mA continuous
1100 V DC:	< 25 mA continuous

1.018V Output (Switchable to 1V)

Stability:	
After 1 year:	< 2 ppm
After 2 years:	< 1 ppm
Drift Predictability:	\pm 0.6 ppm/year
Temperature Coefficient:	
+15°C to +35°C:	< 0.2 ppm/°C

Noise:	
White Noise (< 1MHz):	< 100ppm rms
0.01Hz to 10Hz:	< 0.040 ppm rms
DC to 0.02Hz (24hr):	< 0.025 ppm rms

Hysteresis:	
After conditioning:	< 0.5 ppm

Battery

Type:	NiMH
Backup Period:	> 16 hrs from fully charged condition
Recharge Times:	
Zero to 25% charge:	< 4 hours
25% to full charge:	< 48 hours
Half Life:	> 5 years

Environment

Temperature:	
Operating:	+15°C to +35°C
Storage:	0°C to +45°C
Transit:	-18°C to +45°C
Humidity:	
Warm-Up Period:	10 minutes to \pm 0.1 ppm of final output value

Power	< 1W
-------	------

Mechanical

Dimensions (HxWxD)	XX x XX x XXx mm
Weight:	X.XX kg (X.X lb)

EMC/ESD

Emissions:	EN55011:1991
Immunity:	EN50082-1:1992

Safety	UL3111, EN61010-1-1: 1993/A2:1995
--------	--------------------------------------

Worldwide Sales Offices

Austria

Wavetek Gesellschaft m.b.H. Pharos Haus Nordbahnstrasse 36/TOP 1.4 A-1020 Vienna, Austria	Tel: (43) 1-214-5110 Fax: (43) 1-214-5109
--	--

China

Wavetek Corporation Room 2701, Citic Building No. 19 Jianguomenwai Dajie Beijing 100004, P. R. China	Tel: (86) 10-6592-8044 Fax: (86) 10-6500-8199
---	--

France

Wavetek S. A. Immeuble le Seine St Germain 12, Bd des Iles Bat B 3eme étage 92441 Issy les Moulineaux, Cedex France	Tel: (33) 1-41-90-6666 Fax: (33) 1-41-90-6650
--	--

Germany

Wavetek GmbH Gutenbergstrasse 2-4 85737 Ismaning Germany	Tel: (49) 89-996-410 Fax: (49) 89-996-41160
---	--

Hong Kong

Wavetek Hong Kong Ltd. 3A HKPC Building 78 Tat Chee Avenue Kowloon, Hong Kong	Tel: (852) 2788-6221 Fax: (852) 2788-6220
--	--

Japan

Yokogawa Electric Corporation Measurement Division 155 Takamuro-cho, Kofu-shi Yamanashi-ken, 400-0057 Japan	Tel: (81) 552-43-0311 Fax: (81) 552-43-0396
--	--

Singapore

Wavetek Asia-Pacific Pte Ltd 51 Goldhill Plaza #14-04/05 Singapore 308900	Tel: (65) 356-2522 Fax: (65) 356-2553
--	--

United Kingdom

Wavetek Ltd Hurricane Way Norwich, Norfolk NR6 6JB, U.K.	Tel: (44) 1603-256-600 Fax: (44) 1603-483-670
--	--

United States

Wavetek Corporation 9045 Balboa Avenue San Diego, CA 92123, U.S.A.	Tel: (1) 619 279 2955 Fax: (1) 619 450 0325
--	--

Web Site

www.wavetek.com

WAVETEK is a registered trademark of Wavetek Corporation
Active Head Technology is a trademark of Wavetek Corporation
Windows is a trademark of Microsoft Corporation

Specifications may be subject to change without notice

© Wavetek Corporation 1998

Ordering Information

Model 7001	Solid-State 10-Volt DC Voltage Reference complete with External Power Supply
Option XXX	Ruggedized Transit Case complete with Environmental Monitor

