

# Manual Supplement

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This supplement contains information necessary to ensure the accuracy of the above manual. This manual is distributed as an electronic manual on the following CD-ROM:

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**Tequipment**  
**.NET**

USA

205 Westwood Ave  
Long Branch, NJ 07740  
1-877-742-TEST (8378)  
Fax: (732) 222-7088  
salesteam@Tequipment.NET

## Change #1, 48297, 49879, 49900

On page 68, replace the ***AC Voltage Specifications*** table with the one shown below.

On page 74, replace the ***Frequency Counter Specifications*** table with the one shown below.

On page 77, replace the ***Input Characteristics*** table with the one shown below.

**AC Voltage Specifications**

Function	Range	Resolution	Accuracy				
			20 to 45 Hz	45 to 65 Hz	65 Hz to 10 kHz	10 to 20 kHz	20 to 100 kHz
AC mV	50 mV <sup>[1]</sup>	0.001 mV	1.5 % + 60	0.3 % + 25	0.4 % + 25	0.7 % + 40	3.5 % + 40 <sup>[5]</sup>
	500 mV	0.01 mV	1.5 % + 60	0.3 % + 25	0.4 % + 25	0.7 % + 40	3.5 % + 40
AC V	5 V <sup>[1]</sup>	0.0001 V	1.5 % + 60	0.3 % + 25	0.6 % + 25	1.5 % + 40	3.5 % + 40 <sup>[5]</sup>
	50 V <sup>[1]</sup>	0.001 V	1.5 % + 60	0.3 % + 25	0.4 % + 25	0.7 % + 40	3.5 % + 40
	500 V <sup>[1]</sup>	0.01 V	1.5 % + 60	0.3 % + 25	0.4 % + 25	Not Spec'd	Not Spec'd
	1000 V	0.1 V	1.5 % + 60	0.3 % + 25	0.4 % + 25	Not Spec'd	Not Spec'd
dBV	-70 to -62 dB <sup>[3]</sup>	0.01 dB	3 dB	1.5 dB	2 dB	2 dB	3 dB
	-62 to -52 dB <sup>[3]</sup>	0.01 dB	1.5 dB	1.0 dB	1 dB	1 dB	2 dB
	-52 to -6 dB <sup>[3]</sup>	0.01 dB	0.2 dB	0.1 dB	0.1 dB	0.2 dB	0.8 dB
	-6 to +34 dB <sup>[3]</sup>	0.01 dB	0.2 dB	0.1 dB	0.1 dB	0.2 dB	0.8 dB
	34 to 60 dB <sup>[3]</sup>	0.01 dB	0.2 dB	0.1 dB	0.1 dB	Not Spec'd	Not Spec'd
Low pass filter <sup>[4]</sup>			2 % + 80	2 % + 40	2 % +10 -6 % -60 <sup>[2]</sup>	Not Spec'd	Not Spec'd
$V_{\text{Lez}}$ <sup>[4]</sup>	1000 V	0.1 V	2 % + 80	2 % + 40	2 % + 40 <sup>[6]</sup>	Not Spec'd	Not Spec'd

[1] Below 5 % of range, add 20 counts.  
 [2] Specification increases linearly from -2 % at 200 Hz to -6 % at 440 Hz. Range is limited to 440 Hz.  
 [3] dBm (600 Ω) is specified by adding +2.2 dB to the dBV range values.  
 [4] 289 only.  
 [5] Add 2.5 % above 65 kHz.  
 [6] Range is limited to 440 Hz.  
 See Detailed Specifications introduction for additional information.

**Frequency Counter Specifications**

Function	Range	Resolution	Accuracy
Frequency (0.5 Hz to 999.99 kHz, pulse width >0.5 $\mu$ s)	99.999 Hz	0.001 Hz	0.02 % + 5
	999.99 Hz	0.01 Hz	0.005 % + 5
	9.9999 kHz	0.0001 kHz	0.005 % + 5
	99.999 kHz	0.001 kHz	0.005 % + 5
	999.99 kHz	0.01 kHz	0.005 % + 5
Duty Cycle <sup>[1][2]</sup>	1.00 % to 99.00 %	0.01 %	0.2 % per kHz + 0.1 %
Pulse Width <sup>[1][2]</sup>	0.1000 ms	0.0001 ms	0.002 ms + 3 counts
	1.000 ms	0.001 ms	0.002 ms + 3 counts
	10.00 ms	0.01 ms	0.002 ms + 3 counts
	1999.9 ms	0.1 ms	0.002 ms + 3 counts
<p>[1] For rise times &lt;1 <math>\mu</math>s. Signals centered around trigger levels.</p> <p>[2] 0.5 to 200 kHz, pulse width &gt;2 <math>\mu</math>s. Pulse width range is determined by the frequency of the signal.</p>			

**Input Characteristics**

Function	Overload Protection <sup>[1]</sup>	Input Impedance	Common Mode Rejection Ratio (1 kΩ unbalance)	Normal Mode Rejection							
$\bar{V}$	1000 V	10 MΩ <100 pF	>120 dB at dc, 50 Hz or 60 Hz	>60 dB at 50 Hz or 60 Hz							
$\overline{mV}$	1000 V <sup>[2]</sup>	10 MΩ <100 pF	>120 dB at dc, 50 Hz or 60 Hz	>60 dB at 50 Hz or 60 Hz							
$\tilde{V}$	1000 V	10 MΩ <100 pF (ac-coupled)	>60 dB, dc to 60 Hz								
$\text{LoZ } \tilde{V}$	1000 V	3.2 kΩ <100 pF (ac-coupled)	Not specified	Not specified							
Function	Overload Protection <sup>[1]</sup>	Open Circuit Test Voltage	Full Scale Voltage		Typical Short Circuit Current						
			To 500 kΩ	≥5 MΩ or 50 nS	500 Ω	5 kΩ	50 kΩ	500 kΩ	5 MΩ	50 MΩ	500 MΩ
Ω	1000 V <sup>[2]</sup>	5 V dc	550 mV	<5 V	1 mA	100 μA	10 μA	1 μA	0.3 μA	0.3 μA	0.3 μA
50Ω	1000 V <sup>[2]</sup>	20 V decreasing to 2.5 V	500 mV		10 mA						
$\rightarrow$	1000 V <sup>[2]</sup>	5 V dc	3.1 V dc		1 mA						
<p>[1] Input is limited to the product of a V rms sinewave times frequency of <math>2 \times 10^7</math> V·Hz.</p> <p>[2] For circuits &lt;0.5 A short circuit. 660V for high energy circuits.</p>											

