



ENGLISH

Datasheet

Stock No. 124-1960, 124-2010, 124-2011, 124-2012,  
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## RS PRO IDM 505 Industrial Digital Multimeter



### Feature:

- 100,000/10,000 count extra-large digital display
- 43 segments analog bar graph
- Auto Backlit, Dual display
- Auto AC, DC and AC+DC on Voltage & Current mode with Frequency indication
- Auto selection on Ohm, Diode or Continuity
- On-Screen-Menu Selection
- Navigator Key Drive
- High Frequency Rejection (HFR)
- 0.015% DCV accuracy
- AC+DC True RMS indication
- 0.5 ms Peak Hold
- Auto Hold
- Store/Recall memories
- dBm/dB measurement
- 20000 records data logging capacity
- All Weather Housing
- Optical USB interface with Software included
- Included with Magnetic Hanging kit
- CAT. IV 600V/CAT. III 1000V standard

## Specifications:

- Accuracy is  $\pm$  (% reading + number of digits)
- Ambient temperature:  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$  (< 80% RH)
- For the best measurements, with REL  $\Delta$  function to compensate for offsets.

## Voltage:

Function	Range	Accuracy
AC	100.000mV 1000.00mV	Sine Wave: $\pm$ (0.7% + 50d) for 40Hz to 65Hz[1] $\pm$ (1.5% + 50d) for 66Hz to 1kHz[1] $\pm$ (3.0% + 50d) for 1kHz to 3kHz[2]
	10.0000V 100.000V	Sine Wave: $\pm$ (1.0% + 50d) for 40Hz to 45Hz[1] $\pm$ (0.4% + 50d) for 46Hz to 65Hz[1] $\pm$ (1.0% + 50d) for 66Hz to 1kHz[1] $\pm$ (2.0% + 50d) for 1kHz to 10kHz[1] $\pm$ (3.0% + 50d) for 10kHz to 20kHz[2] $\pm$ (5.0% + 50d) for 20kHz to 50kHz[3] $\pm$ (10% + 50d) for 50kHz to 100kHz[3] [4]
	1000.0V	Sine Wave: $\pm$ (1.0% + 50d) for 40Hz to 45Hz[1] $\pm$ (0.4% + 50d) for 46Hz to 65Hz[1] $\pm$ (1.0% + 50d) for 66Hz to 1kHz[1]
DC	100.000mV	$\pm$ (0.025% + 40d)
	1000.00mV	$\pm$ (0.020% + 20d)
	10.0000V 100.000V 1000.00V	$\pm$ (0.015% + 20d)
[1] Below 5% of AC range, add 70d to accuracy. [2] Below 5% of AC range, add 150d to accuracy. [3] Below 5% of AC range, add 350d to accuracy. [4] At 100.000V of AC range, the accuracy is $\pm$ (15% + 50d).		

**Input Protection:** 1000VDC or 1000VAC rms

**Input Impedance:** 10M $\Omega$ , < 100pF

**Bandwidth:** 40Hz to 100 kHz

**Minimum Resolution:** 1 $\mu$ V

**CMRR / NMRR (Common / Normal Mode Rejection Ratio):**

VAC: CMRR > 60dB at DC, 50Hz / 60Hz

VDC: CMRR > 100dB at DC, 50Hz / 60Hz

NMRR > 50dB at DC, 50Hz / 60Hz

**AC Conversion Type:**

AC conversions are ac-coupled, true rms responding, calibrated to the sine wave input.

**For non-sine wave add the following Crest Factor corrections:**

For Crest Factor of 1.4 to 2.0, add 1.0% to AC accuracy.

For Crest Factor of 2.0 to 2.5, add 2.5% to AC accuracy.

For Crest Factor of 2.5 to 3.0, add 4.0% to AC accuracy.

**Current:**

Function	Range	Accuracy
AC	10.0000mA 100.000mA 10.0000A	Sine Wave: ± (0.7% + 80d) for 40Hz to 65Hz[1] ± (2.0% + 80d) for 66Hz to 1kHz[1]
DC	10.0000mA 100.000mA	± (0.1% + 40d)
	10.0000A	± (0.1% + 80d)
[1] Below 5% of AC range, add 70d to accuracy.		

**Input Protection:** Equipped with High Energy Fuse

**mA:** 440mA, 1000V IR 10kA Fuse (Bussmann DMM-B-44/100)

**A:** 11A, 1000V IR 20kA Fuse (Bussmann DMM-B-11A)

**Input Impedance:** 10mΩ at A input, 10Ω at mA input

**Bandwidth:** 40Hz to 1 kHz

**Minimum Resolution:** 0.1μA in the 10mA range

**Maximum Measuring Time:** 3 minutes at A input, 10 minutes at mA input

Rest time is 20 minutes minimum

**AC Additional Specifications:** The AC additional specifications are same as voltage

**AC+DC:**

Function	Range	Accuracy
On ACV / ACA	Same as ACV / ACA	AC accuracy + DC accuracy + 1.0%

**HFR (Low Pass Filter)**

Function	Range	Accuracy
On ACV	Same as ACV	AC accuracy + 1.0% for 40Hz to 400Hz

**The Cut-Off Frequency of HFR:** 800Hz (-3dB point)

**Attenuation Characteristic of HFR:** Approx. -24dB

### Frequency Counter:

Function	Range	Sensitivity	Accuracy
On ACV / ACA	100.0Hz 1.000kHz 10.00kHz	20% AC Range	± (0.1% + 1d)
On AC 4V AC 40V	100.0kHz	40% AC Range	

**Min Frequency:** 10Hz

**Minimum Resolution:** 10Hz

### Peak Hold:

Function	Range	Accuracy
On ACV / ACA	50,000 counts	± (3.0% + 100d)

### Resistance:

Range	Resolution	Accuracy
1000.00Ω	10mΩ	± (0.05% + 30d)
10.0000kΩ	100mΩ	± (0.025% + 30d)
100.000kΩ	1Ω	
1000.00kΩ	10Ω	± (0.3% + 30d)
10.0000MΩ	100Ω	± (1.0% + 30d) [1]
40.00MΩ	10kΩ	± (1.5% + 30d) [1]

[1] There is a little rolling less than < 100d.

**Input Protection:** 1000VDC or 1000VAC rms

**Maximum Open Circuit Voltage:** Approx. 3.5V

### Continuity Check:

Range	Resolution	Accuracy
1000.0Ω	100mΩ	± (0.05% + 3d)

**Input Protection:** 1000VDC or 1000VAC rms

**Maximum Open Circuit Voltage:** Approx. 2.5V

**Maximum Short Test Current:** Approx. 0.1mA

**Continuity Threshold:** 50Ω

**Continuity Indicator:** 2 kHz Tone Buzzer

**Diode Test:**

Range	Resolution	Accuracy
2.000V	1mV	$\pm (1.5\% + 2d)$

**Input Protection:** 1000VDC or 1000VAC rms

**Maximum Open Circuit Voltage:** Approx.  $\pm 2.5V$

**Maximum Short Test Current:** Approx.  $\pm 0.5mA$

**Capacitance:**

Range	Resolution	Accuracy	Measuring Time
4.000nF	1pF	Unspecified	0.7sec
40.00nF	10pF	$\pm (1.2\% + 20d)$	
400.0nF	100pF	$\pm (0.8\% + 2d)$	
4.000uF	1nF		
40.00uF	10nF		
400.0uF	100nF		
4.000mF	1uF	$\pm (1.2\% + 20d)$	3.75sec
40.00mF	10uF	$\pm (1.2\% + 40d)$	7.5sec

**Input Protection:** 1000VDC or 1000VAC rms

**Frequency Counter:**

Range	Resolution	Sensitivity	Accuracy
40.000Hz	0.001Hz	2VP-P	$\pm 50d$
400.00Hz	0.01Hz	2VP-P	$\pm 10d$
4.0000kHz	0.1Hz	2VP-P	
40.000kHz	1Hz	4VP-P	
100.00kHz	10Hz	8VP-P	

**Input Protection:** 1000VDC or 1000VAC rms

**Minimum Frequency:** 5Hz

**Maximum Test Voltage:** 400V

**Temperature:**

Range	Resolution	Accuracy
-200.0°C to 10.0°C	0.1°C	$\pm (1.0\% + 20d)$
10.1°C to 1200.0°C	0.1°C	$\pm (1.0\% + 10d)$
-328.0°F to 50.0°F	0.1°F	$\pm (1.0\% + 40d)$
50.1°F to 2192.0°F	0.1°F	$\pm (1.0\% + 20d)$

**Input Protection:** 1000VDC or 1000VAC rms

**General:**

<b>Sampling Rate:</b>	3 times/sec
<b>Overload Indication:</b>	"OL" or "-OL"
<b>Low Battery Indication:</b>	
<b>Auto Power Off:</b>	Approx. 30 minutes after last operation
<b>Operating Temperature:</b>	0 °C ~ 30 °C ( $\leq 85\%$ RH) 30 °C ~ 40 °C ( $\leq 75\%$ RH) 40 °C ~ 50 °C ( $\leq 45\%$ RH)
<b>Storage Temperature:</b>	-20°C to 60°C, 0% RH to 80% RH (batteries not fitted)
<b>Temperature Coefficient:</b>	0.15 x (Specified accuracy) / °C, < 18°C, > 28°C.
<b>Safety:</b>	IEC 61010-1: CAT.IV 600V, CAT.III 1000V.
<b>Power Requirement:</b>	4 x 1.5V IEC LR6 or AA size
<b>Battery Life:</b>	100 hours
<b>Size:</b>	95mm(W) x 207mm(L) x 52mm(D)
<b>Weight:</b>	Approx. 630g (with battery)
<b>Accessories:</b>	Battery (installed), Test Leads, User Manual, USB Cable, Software CD