



## HD110C Heavy-Duty Digital Multimeter

### Key features:

- Measures 1500 VDC
- CAT IV 1000 V
- IP67 Rated
- Magne-Grip™ holster with magnetic hanging strap

- Highest voltage capability, measuring to 1500 V dc and 1000 V ac
- CAT IV 1000 V rated
- Special sealing for environment and water resistance. IP67 rated
- Constructed with drop-resistant housing and PCB mounting
- Magne-Grip™ holster, frees both hands for work
- Includes high voltage test leads with threaded alligator clips

### No hassle warranty

*No waiting.*

*No shipping charges.*



Our commitment to high-quality products and customer service is demonstrated by our industry exclusive "No Hassle" warranty. In the unlikely event that an Amprobe Test Tool requires warranty service, any of our local dealers are authorized to replace it, on the spot.

The HD110C is designed for professional use in harsh environments. The meter is unusually rugged and reliable in everyday heavy use applications. The meter is made using waterproof construction to prevent dirt, grime and moisture from entering the case and causing inaccurate readings or damaging shorts.

Built of tough, fire-retardant thermoplastic resistant to grease and chemical spills, with all sensitive components shock-mounted for a drop resistant to at least eight feet.


HD110C has an extended voltage measurement capability of 1500 V dc and 1000 V ac, unmatched by any other line of digital multimeters. The extended voltage ranges can withstand transients up to 12 kV.



HD110C



## General Specifications

Display	3-1/2 digit LCD, 1999 counts, with annunciators and menu features
Polarity Indication	Automatic
Input overload indication	1
Low Battery Indication	 ; < 50 hours battery life remain, accuracy is no longer guaranteed
Display Update Rate	2.5/sec, nominal
Oper. Temp.	0 °C to +50 °C, (< 75 % R.H.)
Storage Temp	-20 °C to 60 °C, 0 to 80 % RH, battery removed
Temperature coefficient	0.1 x (spec. accuracy)/°C (0 ° to 18 °C and 28° to 50 °C) all functions and ranges except for mVDC 0.3 x (spec. accuracy)/°C (0 ° to 18 °C and 28° to 50 °C) for mVDC
Altitude	Up to 2000 m — indoor use
Fuse	F 2 A/1500 V fuse (8 mm x 65 mm), I.R. 30 kA – Amprobe® p/n FP700
Power	Standard 9 V battery, NEDA 1604, JIS 006P,IEC 6F22
Auto Power-Down	Meter powers down after approx. 30 min. of inactivity.
Battery Life	250 hours typical with carbon-zinc, 500 hours typical with alkaline
Dimensions, with holster (H x W x D)	200 x 102 x 59 mm (7.9 in x 4.0 in x 2.3 in)
Weight (incl. battery)	642 g (20 oz)
Accessories	Heavy Duty CAT IV 1000 V Test leads with threaded alligator clips (TL1500), battery (in instrument), hex wrench in holster, Magne-Grip flex strap and User Manual
Case material	Flame retardant, high-impact thermoplastic
Safety	Meets EN 61010-1 CAT IV 1000 V (1500 V DC max) Class II, EN 60529:IP67
EMC	Meets EN 61326-1

## Electrical Specifications *(Accuracies at 23 °C ± 5 °C, <75 % RH non-condensing, guaranteed for one year.)*

Function	Range	Accuracy
<b>DC Volts</b>		
Ranges	200 mV, 2 V, 20 V, 200 V, 1500 V	
Resolution	0.1 mV	
Accuracy	All ranges	±(0.1 % rdg+2 dgts)
Input Impedance	10 MΩ	
OL Protection	1500 V dc/1000 V ac rms	
Transient Protection	12 kV impulse (1.2 μS/50 μS) based on EN 61010-1:2001 impulse requirement for at CAT IV 1000 V product. This product should not be used in installations where transients exceed 12 kV.	
<b>AC Volts (45 Hz to 2 kHz)</b>		
Ranges	200 mV, 2 V, 20 V, 200 V, 1000 V	
Resolution	0.1 mV	
Accuracy	200 mV to 200 V (45-500 Hz)	±(0.8 % rdg+4 dgts)
	200 mV to 200 V (500 Hz-2 kHz)	±(1.5 % rdg+5 dgts)
	1000 V (50-60 Hz)	±(0.8 % rdg+4 dgts)
	1000 V (60-500 Hz)	±(1.5 % rdg+5 dgts)
Input Impedance	10 MΩ	
OL Protection	1500 V dc/1000 V ac rms	
Transient Protection	12 kV impulse (1.2 μS/50 μS) based on EN 61010-1:2001 impulse requirement for at CAT IV 1000 V product. This product should not be used in installations where transients exceed 12 kV.	
<b>DC Current</b>		
Ranges	200 μA, 2 mA, 20 mA, 200 mA, 2 A	
Resolution	0.1 μA	
Accuracy	200 μA to 20 mA	±(0.5 % rdg+2 dgts)
	200 mA to 2 A	±(1.0 % rdg+2 dgts)

## HD110C Technical Specifications (continued)

Function	Range	Accuracy
<b>DC Current (cont.)</b>		
Voltage Burden	250 mV max. (1 mV/1 $\mu$ A on 200 $\mu$ A Range) (100 mV/1 mA on 2 mA Range) (10 mV/1 mA on 20 mA Range) (1.5 mV/1 mA on 200 mA Range) (500 mV/1 A on 2 A Range)	
OL Protection	A Input (F 2 A/1500 V, size 8 x 65 mm IR fast blow ceramic) (FP 700)	
<b>AC Current (45 Hz to 1 kHz)</b>		
Ranges	200 $\mu$ A, 2 mA, 20 mA, 200 mA, 2 A	
Resolution	0.1 $\mu$ A	
Accuracy	200 $\mu$ A to 20 mA 200 mA to 2 A	$\pm$ (0.8 % rdg+4 dgts) $\pm$ (1.2 % rdg+4 dgts)
Voltage Burden	250 mV max. (1 V on 2 A range)	
OL Protection	same as DC Current	
<b>Resistance</b>		
Ranges	200 $\Omega$ , 2 k $\Omega$ , 20 k $\Omega$ , 200 k $\Omega$ , 2 M $\Omega$ , 20 M $\Omega$	
Resolution	0.1 $\Omega$	
Accuracy	200 $\Omega$ 2 k $\Omega$ to 200 k $\Omega$ 2 M $\Omega$ 20 M $\Omega$	$\pm$ (0.5 % rdg+4 dgts) $\pm$ (0.3 %rdg+2 dgts) $\pm$ (1.0 % rdg+4 dgts) $\pm$ (2.0 %rdg+4 dgts)
OL Protection	1500 V dc/1000 V ac rms	
Open Circuit Voltage	200 $\Omega$ range all other ranges	3.0 V dc typical 0.3 V dc typical.
<b>Diode/Continuity Test</b>		
Test Current	1m A dc typical	
Test/Open Circuit Voltage	3.0 V dc Typical	
Diode Accuracy	$\pm$ (1.5 % rdg+2 dgts)	
Continuity Audible Threshold	<50 $\Omega$ $\pm$ 25 $\Omega$	
Response Time	<100 msec	
OL Protection	1500 V dc/1000 V ac rms	



### Included Accessories

Heavy Duty CAT IV 1000 V Test leads with threaded alligator clips (TL1500), battery (in instrument), hex wrench in holster, Magne-Grip flex strap and User Manual

### Optional Accessories

- TL1500 Cat IV 1000 V Test Leads with Alligator Clips
- CT235A 1000 A ac/dc Clamp
- CT237A 200 A ac/dc Current Clamp
- CT238A 20 A ac/dc Current Clamp
- VC221B Padded Vinyl Case. Fits meter & holster.
- DC205C Deluxe Hard-Shell Carry Case
- DC207C Large Deluxe Hard-Shell Carry Case with extra space for accessories
- HV231-10A High Voltage Probe
- FP700 Replacement Fuse, 2 A/1500 V, pack of two

### Amprobe® Test Tools

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# HD160C

## Heavy-Duty Digital Multimeter

Rugged autoranging meter with true-rms

### Key features:

- Measures 1500 VDC
- CAT IV 1000 V
- IP67 Rated
- Temperature, Frequency & Capacitance
- Magne-Grip™ holster with magnetic hanging strap

### No hassle warranty

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Our commitment to high-quality products and customer service is demonstrated by our industry exclusive "No Hassle" warranty. In the unlikely event that an Amprobe Test Tool requires warranty service, any of our local dealers are authorized to replace it, on the spot.

- Highest voltage capability, measuring to 1500 Vdc and 1000 Vac
- CAT IV 1000 V rated
- Special sealing for environment and water resistance. IP67 rated
- Constructed with drop-resistant housing and PCB mounting
- Measures capacitance, temperature and frequency
- Superior 10,000 count resolution with bar graph
- Magne-Grip™ holster, frees both hands for work
- Includes high voltage test leads with threaded alligator clips
- Temperature measurement built-in
- Frequency and capacitance
- Digi-Glo™ bright backlight

The HD160C is designed for professional use in harsh environments. The meter is unusually rugged and reliable in everyday heavy use applications. The meter is made using waterproof construction to prevent dirt, grime and moisture from entering the case and causing inaccurate readings or damaging shorts.

Built of tough, fire-retardant thermoplastic resistant to grease and chemical spills, with all sensitive components shock-mounted for a drop resistance to at least eight feet.

Model HD160C has an extended voltage measurement capability of 1500 V dc and 1000 V ac, unmatched by any other line of digital multimeters. The extended voltage ranges can withstand transients up to 12 kV.




HD160C





## General Specifications

Display	4 digit LCD, 9999 counts, with annunciators, menu features and 41 segment bargraph.
Polarity Indication	Automatic
Input overload indication	OL, -OL.
Low Battery Indication	 ; less than 50 hours battery life remain, accuracy is no longer guaranteed
Display Update Rate	2/sec, nominal; 20/sec for bargraph.
Oper. Temp.	0 °C to +50 °C @ 0 to 75 % R.H.
Storage Temp.	-20 °C to 60 °C @ 0 to 80 % RH, battery removed
Altitude	2000 meters - indoor use
Temperature coefficient	0.1 x (spec. accuracy)/°C (0 °C to 18 °C and 28 °C to 50 °C)
Fuse	F 2 A/1500 V fuse (8 mm x 65 mm), I.R. 30 kA – Amprobe® p/n FP700
Power	Standard 9-volt battery, NEDA 1604, JIS 006P, IEC 6F22
Auto Power-Down	Meter powers down after approximately 30 minutes of inactivity. Not in Min/Max function.
Battery Life (typical)	150 hours, alkaline. Backlight usage consumes extra power and will decrease battery life significantly. Backlight auto-off after approx. 60 seconds.
Dimensions, without holster (H x W x D)	200 x 102 x 59 mm (7.9 in x 4.0 in x 2.3 in)
Weight (incl. battery)	642 g (22 oz)
Accessories	Heavy Duty CAT IV 1000 V Test leads with threaded alligator clips (TL1500), battery (installed), hex wrench (inside holster), Holster with Magne-Grip strap, Type K thermocouple probe (TP255), Temperature Adaptor (TA-1A) and User Manual.
Case material	Reinforced, high-impact, fire retardant thermoplastic
Safety	Meets EN 61010-1 CAT IV 1000 V (1500 V DC max) Class II, EN 60529:IP67
EMC	Meets EN 61326-1

## Electrical Specifications *(Accuracy at 23 °C ± 5 °C, <75 % RH, guaranteed for one year.)*

Function	Range	Accuracy
<b>DC Volts</b>		
Ranges	1000 mV, 10 V, 100 V, 1500 V	
Resolution	0.1 mV in 1000 mV range	
Accuracy	±(0.1 % rdg + 5 dgt)	
Input Impedance	10 MΩ	
CMRR	>120 dB up to 1500 V dc	
NMRR	>60 dB at 50 or 60 Hz	
OL Protection	1500 V dc or 1000 V ac rms.	
Transient protection	12 kV impulse (1.2 μS/50 μS) based on EN 61010-1:2001 impulse requirement for at CAT IV 1000 V/1500V dc product. This product should not be used in installations where transients exceed 12 kV.	
<b>AC Volts True rms</b>		
Ranges	1000 mV, 10 V, 100 V, 1000 V	
Resolution	0.1 mV in 1000 mV range	
Accuracy	1000 mV (45 Hz to 400 Hz)	± (1.2 % rdg + 10 dgt)
	10 V, 100 V (45 Hz to 500 Hz)	± (1.2 % rdg + 10 dgt)
	10 V, 100 V (500 Hz to 2 kHz)	± (2.0 % rdg + 10 dgt)
	1000 V (45 Hz to 1 kHz)	± (2.0 % rdg + 10 dgt)
Input Impedance	10 MΩ	
Conversion type	True rms, ac coupled 5 % to 100 % of range	
Crest factor	≤ 3	
OL Protection	1500 V dc or 1000 V ac rms	
Transient protection	12 kV impulse (1.2 μS/50 μS) based on EN 61010-1:2001 impulse requirement for at CAT IV 1000 V product. This product should not be used in installations where transients exceed 12 kV	

## HD160C Technical Specifications (continued)

## Data Sheet

Function	Range	Accuracy
<b>DC Current</b>		
Ranges	100 $\mu$ A, 1000 $\mu$ A, 10mA, 100mA, 400mA, 2A (Auto/Manual ranging)	
Resolution	0.01 $\mu$ A in 100 $\mu$ A range	
Accuracy	100 $\mu$ A range 1000 $\mu$ A to 400 mA ranges 2 A range	$\pm$ (0.5% rdg + 10 dgts) $\pm$ (0.5% rdg + 5 dgts) $\pm$ (1.5% rdg + 10 dgts)
Input protection	2 A/1500 V fast blow ceramic fuse 8x65 mm on A input , FP700	
Burden voltage	$\mu$ A range of 1 mV/1 $\mu$ A, mA range of 10 mV/1 mA, 2A range of 500 mV/1A, 500 mV max. (2 V max. on 1000 $\mu$ A, 100 mA, 400 mA, 2 A ranges)	
OL Protection	A Input (F 2 A/1500 V, size 8 x 65 mm IR fast blow ceramic)	
<b>AC Current True rms</b>		
Ranges	100 $\mu$ A, 1000 $\mu$ A, 10 mA, 100 mA, 400 mA, 2 A	
Resolution	0.01 $\mu$ A in 100 $\mu$ A range	
Accuracy (45 Hz to 1kHz)	100 $\mu$ A to 100 mA 400 mA 2 A	$\pm$ (1.5 % + 10 dgts) $\pm$ (2.0 % + 10 dgts) $\pm$ (2.5 % + 20 dgts)
Voltage burden	see DC Current	
Conversion type	True rms ac coupled 10 to 100% of range	
Crest factor	$\leq$ 3	
OL protection	see DC Current	
<b>Resistance</b>		
Ranges	1000 $\Omega$ , 10 k $\Omega$ , 100 k $\Omega$ , 1000 k $\Omega$ , 10 M $\Omega$ , 40 M $\Omega$	
Resolution	0.1 $\Omega$ in 1000 $\Omega$ range	
Accuracy	1000 $\Omega$ to 1000 k $\Omega$ ranges 10 M $\Omega$ range 40 M $\Omega$ range	$\pm$ (0.5 % rdg + 8 dgts) $\pm$ (1.0 % rdg + 10 dgts) $\pm$ (2.0 % rdg + 10 dgts)
Overload protection, all ranges	1500 V dc or 1000 V ac rms	
<b>Continuity Test</b>		
Audible indication	Less than 40 $\Omega$	
Response time	100 ms	
Overload protection	1500 V dc or 1000 V ac rms	
<b>Capacitance</b>		
Ranges	40 nF, 400 nF, 4 $\mu$ F, 40 $\mu$ F, 400 $\mu$ F (3999 counts) (Auto/Manual ranging)	
Resolution	0.01 nF	
Accuracy	40 nF, 400 $\mu$ F ranges 400 nF to 40 $\mu$ F ranges	$\pm$ (3.0% rdg +10 dgts) $\pm$ (3.0% rdg +5 dgts)
Test voltage	< 1 V	
Test Frequency	1.3 Hz on 40 nF to 40 $\mu$ F ranges; 0.7 Hz on 400 $\mu$ F range	
Overload protection	1500 V dc or 1000 V ac rms	
<b>Temperature</b>		
Ranges	-20 $^{\circ}$ C ~ 1300 $^{\circ}$ C (-4 $^{\circ}$ F ~ 2372 $^{\circ}$ F)	3999 counts
Resolution	1 $^{\circ}$ C, 1 $^{\circ}$ F	
Accuracy	-20 $^{\circ}$ C ~ 10 $^{\circ}$ C 10 $^{\circ}$ C ~ 200 $^{\circ}$ C 200 $^{\circ}$ C ~ 1300 $^{\circ}$ C -4 $^{\circ}$ F ~ 50 $^{\circ}$ F 50 $^{\circ}$ F ~ 400 $^{\circ}$ F 400 $^{\circ}$ F ~2372 $^{\circ}$ F	$\pm$ (2.0% rdg + 4 $^{\circ}$ C) $\pm$ (1.0% rdg + 3 $^{\circ}$ C) $\pm$ (2.0% rdg + 2 $^{\circ}$ C) $\pm$ (2.0% rdg + 8 $^{\circ}$ F) $\pm$ (1.0% rdg + 6 $^{\circ}$ F) $\pm$ (2.0% rdg + 4 $^{\circ}$ F)
Overload protection	1500 V dc or 1000 V ac rms	

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## HD160C Technical Specifications (continued)

## Data Sheet

Function	Range	Accuracy
<b>Frequency Ranges</b>	100Hz, 1000Hz, 10kHz, 100kHz, 1000kHz, 10MHz	
<b>Resolution</b>	0.01 Hz on 100 Hz range	
<b>Accuracy</b>	±(0.1% rdg + 5 dgts)	
<b>Sensitivity</b>	3 Hz to 1 MHz 1MHz to 10MHz	>2.5 V ac rms >2.5 V ac rms, <5 V ac rms
<b>Minimum input range</b>	100 Hz range 1000 Hz range	>3 Hz; >30 Hz
<b>Minimum pulse width</b>	> 25 ns	
<b>Duty cycle limits</b>	> 30 % and < 70 %	
<b>Overload protection</b>	1500 V dc or 1000 V ac rms	



### Included Accessories

Heavy Duty CAT IV 1000 V Test leads with threaded alligator clips (TL1500), battery (installed), hex wrench (inside holster), Holster with Magne-Grip strap, Type K thermocouple probe (TP255), Temperature Adaptor (TA-1A) and User Manual.

### Optional Accessories

<b>TL1500</b>	Cat IV 1000 V Test Leads with Alligator Clips
<b>CT235A</b>	1000 A ac/dc Clamp
<b>CT237A</b>	200 A ac/dc Current Clamp
<b>CT238A</b>	20 A ac/dc Current Clamp
<b>VC221B</b>	Padded Vinyl Case. Fits meter & holster.
<b>DC205C</b>	Deluxe Hard-Shell Carry Case
<b>DC207C</b>	Large Deluxe Hard-Shell Carry Case with extra space for accessories
<b>HV231-10A</b>	High Voltage Probe
<b>FP700</b>	Replacement Fuse, 2 A/1500 V, pack of two
<b>TA-1A</b>	K-type thermocouple, temperature adapter

### Amprobe® Test Tools

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