

Thank you very much for choosing an Ironton™ product! For future reference, please complete the owner's record below:

Model: _____ Purchase Date: _____

Save the receipt, warranty and these instructions. It is important that you read the entire manual to become familiar with this product before you begin using it.

This machine is designed for certain applications only. The distributor cannot be responsible for issues arising from modification. We strongly recommend this machine not be modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, DO NOT use the machine until you have first contacted the distributor to determine if it can or should be performed on the product.

For technical questions please call **1-800-222-5381**.

INTENDED USE

DC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200mV	100uV	±(0.5% of rdg + 3D)
2000mV	1mV	
20V	10mV	±(0.8% of rdg + 5D)
200V	100mV	
1000V	1V	±(1.0% of rdg + 5D)

OVERLOAD PROTECTION: 220V rms AC for 200mV range and 1000V DC or 750V rms for all ranges.

AC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200V	100mV	±(2.0% of rdg +10D)
750V	1V	

RESPONSE: Average responding, calibrated in rms of a sine wave.

FREQUENCY RANGE: 45Hz ~ 450Hz

OVERLOAD PROTECTION: 1000V DC or 750V rms for all ranges.

DC CURRENT

RANGE	RESOLUTION	ACCURACY
200uA	100nA	
2000uA	1uA	±(1.8% of rdg +2D)
20mA	10uA	
200mA	100uA	±(2.0% of rdg +2D)
10A	10mA	±(2.0% of rdg +10D)

OVERLOAD PROTECTION: 500mA/250V fuse (10A range unfused).

MEASURING VOLTAGE DROP: 200mV

RESISTANCE


RANGE	RESOLUTION	ACCURACY
200Ω	0.1Ω	±(1.0% of rdg +10D)
2000Ω	1Ω	
20KΩ	10Ω	±(1.0% of rdg +4D)
200KΩ	100Ω	
2000KΩ	1KΩ	

MAXIMUM OPEN CIRCUIT VOLTAGE: 3V.

OVERLOAD PROTECTION: 15 seconds maxi- mum 220Vrms.

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TECHNICAL SPECIFICATIONS

Item	Description
Max display	LCD 3 1/2 digits(1999 count) 0.5" high
Polarity	Automatic,indicated minus,assumed plus.
Measure method	Double integral A/D switch implement
Sampling speed	2 times per second
Over-load indication	"1" is displayed
Operating Environment	0℃~40℃,at<80%RH
Storage Environment	-10℃~50℃,at<85%RH
Power	9V NEDA 1604 or 6F22
Low battery indication	
Static electricity	About 4mA
Product Size	126x70x26mm
Product net weight	108g (including battery)

GENERAL SAFETY RULES



WARNING: Read and understand all instructions. Failure to follow all instructions listed below may result in serious injury.



CAUTION: Do not allow persons to operate or assemble this digital multimeter until they have read this manual and have developed a thorough understanding of how the digital multimeter works.



WARNING: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions or situations that could occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

SAVE THESE INSTRUCTIONS

IMPORTANT SAFETY CONSIDERATIONS

DIGITAL MULTIMETER USE AND CARE

- **Do not modify the digital multimeter in any way.** Unauthorized modification may impair the function and/or safety and could affect the life of the equipment. There are specific applications for which the digital multimeter was designed.

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- **Always check of damaged or worn out parts before using the digital multimeter.** Broken parts will affect the digital multimeter operation. Replace or repair damaged or worn parts immediately.
- **Store idle digital multimeter.** When digital multimeter is not in use, store it in a secure place out of the reach of children. Inspect it for good working condition prior to storage and before re-use.

OPERATION

DC & AC VOLTAGE MEASUREMENT

1. Connect red test lead to "VΩmA" jack, Black lead to "COM" jack.
2. Set RANGE switch to desired VOLTAGE position, if the voltage to be measured is not known beforehand, set switch to the highest range and reduce it until satisfactory reading is obtained.
3. Connect test leads to device or circuit being measured.
4. Turn on power of the device or circuit being measured voltage value will appear on Digital Display along with the voltage polarity.

DC CURRENT MEASUREMENT

1. Red lead to "VΩmA". Black lead to "COM" (for measurements between 200mA and 10A connect red lead to "10A" jack with fully depressed.)
2. RANGE switch to desired DCA position.
3. Open the circuit to be measured, and connect test leads INSERIES with the load in with current is to measure.
4. Read current value on Digital Display.
5. Additionally, "10A" function is designed for intermittent use only. Maximum contact time of the test leads with the circuit is 15 seconds, with a minimum intermission time of seconds between tests.

RESISTANCE MEASUREMENT

1. Red lead to "VΩmA". Black lead to "COM".
2. RANGE switch to desired OHM position.
3. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.
4. Connect test leads to circuit being measured.
5. Read resistance value on Digital Display.

DIODE MEASUREMENT

1. Red lead to "VΩmA", Black lead to "COM".
2. RANGE switch to "■" position.
3. Connect the red test lead to the anode of the diode to be measured and black test lead to cathode.
4. The forward voltage drop in mV will be displayed. If the diode is reversed, figure "1" will be shown.

TRANSISTOR hFE MEASUREMENT

1. RANGE switch to the hFE position.
2. Determine whether the transistor is PNP or NPN type and locate the Emitter, Base and Collector leads. Insert the leads into the proper holes of the hFE Socket on the front panel.
3. The meter will display the approximate hFE value at the condition of base current 10μA and V_{CE}2.8V.

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BATTERY AND FUSE REPLACEMENT

If  appears in display, it indicates that the battery should be replaced.

To replace battery & Fuse (500mA/250V) remove the 2 screws in the bottom of the case, simply remove the old, and replace with a new one. Be careful to observe polarity.

MAINTENANCE

- **Maintain your digital multimeter.** It is recommended that the general condition of any digital multimeter be examined before it is used. Keep your digital multimeter in good repair by adopting a program of conscientious repair and maintenance. Have necessary repairs made by qualified service personnel.

ACCESSORIES

- > Operator's instruction manual
- > Set of test leads
- > 9-volt battery, NEDA 1604 6F22 type.

For technical questions, please call **1-800-222-5381**.

WARRANTY

One-Year Limited Warranty



Distributed by
Northern Tool + Equipment Co., Inc.
Burnsville, Minnesota 55306
NorthernTool.com
Made in China

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DIGITAL MULTIMETER

OWNER'S MANUAL



WARNING:
Read carefully and understand all **ASSEMBLY AND OPERATION INSTRUCTIONS** before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item# 43980