

Operating Instructions

Please read and save these instructions. Read through this owner's manual carefully before using product. Protect yourself and others by observing all safety information, warnings, and cautions. Failure to comply with instructions could result in personal injury and/or damage to product or property. Please retain instructions for future reference.

WESTWARD® 400A Digital Clamp Meters

Description

Model 22XX23/28AF74 are 4000-count digital clamp meters (hereafter referred to as "the Meter") featuring stable performance, high reliability and safety. They are designed with large-scale integrated circuits and dual integral A/D converter as the core as well as the overload protection and novel structure. The Meter can measure AC/DC voltage, AC/DC current, resistance, frequency, diode, continuity, etc. It is a superb professional tool for electricians.

Unpacking


Open the package case and take out the Meter. Check the following items carefully for any missing or damaged part. If any missing or damaged item is found, please contact your dealer immediately. The package contains the followings:

1. The Meter-----1pc
2. Operating Manual-----1pc
3. Test Leads-----1pair
4. Carrying Bag-----1pc
5. 9V Battery (NEDA 1604, 6F22 or 006P)-----1pc



Specifications

GENERAL SPECIFICATIONS

Display	4000-count LCD display, Max. display up to 3999.
Polarity	Automatically display "+" / "-".
Overload Indication	Display "OL" or "-OL".
Low Battery Indication	"  " appears and alerts users to replace the battery timely.
Sample Rate	3 times per second
Measurement Error	Additional 1% of reading deviation occurs if you fail to center the conductor within the clamp jaws during current measurement.
Sensor Type	AC/DC Hall-type sensor
Drop Test	Pass 1m drop test
Max. Jaw Opening	28mm diameter
Max Tested Conductor	26mm diameter
Electromagnetic Field Effect	It may cause the Meter to display unstable or incorrect readings if measuring near electromagnetic field
Power Supply	1pc .9V battery (NEDA1604 or 6F22 or 006P)
Battery Life	150 hours, typical (alkaline battery)
Auto Power Off	Available, allowed to be disabled.
Dimensions	76mm(W) × 208mm(L) × 30mm(H)
Weight	About 260g (including battery)
Application	For indoor use only
Temperature/Humidity	Operating : 0°C ~ 30°C/≤85% RH; 30°C ~ 40°C/≤75% RH; 40°C ~ 50°C/≤45% RH; Storage: -20°C ~ +60°C/≤85% RH;
Altitude	2000m
Compliance	IEC61010 CAT. II 600V, CAT. III 300V
Pollution Degree	2

ACCURACY SPECIFICATIONS

Accuracy: ± (a% of reading + b digits); calibration per year.

Ambient Temperature: 23°C ± 5°C.

Ambient Humidity: ≤85% RH.

Temperature Coefficient: 0.1 × Accuracy/1°C

1. DC Voltage

Range	Resolution	Accuracy	Overload Protection
400.0mV	0.1 mV	±(0.8%+3)	600Vdc/ac
4.000V	1mV		
40.00V	10mV	±(0.8%+1)	
400.0V	100mV		
600V	1V	±(1%+3)	

▲ Input Impedance: 10MΩ

2. AC Voltage

Range	Resolution	Accuracy	Overload Protection
4.000V	1mV	±(1%+5)	600Vdc/ac
40.00V	10mV		
400.0V	100mV		
600V	1V	±(1.2%+5)	

▲ 1) Input Impedance: 10MΩ

2) Frequency Response: 40Hz ~400Hz.

3) AC Conversion Type: 22XX23;

Average-responded. Input sinewave and calibrate the reading consistent with RMS value 28AF74:

AC-coupled and True RMS-responded. Sinewave is input. Non-sine wave must follow the accuracy below:

Peak factor: 1.4~2.0, add 1.0% on the stated accuracy


Peak factor: 2.0~2.5, add 2.5% on the stated accuracy

Peak factor: 2.5~3.0, add 4.0% on the stated accuracy.

3. Resistance


Range	Resolution	Accuracy	Overload Protection
400.0Ω	100mΩ	±(1.2%+2)	600Vp
4.000kΩ	1Ω		
40.00kΩ	10Ω	±(1%+2)	
400.0kΩ	100Ω		
4.000MΩ	1kΩ	±(1.2%+2)	
40.00MΩ	10kΩ		

4. Diode Test

Range	Resolution	Accuracy	Overload Protection
	1mV	Display approximate forward voltage drop value	600Vp

▲ Open Voltage: about 1.48V

5. Continuity Test

Range	Resolution	Accuracy
	100mΩ	≤10Ω: the buzzer sounds

▲ 1) Open Voltage: about 0.45V

2) When the tested resistance within 10Ω ~ 100Ω: the buzzer doesn't necessarily sound

6. Frequency

Range	Resolution	Accuracy	Overload Protection
10Hz	0.001Hz	±(0.1%+3)	600Vp
100Hz	0.01Hz		
1kHz	0.1Hz		
10kHz	1Hz		
100kHz	10Hz		
1MHz	100Hz		
10MHz	1kHz	For reference only	

▲ Input Sensitivity

When ≤100kHz: ≥300mVrms

>100kHz: ≥600mVrms

>1 MHz: ≥800mVrms

Input Amplitude a:

10Hz~100kHz: 30Vrms ≥ a ≥300mVrms

100kHz~10MHz: 30Vrms ≥ a ≥600mVrms

7. Duty Cycle

Range	Resolution	Accuracy
0.1% ~ 99.9%	0.1%	For reference only

8. DC Current

Range	Resolution	Accuracy
40.00A	0.01A	±(2%+5)
400.0A	0.1A	±(2%+3)

9. AC Current

Range	Resolution	Accuracy	Frequency Response
40.00A	0.01A	±(2.5%+8)	50Hz ~ 60Hz
400.0A	0.1A	±(2.5%+5)	

General Safety Information

The Meter is designed and manufactured in compliance with:

IEC61010 CAT. II 600V, CAT. III 300V, Double Insulation and Pollution Degree 2 standards.













⚠ This product has been tested to the requirements of CAN/CSA-C22.2 No. 61010-1, second or a later version of the same standard incorporating the same level of testing requirement

▲ WARNING

To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or equipment under test, adhere to the following rules:

- Inspect the Meter and test leads before use. Do not use the Meter if the insulation casing is found damaged or there is no display or you doubt the Meter works normally.
- Do not use the Meter with the back cover and battery cover opened, it may pose electric shock.
- Keep your fingers behind the finger guards during measurement. Do not touch any connector, unused input terminals or circuits under test in order to avoid electric shock.
- Set the Meter to a proper measurement range before measurement, do not switch over measurement which may damage the Meter.
- To avoid electric shock and damage to the Meter, do not apply any voltage higher than the rated value and grounding.
- Please take extreme caution when working with voltage above 60Vdc or 30Vac rms.
- Do not apply any voltage or current beyond the rated value. If the measured value is beyond the measuring range.
- Cut the power to the circuit and discharge all capacitors completely before measuring or continuity.
- Remove the test leads away from tested circuit, disconnect them from input terminals power to the Meter after completing the measurements.
- To ensure measurement accuracy, please replace the battery when low battery indicator battery if not in use for a long time.
- When servicing the Meter, use the replacement parts with the same model or identical.
- The Meter is suitable for indoor use.
- Do not alter randomly internal wiring of the Meter, for it cause damage to the Meter or personal injury.
- Do not store or use the Meter in high temperature, high humidity, flammables, explosive field environments.
- Clean the Meter's casing with soft cloth dampened with water or mild detergent. Do not use solvents, for that may corrode the casing and cause damage to the meter or personal injury.
- CAT II MEASUREMENT CATEGORY II is applicable to test and measuring circuits connected to the building's low-voltage MAINS installation.
- CAT III MEASUREMENT CATEGORY III is applicable to test and measuring circuits connected to the building's low-voltage MAINS installation.

International Electrical Symbols

	Alternating Current(AC)
	Direct Current(DC)
	AC or DC
	Double Insulated
	Grounding
	Continuity Test
	Diode Test
	Low Battery Indicator
	Warning. Refer to the Manual
	Risk of High Voltage
	Conforms to European Union directives
	This symbol signify the product comply with both USA and Canada requirement.