

User's Manual 73101 Pocket Digital Multimeter

Store this manual in a safe place for future reference.

YOKOGAWA IM 73101-E
Yokogawa Meters & Instruments Corporation 5th Edition: Dec. 2011 (YMI)

Precautions for Safe Use

When operating the instrument, be sure to observe the cautionary notes given below to ensure correct and safe use of the instrument. If you use the instrument in any way other than as instructed in this manual, the instrument's protective measures may be impaired. Yokogawa is by no means liable for any damage resulting from use of the instrument in contradiction to these cautionary notes.

The following safety symbols are used on this manual.

WARNING

Indicates a hazard that may result in the loss of life or serious injury of the user unless the described instruction is abided by.

CAUTION

Indicates a hazard that may result in an injury to the user and/or physical damage to the product or other equipment unless the described instruction is abided by.

WARNING

To avoid damage to instrument or electrical shock!

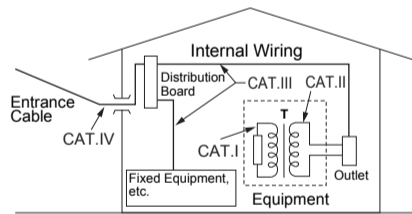
The maximum input voltage level for 73101 depend on the measurement categories specified by the safety standards.

These categories are described as below to protect operators against transient impulse voltages in power lines.

Measurement Category	Maximum Input Voltage
CAT. I	600V
CAT. II	300V

Measurement Categories

Measurement Categories	Description	Remarks
I CAT.I	For measurements performed on circuits not directly connected to MAINS.	
II CAT.II	For measurements performed on circuits directly connected to the low voltage installation.	Appliances, portable equipment, etc.
III CAT.III	For measurements performed in the building installation.	Distribution board, circuit breaker, etc.
IV CAT.IV	For measurements performed at the source of the low-voltage installation.	Overhead wire, cable system, etc.



WARNING

To avoid damage to instrument or electrical shock!

- Pay special attention when measuring the voltage of AC 30Vrms or DC 60V or more to avoid injury.
- Do not apply an input signals exceeding the maximum rating input value.
- Do not use instrument for measuring the line connected with equipment (i.e. motors) that generates induced or surge voltage since it may exceed the maximum allowable voltage.
- Check testing leads before use and do not use deteriorated or damaged ones. Check the continuity of testing leads.
- Do not use the instrument if there is any damage to the casing or when the casing is removed.
- Be careful not to cross the Barrier when using the test leads.
- Be sure to disconnect the test leads from the circuit when changing the function switch.
- Before starting measurement, make sure that the function is properly set in accordance with the measurement.
- Do not use instrument with wet hands or in a damp environment.
- Do not open the case except when replacing batteries. No person, except personnel from Yokogawa is authorized to disassemble this instrument. Do not attempt to repair the instrument yourself, as doing so is extremely dangerous.

To avoid electrical shock or fire!

- Do not use the instrument in an atmosphere where any flammable or explosive gas is present.
- If the instrument being to emit smoke, becomes too hot, or gives off an unusual smell, do not use the instrument.

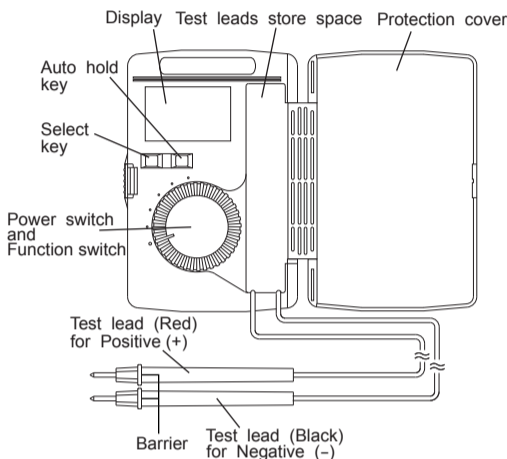
CAUTION

- Do not use the instrument near noise-emitting equipment or where there may be a sudden temperature change. Otherwise, the instrument may produce an unstable reading or errors.
- Do not wipe the instrument using any solvent (chemicals) such as benzine or paint thinner. Otherwise, the front panel may be damaged or discolored. When cleaning the instrument, use a dry cloth.
- Do not leave the instrument exposed to direct sunlight or in a hot and humid location such as the inside of a car, for any prolonged length of time.

Maximum Overload Protection Input

Function	Maximum rating input value	Maximum over Load protection input
DC V	DC 600V	DC 600V
AC V	AC 600V	
Ω	Voltage and current input prohibited.	AC 600V rms
Diode		
Barrier		

COMPONENTS (DESCRIPTION OF PANEL)



DESCRIPTION OF FUNCTIONS

- Power Switch and Function Switch**
Turn the switch for power on and off and to select the functions of DCV, ACV, Ω, Buz, Diode.
- Battery Voltage Drop Indication Display**
If the internal battery has been consumed and the voltage drops, the display shows. In this case, replace with 2 new batteries. (LR-44 or SR-44).
- Auto Hold Function**
<1> Press A-HOLD key. (The display shows the A-H symbol)
<2> Connect the test leads to the object under test.
<3> When the reading stabilizes, the buzzer sounds.
<4> Remove the testing leads from the object under test.
<5> The DMM now shows the measured value that it retains.
<6> You can repeat steps <2> to <5> as many times as you like as long as the display shows the symbol.
<7> To cancel this function, press the A-HOLD key once again.

Note:

- Do not mistake the following for a malfunction!
- In DC voltage measurement, the Auto Hold function is only available for range over 4V.
- The Auto Hold function cannot be applied to unstable signals.

ACCURACY (MEASUREMENT RANGES)

23±5°C <80%RH. Accuracy: ± (% of reading + digit)

Range	Resolution	Accuracy	Input Resistance	Maximum input
400mV	0.1mV	1.2+2	>100MΩ	600V
4V	0.001V	0.7+1	11MΩ	
40V	0.01V	1.2+1	10MΩ	
400V	0.1V			
600V	1V			

Range	Resolution	Accuracy	Input Resistance	Maximum input
4V	0.001V	2+5	11MΩ, <50pF	600Vrms
40V	0.01V		10MΩ, <50pF	
400V	0.1V			
600V	1V			

Range	Resolution	Accuracy	Measuring current and Open voltage	Maximum input
400Ω	0.1Ω	1.2+2	<1mA, <3.4V	600V
4kΩ	0.001kΩ		<0.5mA, <1.0V	
40kΩ	0.01kΩ		<70μA, <0.7V	
400kΩ	0.1kΩ		<7μA, <0.7V	
4MΩ	0.001MΩ	2+3	<0.7μA, <0.7V	600V
40MΩ	0.01MΩ	5+3	<70nA, <0.7V	

Range	Resolution	Accuracy	Open-Circuit Voltage	Maximum input
400Ω	0.1Ω	Beep on 50±20Ω	<3.4V	600V

Range	Resolution	Accuracy	Open-Circuit Voltage	Maximum input
2V	0.01V	1.5+1	<3.4V	600V

GENERAL SPECIFICATIONS

Measuring method :	Dual integration mode
Display :	Counter approx. 4300 counts max.
Range selection :	Auto range
Over indication :	"OL" mark.(Voltage only) "- - -" mark. (Others)
Polarity :	Automatic selection ("-" is displayed only.)
Low battery indication :	If the internal battery has been consumed and the voltage drops, the display shows mark.
Sampling rate :	Approx. 2 times/sec.
Operating temperature/ :	0 to 50°C <80%RH.
Humidity :	(No condensation)
Storage temperature/ :	-10 to 60°C <70%RH.
Humidity :	(No condensation)
Power supply :	LR-44 × 2 or SR-44 × 2
Dimension & weight :	Approx.117 (L) × 76 (W) × 18 (H) mm Approx. 110g
Accessories :	User's Manual.....1 LR-44 Button Cell(installed)2
Compliance with Standards	
Safety standard:	EN 61010-1, EN 61010-031 (300V CAT.II, 600 V CAT. I, Pollution degree2)
Operating altitude:	2000m max. above sea level, indoor use
EMC standard:	EN 55011 Group 1 Class B EN 61326-1, EN 61326-2-2

MEASUREMENT PROCEDURE

WARNING

- Do not apply an input signals exceeding the maximum rating input value.
- Be sure to disconnect the test leads from the circuit when changing the function switch.
- Be careful not to cross the Barrier when using the test leads.

- DC Voltage (DCV)**
DCV Measurement Maximum Rating Input Value 600V DC (CAT. I)

- Applications (object to be measured): Measure D.C. circuits
- Measuring Ranges: 5 ranges from 400mV to 600V
- Measurement Procedure:
 - Set the function switch at DCV (DCV) range.
 - Apply the black test lead to the negative (-) potential side of the circuit to measure and the red test lead to the positive (+) potential side.
 - Read the value on the display.
 - After measurement, remove the red and black test leads from the object to be measured.
- The display fluctuates when the test leads are removed. This is not malfunction.

- AC Voltage (ACV)**
ACV Measurement Maximum Rating Input Value 600Vrms (CAT. I)

- Applications (object to be measured): Measure sine-wave A.C. voltages such as lighting voltages
- Measuring Ranges: 4 ranges from 4V to 600V
- Measurement Procedure:
 - Set the function switch at ACV (ACV) range.
 - Apply the red and black test leads to the circuit to measure.
 - Read the value on the display.
 - After measurement, remove the red and black test leads from the object to be measured.
- This instrument employs the average measurement system and some error is made to the display of waveforms other than sine waves.
- The accuracy guaranteed frequency range is 45 Hz to 400 Hz.

- Resistance Measurement (Ω)

WARNING

Do not apply voltage to the input terminals.

- Applications (object to be measured): Resistance of resistors and circuits is measured
- Measuring Ranges: 6 ranges from 400 Ω to 40M Ω
- Measurement Procedure:
 - Set the function switch at Ω (OHM).
 - Apply the red and black test leads to the object to be measured.
 - Read the value on the display.
 - After measurement, remove the red and black test leads from the object to be measured.

"Measures for Administration of the Pollution Control of Electronic Information Products" of the People's Republic of China

This User's Manual explains the Prevention of Pollution Control of Electronic Equipment Method in China. This manual is valid only in China.

产品中有毒有害物质或元素的名称及含量

部件名称	有毒有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
框架 (塑料)	x	x	x	x	○	○
线路板 ASSY	x	x	x	x	○	○
导线	x	x	x	x	○	○
电池	x	x	x	x	○	○

环保使用期限:



该标识适用于2006年2月28日颁布的《电子信息产品污染控制管理办法》以及SJ/T11364-2006《电子信息产品污染控制标识要求》中所述,在中华人民共和国销售的电子信息产品的环保使用期限。只要您遵守该产品相关的安全及使用注意事项,在自制造日起算的年限内,则不会因产品中有有害物质泄漏或突变,而造成对环境的污染或对人体及财产产生恶劣影响。注)该年数为“环保使用期限”,并非产品的质量保质期。零件更换的推荐周期,请参照使用说明书。

- Checking Continuity (•••)

WARNING

Do not apply voltage to the input terminals.

- Applications (object to be measured): Checking the continuity of wiring and selecting wires. The buzzer sounds when the resistance in a circuit to measure is less than about 70Ω.
- Procedure:
 - Set the function switch at ••• range.
 - Apply the red and black test leads to a circuit or conductor to measure.
 - The continuity can be judged by whether the buzzer sounds or not.
 - After measurement, release the red and black test leads from the object measured.

- Testing Diode (→|←)

WARNING

Do not apply voltage to the input terminals.

- Applications (object to be measured): The quality of diodes tested.
- Procedure:
 - Set the function switch at →|← range.
 - Connect the test leads to the diode to be tested. When measuring the forward voltage across diode, a normal diode will indicate 0.5 to 0.7V. The reverse voltage will indicate "OL".
 - For a short-circuited diode, a value near 0V will be displayed.

AUTO POWER OFF SELECTION

- The DMM will power off automatically in approx. 20 minutes later after the last operation was stopped.
- The alarm buzzer sounds 7 times before around 1 minute of power off.
- Press any key or turn the Function switch while the instrument is beeping postpones the power-off time.
- To cancel the Auto Power Off Function, hold down the Select key and then set the Function switch from OFF to the position of any desired measurement mode. The AUTO POWER OFF indication turns off when the Function is cancelled.

MAINTENANCE

- Battery Replacement

WARNING

- If the rear case or the battery lid (cover) is removed with input applied to the input terminals, you may get electrical shock. Before starting the work, always make sure that no input is applied.
- Before starting the work, be sure to turn OFF the main unit power and remove the test leads from the circuit.

<How to Replace>

- Remove the battery lid (cover) screw with a screwdriver.
- Remove the battery lid (cover).
- Take out the batteries and replace with 2 new batteries.
- Attach the battery lid (cover) and screw it on.

Disposing the Product

This Product complies with the WEEE Directive (2002/96/EC) marking requirement. The affixed product label (see below) indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category

With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a "Monitoring and Control instrumentation" product.



To return unwanted products within the EU area, contact your local Yokogawa Europe B.V. office. Do not dispose in domestic household waste.

YOKOGAWA

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