User's Manual

Model 73301/ 02/ 03
Digital Multimeters

Store this manual in a safe place for future reference.

YOKOGAWA
Yokogawa Meters & Instruments Corporation

IM 73301E
6th Edition: Jan. 2007(KP)

User Calibration Function

It is recommended that the instrument be calibrated periodically.
Use the keys on the faceplate of 733 series of multimeters to carry out calibration.
Use the calibrator with ten times the accuracy of 733 series.

CAUTION

- Connect the calibrator to the multimeter with the calibrator's testing leads.
- Before carrying out calibration, read the instruction manual of the calibrator.
- Calibration temperature and humidity: 23±3°C, 55%RH or below
- Leave the multimeter for 30 minutes to enable it to reach room temperature before carrying out calibration.
- Temporarily remove the testing leads from the multimeter before switching between DC and AC, or voltage and current during calibration.

To calibrate the multimeter:

Note: Start calibration of the mV range (calibration of other ranges will become possible after mV calibration has been completed).

a) Turn the function switch from the OFF position to the mV position while pressing the SELECT and RANGE keys at the same time. (The display shows the CAL symbol then the PASS symbol.)
b) Press the SELECT key. (The display shows the "- " symbol.)
c) Press the D-H/A-H key twice. (The display shows the "- - - " symbol.)
d) Press the RANGE key. (The display shows the mV symbol.)
e) Connect the multimeter to the calibrator with the testing leads.
f) Set the calibrator to 380 mVDC as an input to the multimeter.
g) Press the D-H/A-H key.
(After the value stabilizes, press the D-H/A-H key to confirm the calibration value.)
h) Carry out calibration of other ranges by repeating steps f) and g) in accordance to Table 1.
i) To quit calibration, turn the function switch back to the OFF position.

Table 1. Input Signal for Calibration

Range	Input	Range	Input	Range	Input
400 mVDC	380 mV	400 µADC	380 µA	10 nF	9 nF
4 VDC	3.8 V	4000 µADC	3800 µA	100 nF	90 nF
40 VDC	38 V	40 mADC	38 mA	1 µF	0.9 µF
400 VDC	380 V	400 mADC	380 mA	10 µF	9 µF
1000 VDC	1000 V	4 ADC	3.8 A	100 µF	90 µF
		10 ADC	10 A	1000 µF	1000 µF
VAC (RMS)	3.8 V at 60 Hz				
VAC (AVG)	3.8 V at 60 Hz	AAC	38 mA at 60 Hz		

Safety Precautions

To ensure safe use of the product, strictly adhere to the precautions indicated by the following symbols throughout 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.

The instrument and this manual also use the following safety symbols:

Caution
This symbol indicates that the operator must refer to an explanation in the instruction manual in order to avoid the risk of injury or death of personnel and/or damage to the instrument.

Double Insulation
This symbol indicates double insulation.

AC Voltage/Current
This symbol indicates AC voltage/current.

DC Voltage/Current
This symbol indicates DC voltage/current.

Fuse
This symbol indicates a fuse.

Ground
This symbol indicates ground (earth).

WARNING

■ To avoid electric shock
- Do not use deteriorated or damaged testing leads. Check testing leads before use.
- Do not use the instrument if there is any damage to the casing or when the casing is removed.
- Disconnect testing leads from the circuit under test before opening the casing to replace the batteries or for any other reason.
- Avoid using the instrument if it has been exposed to rain or moisture or if your hands are wet.

■ To avoid electric shock or fire
Do not use the instrument in an atmosphere containing any flammable or explosive gases.

WARNING

■ Measurement Category (CAT.)
The restrictions on the maximum voltage level for which the 73301, 73302 and 73303 multimeters can be used, depend on the Measurement categories specified by the safety standards.

Measurement Category (CAT)	Maximum Input Voltage
III	600 V AC/DC
II	1000 V AC/DC

CAT.I For measurements performed on circuits not directly connected to MAINS.
CAT.II For measurements performed on circuits directly connected to the low voltage installation.
CAT.III For measurements performed in the building installation.

CAUTION

- Do not use the multimeter near noise-emitting equipment or where there may be a sudden change of temperature. Otherwise, the instrument may give an unstable reading or errors.
- Do not wipe the instrument using any organic solvent such as benzine or paint thinner, as this may damage or discolor the front panel. Use a dry cloth to clean the instrument.
- Do not leave the multimeter exposed to direct sunlight or in a hot and humid location such as the inside of a car, for any prolonged length of time.

NOTE

- Radiation immunity affects the accuracy of 733 Series digital multimeter under the conditions specified in EN 61326-1.
- If equipment generating strong electromagnetic interference is located nearly, the testers may malfunction.

Components

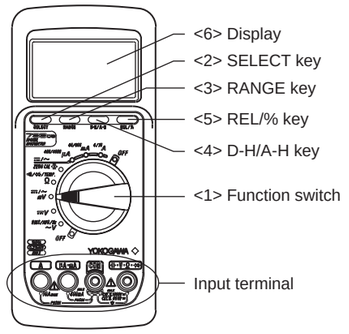
1) Function Switch
Turns off the power or selects the measurement mode.
OFF: Turns off the power.
~ V: AC voltage measurement
⎓ V: DC voltage measurement
mV: DC voltage measurement in milli-volts
Ω : Resistance measurement
⊣⊢ : Capacitor check (73302 & 73303)
⊣◀ : Diode test (73301)
µA/mA/A: DC/AC current measurement

2) SELECT key
This button is enabled only if the multimeter is in one of the following measurement modes.
- ~ V: In this mode, the key selects the frequency measurement in hertz (73302 & 73303). In this mode, the key selects the AC voltage measurement in an average value. (73303)
- mV: In this mode, the key selects AC voltage measurement in milli-volts.
- Ω: In this mode, the key selects among the continuity check, diode test, and temperature measurement.
- ⊣⊢: In this mode, the button adjusts the stray capacitance of the testing leads and the multimeter itself, to zero (73302 & 73303).
- µA/mA/A: In this mode, the button selects AC current measurement.

3) RANGE key
Allows the operator to select the measuring range manually (the display shows the R•H symbol). The range increases as the button is pressed.
To return to the normal auto-ranging mode, hold down this button for at least one second until the display shows "AUTO."

4) D-H/A-H key
Selects between the DATA HOLD and AUTO HOLD functions (the display shows the D•H symbol when in the DATA HOLD mode, and the A•H symbol when in the AUTO HOLD mode).

5) REL/% key
Selects between REL and % calculations (the display shows the REL symbol when in the REL mode, and the REL and % symbols when in the % mode).



6) Display Description

Symbol and Unit	Description
⎓	Lit when in DC-mode measurement
~	Lit when in AC-mode measurement
—	Polarity indicator-lit when the polarity is negative
⊣◀	Lit when in diode test
•))	Lit when in continuity check
REL	REL calculation indicator
D•H	DATA HOLD indicator
A•H	AUTO HOLD indicator
R•H	Manual range indicator
AUTO	AUTO RANGE indicator
RMS	AC root-mean-square voltage measurement indicator
AVG	AC average-voltage measurement indicator
AUTO POWER OFF	AUTO POWER OFF indicator
nF, µF	Unit for capacitance measurement
mV, V	Unit for voltage measurement
µA, mA, A	Unit for current measurement
Ω, kΩ, MΩ	Unit for resistance measurement
°C	Unit for temperature measurement
Hz	Unit for frequency measurement
%	Unit for percentage calculation
+–	Lit when the batteries are low
	Bar graph indicator

Measuring Instructions

CAUTION

To aboid damage to Instrument or equipment
- Before starting measurement, make sure that the function switch mode is set and the testing leads are plugged into the terminals required for the desired mode of measurement.
- Temporarily remove the testing leads from the device under test before operating the function switch.

• AC Voltage Measurement (~V)
a) Turn the function switch from the OFF position to the ~V or mV position.
b) Press the SELECT key when the mV mode is selected (the display shows the ~ symbol).
c) Plug the black testing lead into the COM input terminal and the red testing lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
d) Connect the testing leads to the circuit under test and then read the meter when it stabilizes.
Note: When the ~V mode is selected, the AC voltage can be displayed as an average or effective value. Press the SELECT key to display the AVG or RMS symbol (73303).

• DC Voltage Measurement (⎓V)
a) Turn the function switch from the OFF position to the ⎓V position.
b) Plug the black testing lead into the COM input terminal and the red testing lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
c) Connect the testing leads to the circuit under test and then read the meter when it stabilizes.

NOTE
Do not mistake the following for a malfunction!
If the 400 mV range is selected and the testing leads are left open-circuited, the multimeter may give a certain reading. This does not affect your measurement.

• Resistance Measurement (Ω)

CAUTION
To avoid damage to instrument
Turn off the power to the circuit under test before starting measurement in order to prevent any excessive voltage from being applied to the multimeter.

a) Turn the function switch from the OFF position to the Ω position.
b) Plug the black testing lead into the COM input terminal and the red testing lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
c) Connect the testing leads to the circuit under test and then read the meter when it stabilizes.

• Continuity Check (•))

CAUTION
To avoid damage to instrument
Turn off the power to the circuit under test before starting measurement in order to prevent any excessive voltage from being applied to the multimeter.

a) Turn the function switch from the OFF position to the Ω position.
b) Press the SELECT key to display the •)) symbol.
c) Plug the black testing lead into the COM input terminal and the red testing lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
d) Connect the testing leads to the circuit under test. If the circuit is continuous (no more than approximately 20 Ω, the buzzer sounds.

• Diode Test (⊣◀)

CAUTION
To avoid damage to instrument
Turn off the power to the circuit under test before starting measurement in order to prevent any excess voltage from being applied to the multimeter.

a) Turn the function switch from the OFF position to the Ω position. (For 73301 turn to the ⊣◀ position.)
b) Press the SELECT key to display the ⊣◀ symbol.
c) Plug the black testing lead into the COM input terminal and the red testing lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
d) Connect the testing leads to the diode under test and then read the meter when it stabilizes.
(1) Forward-bias Diode Test
Connect the black testing lead to the cathode and the red testing lead to the anode.
(2) Reverse-bias Diode Test
Connect the black testing lead to the anode and the red testing lead to the cathode.

• Temperature Measurement (TEMP)

CAUTION
To avoid damage to instrument
Turn off the power to the circuit under test before starting measurement in order to prevent any excessive voltage from being applied to the multimeter.

a) Turn the function switch from the OFF position to the Ω position.
b) Press the SELECT key three times to select the TEMP mode (the display shows the °C symbol).

c) Plug the black lead of the optional 234901 thermistor measuring probe into the COM input terminal and the red lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
d) Connect the testing leads to the circuit under test and then read the meter when it stabilizes.

• Current Measurement (µA/mA/A)

CAUTION
To avoid damage to instrument
Check which mode the function switch is set to before starting measurement.

a) Turn the function switch from the OFF position to either the µA, mA or A position. (If the magnitude of the current being measured is not known, select the A position. Make sure the current being measured is no more than 0.4 A before the µA or mA position is selected.)
b) Press the SELECT key to select DC or AC measurement.
c) Plug the black testing lead into the COM input terminal and the red testing lead into the A input terminal. If the current is in the order of milli-amperes or less, plug the red testing lead into the µA • mA input terminal.
d) Connect the testing leads to the circuit under test and then read the meter when it stabilizes.

- **Capacitor Check (⊣⊢)**

CAUTION
To avoid damage to instrument
Turn off the power to the circuit under test before starting measurement in order to prevent any excess voltage from being applied to the multimeter.

a) Turn the function switch from the OFF position to the ⊣⊢ position.
b) Plug the black testing lead into the COM input terminal and the red testing lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
c) Open the testing lead and press the SELECT key to adjust the stray capacitance to zero (the display shows 0.00).
d) Connect the testing leads to the capacitor under test and then read the meter when it stabilizes. When the capacitor check is below the capacity at zero calibration, "0.00" is displayed until the power off.

NOTE
Do not mistake the following for a malfunction!
Zero calibration is only effective when the 10 nF range is selected.

- **Frequency Measurement (Hz)**

CAUTION
To avoid damage to instrument
Check which mode the function switch is set to before starting measurement.

a) Turn the function switch from the OFF position to the ⎓V position.
b) Press the SELECT key to select Hz measurement (the display shows the Hz symbol).
c) Plug the black testing lead into the COM input terminal and the red testing lead into the ⊣⊢ • V • Ω • ⊣◀ input terminal.
d) Connect the testing leads to the circuit under test and then read the meter when it stabilizes.

NOTE
Do not mistake the following for a malfunction!
If the Frequency measurement range is selected and the testing leads are left open-circuited, the multimeter may give some kind of reading. This does not affect your measurement.

AUTO HOLD Function

The 733 series of multimeters can automatically retain the measured value when the testing leads are handled as described below.
a) Press the D-H/A-H key to select the function. (The display shows the A•H symbol.)
b) Connect the testing leads to the object under test.
c) When the reading stabilizes, the buzzer sounds.
d) Remove the testing leads from the object under test.
e) The multimeter now shows the measured value that it retains.
f) You can repeat steps b) to e) as many times as you like as long as the display shows the A•H symbol.
g) To cancel this function, press the D-H/A-H key once again. (The A•H symbol disappears.)

NOTE
Do not mistake the following for a malfunction!
- In DC/AC voltage measurement, the AUTO HOLD function is only available for ranges greater than the 4 V range.
- This function is not available for Capacitor check, Temperature-mode measurement, Continuity check and Frequency measurement.
- The AUTO HOLD function cannot be applied to unstable signals.

REL&% Calculation Function

The 733 series of multimeters can calculate relative values or differences, and percentage values from the reference measurement values.

(1) REL calculation
Subtracts the reference value from the measured value to display the relative value or difference.
a) Enter the reference value.
b) Press the REL/% key to display the REL symbol.
c) Enter the measured value.
d) The display shows the relative value or difference.

(2) % calculation
Calculates and displays the percentage value according to the following equation:
% value = (reference value - measured value)/ reference value
a) Enter the reference value.
b) Press the REL/% button to display the REL symbol.
c) Enter the measured value.
d) Press the REL/% button again to display the % symbol.
e) The display shows the percentage value.

AUTO POWER OFF function

The multimeter automatically turns off if no key is pressed for a period of 20 minutes. The multimeter will beep for approximately 30 seconds to alert the operator before the AUTO POWER OFF function takes effect. (Pressing any key while the multimeter is beeping postpones the power-off time.) Pressing any key once after the power to the multimeter is automatically turned off switches the multimeter on again.
To cancel the AUTO POWER OFF function, hold down the D-H/A-H key and then turn the function switch from OFF to the desired position of any measurement mode. (The AUTO POWER OFF indication turns off when the function is canceled.)
To enable the function once again, temporarily turn the function dial back to the OFF position, and then select the desired measurement mode.

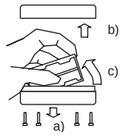
When this function is complete, turn the function switch back to the OFF position and turn-off the multi meter.

Battery Replacement

If the batteries fall below the normal operating voltage, the ▪+▪− symbol turns on. If this happens, replace the batteries with new ones (two AA-size [R6 or LR6] batteries).

CAUTION
To avoid electric shock
- Be SURE to disconnect the multimeter from the circuit under test before replacing the batteries.
- Replace both batteries at the same time making sure to position their polarities correctly.

To replace the batteries:
a) Remove the four screws on the back of the casing.
b) Open the casing.
c) Take the battery holder out of the casing.
d) Replace the batteries with new ones and install the battery holder back into the casing.
e) Close the casing and fasten it with the four screws.

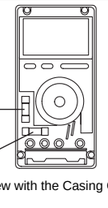


Fuse Replacement

If a current greater than the rated value flows when the multimeter is in the current-measurement range, a protection fuse may blow. If this happens, replace that fuse. The multimeter contains the following two types of fuses:
• F1 fuse: type A1518EF (600 V/500 mA)
• F2 fuse: type A1519EF (600 V/15 A)

CAUTION
To avoid electric shock
- Be SURE to disconnect the multimeter from the circuit under test before replacing the fuse(s).
- Do NOT operate the multimeter with the casing left open.
- In order to avoid damage to the multimeter or any possible accident, use fuses of the specified rating.

To replace the fuse(s):
a) Remove the four screws on the back of the casing.
b) Open the casing.
c) Remove the blown fuse from the fuse holder.
d) Install a new fuse in the holder.
e) Close the casing and fasten it with the four screws.



View with the Casing Open

Specifications

1. Standard Specifications
- Measurement functions: AC voltage, DC voltage, AC current, DC current, resistance, continuity, diode, temperature, frequency[Note] and capacitance[Note]
  Note: This function is not supported on the 73301 multimeter.
- Additional functions: Data-hold/Automatic-hold, manual range selection, REL/%, over-range alarm, and automatic power-off
- Display: LCD display that is capable of indicating a significant reading of up to 4000 counts[Note] in the digital display and 40 segments in the bar graph display along with the indications of the unit indication is given for positive polarity. The display also has the OL over-range and ▪+▪− low-battery alarm indicators.
  Note: The most significant reading is 9999 counts for the frequency measurement.
- Range selection: Manual or automatic
- Measurement cycle: Digital 2.3 times per second (where the cycle for frequency measurement is once every second and 0.2 to 2 times every second for capacitor measurement). Bar graph 23 times per second
- Operating temperature range: -10°C to 50°C (with guaranteed accuracy of 23°C ±5°C) with no condensation
  Where, the range is -10°C to 40°C for a humidity of 80%RH or below, and 40°C to 50°C for a humidity of 70%RH or below.
- Temperature coefficients: Add (accuracy × 0.1)/°C at -10°C to 18°C or 28°C to 50°C
- Storage temperature and humidity ranges: -20°C to 60°C; 70% RH maximum
- Power supply: AA-size (R6 or LR6) batteries: 2
- Battery life: Approximately 300 hours (at DC viltage measurment, using alkaline batteries)
- External dimensions: 85 (W) × 191 (H) × 40 (D) mm (excluding protrusions)
- Weight: Approx. 450 g (including batteries)
- Safety standards: EN61010-1, EN61010-2-031
  (AC/DC 600V CAT.III, AC/DC 1000V CAT.II, Pollution degree 2)
- EMC standards: EN55011 Group1 Class B
  EN61326-1
- Effect of radiation immunity: Accuracy range of reading: [Rated accuracy + 8% of each range] for the strength of a radio-frequency electromagnetic field of 3 V/m
- Operating environment: 2000 m max. above sea level., indoors.
- Withstand voltage: 5.55 kVAC 1 minute (between input terminal and casing)
- Accessories: Batteries: 2
  Testing leads (RD031): 1 set
  Instruction manual: 1
- Optional Accessories: Thermistor measuring probe (234901)

2. Performance
Test conditions:
Temperature and humidity: 23°C ±5°C at 80% RH or below
Accuracy: ±(percentage of reading + number of digits)
Note: Each response noted below is a value measured in the Range Hold mode.

- **DC Voltage Measurement (⎓V)**

Range	Resolution	Accuracy		Input Resistance	Maximum Input Voltage
		73301	73302 & 73303		
400 mV	0.1 mV	0.3% + 1	0.2% + 1	10 MΩ	1000 V DC 1000 Vrms AC
4 V	0.001 V			11 MΩ	
40 V	0.01 V			10 MΩ	
400 V	0.1 V				
1000 V	1 V				

Normal mode rejection ratio: 60 dB or better at 50/60 Hz
Common mode rejection ratio: 120 dB or better
Response: 1 sec maximum

- **AC Voltage Measurement (∼V) (73301) - AC coupling. Based on mean-value detection and root-mean-square value calibration.**

Range	Resolution	Accuracy			Input Impedance	Maximum Input Voltage
		50/60 Hz	40 - 500 Hz	500 -1 kHz		
400 mV	0.1 mV	0.5% + 2	1% + 2	1.5% + 4	10 MΩ, <50 pF	1000 VDC 1000 Vrms AC
4 V	0.001 V				11 MΩ, <50 pF	
40 V	0.01 V				10 MΩ, <50 pF	
400 V	0.1 V					
1000 V	1 V			——		

Common mode rejection ratio: 60 dB or better at DC to 60 Hz AC frequencies (where Rs = 1 kΩ)
Response: 2 sec maximum

- **AC Voltage Measurement (∼V) (73302) - AC coupling. Based on mean-value detection and root-mean-square value calibration.**

Range	Resolution	Accuracy			Input Impedance	Maximum Input Voltage
		50/60 Hz	40 - 500 Hz	500 -1 kHz		
400 mV	0.1 mV	0.5% + 2	0.75% + 2	1.5% + 4	10 MΩ, <50 pF	1000 VDC 1000 Vrms AC
4 V	0.001 V				11 MΩ, <50 pF	
40 V	0.01 V				10 MΩ, <50 pF	
400 V	0.1 V					
1000 V	1 V			——		

Common mode rejection ratio: 60 dB or better at DC to 60 Hz AC frequencies (where Rs = 1 kΩ)
Response: 2 sec maximum

- **AC Voltage Measurement (∼V) (73303) - AC coupling. Based on root-mean-square value detection and mean-value detection (excluding 400 mV range) and root-mean-square value calibration (excluding 400 mV range).**

Range	Resolution	Accuracy			Input Impedance	Maximum Input Voltage
		50/60 Hz	40 - 500 Hz	500 -1 kHz		
400 mV	0.1 mV	0.5% + 5 Note	1% + 5 Note	1.5% + 5 Note	10 MΩ, <50 pF	1000 VDC 1000 Vrms AC
4 V	0.001 V				11 MΩ, <50 pF	
40 V	0.01 V				10 MΩ, <50 pF	
400 V	0.1 V					
1000 V	1 V			——		

Common mode rejection ratio: 60 dB or better at DC to 60 Hz AC frequencies (where Rs = 1 kΩ)
Response: 2 sec maximum
Crest factor: < 3
Note: 5 to 100% of the full scale and 1000 V range is 200 to 1000 V.

- **DC Current Measurement (⎓A)**

Range		Resolution	Accuracy		Voltage Drop	Maximum Input Current
			73301	73302 & 73303		
µA	400 µA	0.1 µA	1% + 2	0.5% + 2	<0.12 mV/µA	400 mA The input is protected by a 500 mA/600 V fuse.
	4000 µA	1 µA				
mA	40 mA	0.01 mA			<3.3 mV/mA	
	400 mA	0.1 mA				
A	4 A	0.001 A	1.2% + 2		<0.1 V/A	10 A The input is protected by a 15 A/600 V fuse.
	10 A	0.01 A				

Response: 1 sec maximum

- **AC Current Measurement (∼A) (73301) - AC Coupling. Based on mean-value detection and root-mean-square value calibration.**

Range		Resolution	Accuracy		Voltage Drop	Maximum Input Current
			50/60 Hz	40 -1 kHz		
µA	400 µA	0.1 µA	1% + 5	1.5% + 5	<0.12 mV/µA	400 mA The input is protected by a 500 mA/600 V fuse.
	4000 µA	1 µA				
mA	40 mA	0.01 mA			<3.3 mV/mA	
	400 mA	0.1 mA				
A	4 A	0.001 A	1.2% + 5		<0.1 V/A	10 A The input is protected by a 15 A/600 V fuse.
	10 A	0.01 A				

Response: 2 sec maximum

- **AC Current Measurement (∼A) (73302 & 73303) - AC Coupling. Based on root-mean-square value calibration (73303) and mean-value detection and root-mean-square value calibration.**

Range		Resolution	Accuracy		Voltage Drop	Maximum Input Current
			50/60 Hz	40 -1 kHz		
µA	400 µA	0.1 µA	0.75% + 5 Note	1.5% + 5 Note	<0.12 mV/µA	400 mA The input is protected by a 500 mA/600 V fuse.
	4000 µA	1 µA				
mA	40 mA	0.01 mA			<3.3 mV/mA	
	400 mA	0.1 mA				
A	4 A	0.001 A	1% + 5 Note		<0.1 V/A	10 A The input is protected by a 15 A/600 V fuse.
	10 A	0.01 A				

Response: 3 sec maximum
Crest factor: < 3 (73303)
Note: 5 to 100% of the full scale and 10 A range is 2 to 10 A (73303).

- **Resistance Measurement (Ω)**

Range	Resolution	Accuracy		Measuring Current	Open-loop Voltage	Input Protective Voltage
		73301	73302 & 73303			
400 Ω	0.1 Ω	0.5% + 1 Note	0.4% + 1 Note	<1.4 mA	<3.4 V	600 Vrms
4 kΩ	0.001 kΩ			<120 µA	<1.3 V	
40 kΩ	0.01 kΩ			<13 µA		
400 kΩ	0.1 kΩ			<1.3 µA		
4 MΩ	0.001 MΩ		0.5% + 1	<130 nA		
40 MΩ	0.01 MΩ	1% + 2				

Response: 2 sec maximum for ranges lower than the 400 kΩ range; 10 sec maximum for ranges higher than 4 MΩ
Note: Readings in the 400 Ω range are the values after zero calibration has been completed.

- **Continuity Check (•))**

Range	Resolution	Range of Operation	Measuring Current	Open-loop Voltage	Input Protective Voltage
400 Ω	0.1 Ω	The buzzer turns on for resistances lower than 20 Ω.	0.8 mA	<3.4 V	600 Vrms

- **Diode Test (⊣◀)**

Range	Resolution	Accuracy	Measuring Current (Vf = 0.6 V)	Open-loop Voltage	Input Protective Voltage
2 V	0.001 V	1% + 2	About 0.5 mA	<3.4 V	600 Vrms

- **Temperature measurement (TEMP)**

Range	Resolution	Accuracy	Input Protective Voltage
-50.0°C to 150°C	0.1°C	±1°C for 0°C to 70.0°C range; ±2°C for -30.0°C to 0°C range and 70.0°C to 150.0°C range.	600 Vrms

Accuracy is the value when measured in combination with the 234901 (optional).

- **Capacitor Check (⊣⊢) This function is not supported on the 73301 multimeter.**

Range	Resolution	Accuracy	Input Protective Voltage
		73302 & 73303	
10 nF	0.01 nF	2% + 10 Readings are the values after zero calibration has been completed.	600 Vrms
100 nF	0.1 nF	2% + 5	
1000 nF	1 nF		
10 µF	0.01 µF		
100 µF	0.1 µF	3% + 5	
1000 µF	1 µF		

- **Frequency measurement (Hz) This function is not supported on the 73301 multimeter.**

Range	Resolution	Accuracy	Input Voltage	Maximum Input Voltage
		73302 & 7333		
10.00 to 99.99 Hz	0.01 Hz	0.02% + 1	0.2 to 400 Vrms	600 Vrms
90.0 to 999.9 Hz	0.1 Hz			
0.900 to 9.999 kHz	0.001 kHz		0.4 to 400 Vrms	
9.00 to 99.99 kHz	0.01 kHz		0.8 to 100 Vrms	100 Vrms

AC Coupling

Calibration and Maintenance

Calibration Cycle
It is recommended that the instrument be calibrated once a year.
(see also "User Calibration Function.")

YOKOGAWA ◆
Yokogawa Meters & Instruments Corporation

Yokogawa Meters & Instruments Corporation
International Sales Dept.
Tachihi Bld. No.2, 6-1-3, Sakaecho, Tachikawa-shi,Tokyo 190-8586 Japan
Phone: 81-42-534-1413, Facsimile: 81-42-534-1426
2006.2