Ⅰ. INTRODUCTION:

M890 series including M890C+, M840D, M890D, M890F and M890G. They can be used for measuring DC voltage and current, AC voltage and current, resistance, capacitance, diode, transistor hFE and continuity test, audio frequency and temperature. It can display both reading and sign and have overload protection. Thus it is suitable for use in laboratory, field, workshop, hobby and home application etc.

Ⅱ. FEATURES:

* DC basic accuracy: ±0.5%.
* Full range, auto-zeroing, automation of polarity, overrange and low battery.
* Indication of signs of the readings.
* Press bottom for power on-off.
* Continuity test contains buzzer.
* Capacitance test: 1pF to 20μF, auto-zeroing.
* Resistance range: 0.1Ω to 200MΩ.
* Frequency: 1Hz to 20kHz.
- Diode and transistor test.
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Ⅲ. TECHNICAL SPECIFICATION:

Accuracy: ± a% reading ± No. of digits guaranteed for 1 year.

Environmental temperature: 23℃±5℃

relative humidity: <75%.

1.DC Voltage:

RANGE	ACCURACY	RESOLUTION
200mV	±0.5% of rdg±1 digit	100μV
2V		1mV
20V		10mV
200V		100mV
1000V	±0.8% of rdg±2 digits	1V

Input impedance:10MΩ on all ranges.
Overload protection: DC or AC peak value of 1000V. (except 200mV range with the maximum value being 250V rms)

2.AC Voltage:

RANGE	ACCURACY	RESOLUTION
200mV	±1.2% of rdg±3 digits	100μV
2V	±0.8% of rdg±3 digits	1mV
20V		10mV
200V		100mV
700V	±1.2% of rdg±3 digits	1V

Input impedance:10MΩ on all ranges.
Frequency range:40Hz to 400Hz for 200V range or below.
40Hz to 200Hz for 700V.
Overload protection: AC 700V rms or 1000V peak continuous on all ranges.(except 200mV range with the maximum value being 250V rms).
Indication: Average value (rms of sine wave).

3.DC Current:

RANGE	ACCURACY	RESOLUTION
200μA	±0.8% of rdg±1 digit	0.1μA
2mA		1μA
20mA		10μA
200mA	±1.2% of rdg±1 digit	100μA
2A		1mA
20A	±2% of rdg±5 digits	10mA

Overload protection: 200mA/250V fused for all model except 804D which use 2A/250V fuse.

Maximum input current: 20A (If not fused, max. 15 sec.)

4.AC Current:

RANGE	ACCURACY	RESOLUTION
200μA	±1.8% of rdg±3 digits	0.1μA
2mA	±2% of rdg±3 digits	1μA
20mA		10μA
200mA	±2% of rdg±3 digits	100μA
2A		1mA
20A	±3% of rdg±7 digits	10mA

Overload protection:200mA/250V fused.(except 840D use 2A/250V).

Frequency range:40Hz to 400Hz.

Indication: Average value (rms of sine wave)

Attention: Current measurement protected by fuse. If mis-connect to the AC current, fuse will blow for protecting the internal circuitry. Just replace the fuse. Please

noted that 20A range is not fused and measurement should not take more than 15 seconds. Otherwise, the reading will be deviated due to heating up.

5. Resistance:

RANGE	ACCURACY	RESOLUTION
200Ω	±0.8% of rdg±3 digits	0.1Ω
2kΩ	±0.8% of rdg±1 digit	1Ω
20kΩ		10Ω
200kΩ		100Ω
2MΩ		1kΩ
20MΩ	±1% of rdg±2 digits	10kΩ
200MΩ	±5%(rdg-10digits)±10 digits	100kΩ

Overload protection: 250V DC or AC rms.
Open circuit voltage: <0.7V The open circuit voltage is 3V for 200M ohm range.

6. Capacitance:

RANGE	ACCURACY	RESOLUTION
2000pF	±2.5% of rdg±3 digits	1pF
20nF		10pF
200nF		100Pf
2μF		1nF
20μF		10nF

7. Diode and Buzzer:

RANGE	DESCRIPTIONS	TESTING CONDITION
	Display approx. Forward voltage of diode.	Forward DC current approx.1mA Reversed DC voltage approx.2.8V
	When the resistance is Less than 30Ω, the built- In buzzer sounds.	Open circuit approx.2.8V

Overload protectioon:250V or AC rms, not exceeding 15 sec.

8.Transistor hFE:

RANGE	DESCRIPTIONS	TESTING CONDITION
hFE	Display approx. value hFE (0-1000) of Transistor under test (npn or pnp type)	Base current approx. 10μA, Vce approx.2.8V

9.Frequencies:

RANGE	ACCURACY	RESOLUTION
20kHz	±1% of rdg±1 digit	10Hz

Overload protection: AC 220V rms.

10.Temperature:

RANGE	ACCURACY	RESOLUTION
-40℃ to 400℃	±0.75% of rdg±3 digits	1℃

400℃ to 1000℃	±1.5% of rdg±15 digits	1℃

IV. OPERATING INSTRUCTION:

1. DC and AC voltage measurement:

1.1 Connect the red test lead to the "V/Ω" jack and black test lead to "COM" jack.

1.2 Set the FUNCTION switch to the DCV range for DC voltage and ACV for AC voltage. When only the figure "1" is display, overrange is being indicated and the FUNCTION switch must be set to a higher range.

The same procedure is applicable for AC voltage only by setting the FUNCTION switch to ACV.

Attention:

1. If the voltage range is not known beforehand, set the FUNCTION switch to a high range and work down.
2. When only the figure "1" is shown, overrange is being indicated and the FUNCTION switch must be set to a higher range.
3. ⚠Do not apply more than 1000V DC or 700V AC voltage to the input. Indication is possible at higher voltages but there is a danger of damaging the internal circuitry.

2. DC and AC current measurement:

2.1 Connect the red test lead to the "A" jack for current up to 200mA or "10A"jack for current 10A (Max testing period is 10 sec). Connect the black test lead to "COM" jack.

2.2 Set the FUNCTION switch to DCA for DC current

or

ACA for AC current and connect the two test leads in serier with object under measurement.

Attention:

1. If the current range is not known beforehand, set the FUNCTION switch to a high range and work down.
2. When only the figure "1" is shown, overrange is being indicated and the FUNCTION switch muse be set to a higher range.
3. ⚠ sign imply that the max. input current being 200mA. Overload will blow the fuse and should be replaced by the same rating fuse. 20A range is not fused.
4. Max. voltage drop is 200mV.

3. Resistance measurement:

3.1 Connect the red test lead to the "V/Ω"jack and black test lead to "COM" jack. (The polarity of the red test lead is "+")

3.2 Set the FUNCTION switch to OHM range and connect the two test leads across the resistor under measurement.

ATTENTION:

1. If the resistance value is larger than that of the selected range, overrange indication sign of "1" will be shown. Then set to a higher range. If the resistance of approx. 1 megaohm or above, the meter may take a few seconds to stabilize. This is norma for high resistance measurement.

2. When in open circuit status, an overrange indication of “1” will be shown.
3. When checking in-circuit resistance, make sure the circuit under test has turned off the power and all the capacitors are fully-discharged.
4. When using 200MΩ range for measurement: The display will show 1.0 when connecting the two test leads. This is normal and being a standard deviation. The display will show 101.0 when the resistor under measurement is 100MΩ. The display will show 11.0 when the resistor under measurement is 11.0. The actual value should be the reading value minus 1.

4. Capacitange measurement(auto zeroing):

4.1 When not connecting the capacitor or the FUNCTION switch swithes from other range, the reading may take some times to become zero. Even if the reading is not zeroing, connect the capacitor to meter does not affect the measurement.

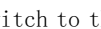
4.2 As the meter has been protected internally, it is not necessary to consider the polarity and charging status of the capacitor when in measuring condition.

4.3 When measuring the capacitance, connect the capacitor to the meter. (do not need the testing lead)

4.4 When measuring large capacitance, the meter takes some times to stabilize.

5. Diode and audible continuity measurement:

5.1 Connect the red test lead to the "V/Ω" jack and black test lead to "COM" jack.

5.2 Set the FUNCTION switch to the  range and connect the test leads across the diode. The polarity of the red test lead should be "+" and black test lead should be "-". The display will show forward voltage of the diode.

5.3 If the resistance is less than 30Ω, buzzer sounds to show the short circuit status.

6. Transistor hFE measurement:

6.1 Set the FUNCTION switch to the hFE range. Connect emitter, base and collector of the PNP or NPN type capacitor to the proper holes on the front panel socket.

6.2 The display will show the approximate value at the test condition of base current I 10μA and Vce≈2.8V.

7. Audio frequency measurement:

7.1 Connect the red test lead to "V/Ω" jack and black test lead to "COM" jack.

7.2 Set the FUNCTION switch to the K Hz range and connect the test lead across the frequency device. The display will show the frequency value directly.

V. MAINTENANCE:

Your digital multimeter is a precision electronic device. Do not tamper with circuitry. To avoid damage:

1. Never connect more than 1000V DC or 700V AC rms to the meter.
2. Never connect a source of voltage with the FUNCTION switch in Ω or ⊣◀ position.
3. Never operate the DMM unless the battery. Cover is in place and fully closed.
4. Battery and/ or fuse replacement should only be done after the test leads have been disconnected and power is off.

VI. AUTO POWER-OFF FUNCTION:

1. When the meter is not in use for more than 15 minutes, the power will automatically turned off. At that time, the meter only consume few μA current.
2. When the meter is at automatic power-off status, to turn on the power again, press the button twice.

VII. GENERAL FEATURES AND ACCESSORIES SUPPLIED:

Size:88×175×43(mm)

Weight:360g (including battery)

Accessories supplied: one pair of testing leads, one battery and temperature probe(only for M890C+ and M890G)

VIII. BRIEF SUMMARY OF THE FUNCTION:

	M890C+	M840D	M890D	M890F	M890G
DC Voltage	√	√	√	√	√
DC Current	√	√	√	√	√
AC Voltage	√	√	√	√	√
AC Current	√	√	√	√	√
Max. Resistance(MΩ)	200	20	200	200	20
Diode Test	√	√	√	√	√
Transistor Test	√	√	√	√	√
Buzzer	√	√	√	√	√
Light Emitting Indication					
Capacitance	√		√	√	√
Frequency				√	√
Temperature	√				√
Conductance					
Battery Test					
Logic Test					
Square Wave Signal Output					
Large Current(A)	20	20	20	20	20
Others					

＊Specification are subject to change without notice.＊