



# MT920

## 2-in-1 Satellite Finder & Multimeter Instruction Manual





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## **1. Introduction**


2 in 1 Satellite Finder & Multimeter is a innovative tester that allows the user easy to measure AC/DC Voltage/Current, Resistance, Continuity, diode and find the satellite with its max signal. Proper use and care of this meter will provide years of reliable service.


## **2. Features**


- 2 in1 Satellite Finder & Multimeter.
- Measures AC/DC Voltage, AC/DC Current, Resistance, Continuity, diode.
- 3-1/2 digit (2000 count) LCD display for multimeter function.
- Scale displays the sensitivity of satellite signal.
- CATIII 600V; CATII 1000V.
- Provides easy to read continuity and fault status display.
- Checks for continuity, open wire, ground wire, shorted pair and crossed pair faults.
- Autoranging with auto power off for multimeter functions.

## **3. Safety**

### **International Safety Symbols**

 This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.

 This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present.

 Double insulation

## 4. Safety Precautions

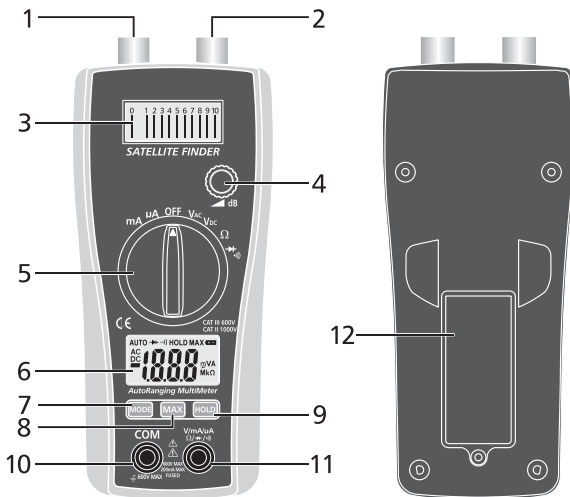
- 4-1. Improper use of this meter can cause damage, shock, injury or death. Read and understand this users manual before operating the meter.
- 4-2. Make sure any covers or battery doors are properly closed and secured.
- 4-3. Always disconnect the test leads from any voltage source before replacing the battery or fuses.
- 4-4. Do not exceed the maximum rated input limits.

Input Limits	
Function	Maximum Input
VDC or VAC	600V DC/AC
$\mu$ A AC/DC	200mA/250V fast acting Fuse
Resistance, Diode & Continuity Test	600V DC/AC

- 4-5. Use great care when making measurements if the voltages are greater than 25VAC 4-rms or 35VDC. These voltages are considered a shock hazard.
- 4-6. Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
- 4-7. Remove the battery from the meter if the meter is to be stored for long periods.

## 5. Meter Description

- 1-LNB input jack
- 2-REC input jack
- 3-Scale for the sensitivity of Satellite signal
- 4-Level Control
- 5-Function switch
- 6-3 1/2 Digit (2000count) LCD display for DMM function
- 7-MODE button
- 8-MAX Hold button
- 9-Data Hold button
- 10-COM input jack
- 11-V/mA/ $\mu$ A/ $\Omega$ / $\rightarrow$ / $\leftarrow$  input jack
- 12-Battery Cover



## 6. Specifications


### Electrical Specifications

Function	Range	Accuracy
DC Voltage	200mV	$\pm(0.5\% \text{ rdg} + 3\text{d})$
	2.000V, 20.00V	$\pm(1.0\% \text{ rdg} + 3\text{d})$
	200.0V, 600V	$\pm(1.0\% \text{ rdg} + 3\text{d})$
AC Voltage 50-60Hz	2.000V, 20.00V	$\pm(1.0\% \text{ rdg} + 5\text{d})$
	200.0V, 600V	$\pm(1.5\% \text{ rdg} + 10\text{d})$
DC Current	200.0 $\mu$ A, 2000 $\mu$ A	$\pm(1.5\% \text{ rdg} + 3\text{d})$
	20.00mA, 200.0mA	$\pm(2.0\% \text{ rdg} + 3\text{d})$
AC Current	200.0 $\mu$ A, 2000 $\mu$ A	$\pm(1.8\% \text{ rdg} + 8\text{d})$
	20.00mA, 200.0mA	$\pm(2.5\% \text{ rdg} + 8\text{d})$
Resistance	200.0 $\Omega$	$\pm(0.8\% \text{ rdg} + 5\text{d})$
	2.000k $\Omega$ , 20.00k $\Omega$ , 200.0k $\Omega$	$\pm(1.2\% \text{ rdg} + 3\text{d})$
	2.000M $\Omega$	$\pm(2.0\% \text{ rdg} + 5\text{d})$
	20.00M $\Omega$	$\pm(5.0\% \text{ rdg} + 8\text{d})$

Max input voltage:	600V AC/DC
Diode Test:	Test current 1mA max, open circuit voltage of 1.5V typical
Continuity Check:	Audible signal if the resistance is <150 $\Omega$
Display:	2000 count 3 -1/2 digit LCD
Over range indication:	LCD displays "OL"
Polarity:	Minus (-) sign for negative polarity.
Low Battery Indication:	"BAT" symbol indicates low battery condition.
Input Impedance:	>7.5M $\Omega$ (VDC & VAC)
AC Response:	Average responding
ACV Bandwidth:	50Hz to 60Hz
Auto Power Off:	15 minutes (approximately)
Fuse:	mA, $\mu$ A ranges; 0.2A/250V fast acting Fuse
Batteries:	Two "AAA" batteries
Operating Temperature:	0°C to 40°C (32°F to 104°F)
Storage Temperature:	-10°C to 50°C (14°F to 122°F)
Weight:	308g
Size:	162 x 74.5 x 44 mm
Standard:	IEC61010-1 CAT III-600V Pollution degree II, CE Approved

## 7. Operation

### 7-1. AC/DC Voltage Measurement

 **CAUTION:** Do not measure AC / DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.


- Insert the black test lead into the negative "COM" terminal and the red test lead into the positive "V/mA/ $\mu$ A/ $\Omega$ / $\rightarrow$ / $\rightarrow$ " terminal.
- Set the function switch to "VAC" or "VDC" position.
- Connect the test leads in parallel to the circuit under test.
- Read the voltage measurement on the LCD display.

### 7-2. AC/DC Current Measurement

- Set the function switch to the " $\mu$ A" or "mA" position.
- Insert the black test lead into the negative "COM" terminal and the red test lead into the positive "V/mA/ $\mu$ A/ $\Omega$ / $\rightarrow$ / $\rightarrow$ " terminal.
- For current measurements up to 2000 $\mu$ A AC/DC, set the function switch to the "mA" position
- Press the "MODE" button to indicate "DC" or "AC" on the display.
- Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
- Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
- Apply power to the circuit.
- Read the current in the display.




### 7-3. Resistance Measurement

 **WARNING:** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

- Set the function switch to the “ $\Omega$ ” position.
- Insert the black test lead into the negative “COM” terminal and the red test lead into the positive “V/mA/ $\mu$ A/ $\Omega$ /↔/” terminal.
- Touch the test probe tips across the circuit or part under test. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
- Read the resistance in the display.

### 7-4. Continuity Check

 **WARNING:** To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

- Set the function switch to the “↔” position.
- Insert the black test lead into the negative “COM” terminal and the red test lead into the positive “V/mA/ $\mu$ A/ $\Omega$ /↔/” terminal.
- Press the “MODE” button to indicate “” on the display.
- Touch the test probe tips to the circuit or wire you wish to check.
- If the resistance is less than approximately 150 $\Omega$ , the audible signal will sound. If the circuit is open, the display will indicate “OL”.

### 7-5. Diode Test

- Set the function switch to the “↔” position.
- Insert the black test lead into the negative “COM” terminal and the red test lead into the positive “V/mA/ $\mu$ A/ $\Omega$ /↔/” terminal.
- Press the “MODE” button to indicate “↔” on the display.
- Touch the test probes to the diode under test.
- Forward voltage will typically indicate 0.400 to 0.700V reverse voltage will indicate “OL”. Shorted devices will indicate near 0V and an open device will indicate “OL” in both polarities

### **7-6.MAX Hold button**

To hold the highest reading on the LCD

- Press the "MAX hold" button. The meter reading will not change as readings change
- Press the "MAX hold" button again to return to normal operation.

### **7-7.Hold Button**

The Data Hold function allows the meter to freeze a measurement for later reference

- Press the "DATA HOLD" button to freeze the display, the "HOLD" indicator will appear.
- Press the "DATA HOLD" button to return to normal operation.


### **7-8.Auto Power Off**

The auto off feature will turn the meter off after 15 minutes.

### **7-9.Replacing The Battery**

- Remove the bottom cover and secure the screw.
- Replace old battery with fresh "AAA" type battery.
- Rejoin the bottom cover and secure the screw.

### **7-10.Replacing The Fuses**

 **WARNING:**To avoid electric shock, disconnect the test leads from any source of voltage before removing the fuse cover.

- Disconnect the test leads from the meter.
- Remove the protective rubber holster.
- Remove the battery cover (two "B" screws) and the battery.
- Remove the four "A" screws securing the rear cover.
- Lift the center circuit board straight up from the connectors to gain access to the fuse holders.
- Gently remove the old fuse and install the new fuse into the holder.
- Always use a fuse of the proper size and value (0.2A/250V fast blow for the 200mA range).
- Align the center board with the connectors and gently press into place.
- Replace and secure the rear cover, battery and battery cover.

### 7-11.Satellite Finder Operation

- Connect a jump cable from LNB to Satellite finder's "LNB" input.
- Connect the "REC" a DC 13-18V power which comes from satellite receiver.
- Made sure that satellite finder is properly connected. Plug in the AC cord and turn on the satellite receiver. There will have light on the scale, the reading shall be arround 1.
- Make coarse dish alignmant by setting Azimuth and Inclination.
- Set the reading around 5 by adjusting satellite finder's level control on front.
- Adjust dish position, feedhom position, and polarization to have the highest reading on the finder. If full-scale, low down the reading by burning level control counterclockwise.
- Remove the jump cable and satellite finder. Resume connection of satellite receiver and LNB.

#### Important:

- When using this unit to install C band dish, you must not place the satellite finder in front of dish to avoid always full-scale.
- When using high grain LNB, gain that higher than 60dB, insert a 5dB attenuator in between LNB and satellite finder, or replace the jump cable to a 20ft RG-59U.
- If the read-out is jumping, the sensitivity is too high. Low down the sensitivity by adjusting S.A. on the button. On the other hand, adjust the S.A. clockwise to increase sensitivity.

#### Specification

Frequency Range	0.95-2.3GHz
Sensitivity*	7
Power supply	DC13-18V
Operating Range**	LNB Gain=60-65dB

\*:Under the following test condition: LNB gain=55dB, three carrier C/N=15dB

\*\* :Inser a 5dB attenuator when operation with LNB gain= 60-65B



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