ATD-5519
Digital Multimeter
Operation Manual

CONTENT

We thank you very much for your purchasing our products . They are most reliable, high-precision instruments. designed by our excellent technology .Before you use your new instrument , please read this *OPERATION MANUAL* completely and familiarize you self thoroughly with all function and connections with proper use and care your digital multimeter will give you years of satisfactory service .

Safety rules

- Use the meter only as specified in this manual.
- Never measure voltage while the test leads are at the current test state.
- Do not use the meter if it looks damaged.
- Inspect the leads for damaged insulation or exposed metal, check test lead continuity , replace damaged leads.
- Disconnect the power and discharge all high-voltage capacitors before testing in resistance, continuity, and diode function.
- Be Cautions when working above DC 60V or AC 42V , such voltages may cause a shock hazard.
- When making measurement, keep your fingers behind the guards plant on the probes.
- Select the proper function and range for measurement , to avoid damaging the meter, disconnect the test leads from test points before change function.
- **If the voltage of measuring frequency is too high the meter will into protection state the display can't indicate measurement value.**

Features

Measuring method .....△ Σ mode.
Display ..... 4000 counts LCD.
Range ..... Auto range / Manual range
Polarity ..... Automatic on indication for positive(+) polarity , minus(-)sign for negative polarity.
Overrange indication:....."OL" mark indication .
Low battery indication :....."[+ -]" mark is displayed when the battery voltage drops below about 2.4V .
Data hold ..... Data hold function .
Auto power off :.....The meter is powered off 30 minutes later after the last operation was made . To bring back display please turn rotary switch to more positions or push any button.
Operational temperature :.....0℃ to 40℃, ≤75%RH . Storage temperature : -20℃ to 60℃, <80%RH .
Power supply(3V) :.....R6P or 1.5V AA 2 Pcs.
Power consumption :.....4.5mW(typical) .
Size :.....75(W) ×155(H) ×33(D)mm .
Weight :.....Approx. 260g(Included Battery) .

Table 1 . Terminals

Terminals	Description
COM	Common terminal for all measurements
mA	Input for DC 0.1 μ A to 400mA or AC 0.1 μ A to 400mA current measurements
10A	Input for 0.001A to 10A current measurements
V/Ω /Hz	Input for voltage , continuity , resistance , diode , capacitance , frequency and duty cycle measurements

Table 2. Push button

Button	Function	Operation performed	Note
RANGE	DCV ,ACV, DCA,ACA, Ω	Press RANGE enter the manual range mode. Press RANGE more than 2 sec . return to auto range state.	
SELECT	⎓ μ (m)A,⎓ A Ω	Press SELECT to select DC or AC and Ω 、 or mode	*The Yellow key*
REL△	Any switch position except Hz	Press this button meter enter relative measurement mode , the value is equaled test value subtract reference value.	
HOLD	Any switch position except Hz and DUTY	Press HOLD meter enter data hold mode and press this button again the meter exit hold mode.	
Hz/DUTY	Switch at Hz /V/ μ A/mA/A position	Press this button change Hz or duty cycle test mode.	*The Blue Key*
RESET	Clean all value	All range	

Measurement range

A measurement range determines the highest value the meter can measure .Most meter functions have more than one range . So being in the right measurement range is important . If the range is too low for the input , the meter displays "OL" to indicate overload .If the range too high , the meter will not display the most accurate measurement .Power on the meter it in auto range mode . Press RANGE the meter enters the manual range mode and "AUTO" turn off . Each press of RANGE increments the range . When the highest range is reached , the meter wraps to the lowest range . Turn switch to any position the meter will exit manual range mode . In the auto range mode , the meter selects the best range for the input detected . In the manual range mode , you can select the range .This allows you to override auto range and lock the meter in a specific range .

Electrical specification

Accuracies are ± (% of reading +numder in last digit) at 23±5℃, <75%RH.

Table 3. DCV

Range	Resolution	accuracy	Note
400.0mV	0.1mV	±(0.5%rdg+5)	Input resistance: 10MΩ. Overload protect:400mV Range 250V RMS.The rest 600V DC or AC 600V RMS.
4.000V	1mV		
40.00V	10mV		
400.0V	100mV		
600V	1V	±(0.8%rdg+5)	

Table 4.ACV

Range	Resolution	accuracy	Note
400.0mV	0.1mV	±(1.5%rdg+8)	Frequency response:50Hz - 400Hz Input resistance: 10MΩ. Overload protect:400mV Range 250V RMS.The rest 600V DC or AC 600V RMS.
4.000V	1mV	±(0.8%rdg+5)	
40.00V	10mV		
400.0V	100mV		
600V	1V	±(1.2%rdg+5)	

Table 5.DCA

Range	Resolution	accuracy	Note
400.0μA	0.1μA	±(2.0%rdg+5)	Overload protect: Fast fuse 0.5A/250V & Fast fuse 10A/250V. 10A for 15sec maximum. Input voltage drop: ≤0.4V.
4000μA	1μA		
40.00mA	10μA	±(1.5%rdg+5)	
400.0mA	100μA		
4.000A	1mA	±(2.0%rdg+5)	
10.00A	10mA		

Table6.ACA

Range	Resolution	accuracy	Note
400.0μA	0.1μA	±(2.5%rdg+3)	Overload protect: Fast fuse 0.5A/250V & Fast fuse 10A/250V.
4000μA	1μA		

40.00mA	10μA	±(2.0%rdg+5)	10A for 15sec maximum. Input voltage drop: ≤0.4V. Frequency Respond: 50Hz - 400Hz
400.0mA	100μA		
4.000A	1mA	±(2.5%rdg+5)	
10.00A	10mA		

Table7.Resistance

Range	Resolution	accuracy	Note
400.0Ω	100mΩ	±(1.0%rdg+5)	Overload protect: 250V RMS
4.000kΩ	1Ω		
40.00kΩ	10Ω		
400.0kΩ	100Ω		
4.000MΩ	1kΩ		
40.00MΩ	10kΩ	±(2.0%rdg+5)	

Table 8. Capacitance

Range	Resolution	Accuracy	Note
40.00nF	10pF	±(3.5%rdg+10)	Overload protect: 250V RMS
400.0nF	100pF	±(3.0%rdg+5)	
4.000μF	1nF		
40.00μF	10nF		
100.0μF	100nF	±(3.5%rdg+5)	

Table 9. Diode

Range	Description	Note
⊣◀	Display read approx. forward voltage of diode	Forward DC current approx. 1.5mA; Reversed DC voltage approx.1.5V.

Overload protect:250V RMS

Table 10.Frequency and Duty

Range	Resolution	Accuracy	Sensitivity	Note
5.12Hz-10MHz	0.001Hz-10kHz	±(0.1%rdg+5)	≤1MHz: 0.7V RMS; >1MHz: 1.5V RMS	Overload protect: 250V RMS Duty Cycle:10Hz – 1kHz
DUTY CYCLE: 0.1% to 99.9%		±(2.5%rdg+5)	1.5V RMS	

Operation

AC voltage measurement

1. Set the rotary switch to "∼V " position.

2. Connect the black test lead to "COM" terminal and the red test lead to " ⊣◀ •ıl) ⊣⊢ V/Ω/Hz" terminal .

3. Touch the probes to the test points and reading the display ,at same time,you can press Hz/DUTY button obtain the signal frequency and duty of voltage is in measured.

DC voltage measurement

1. Set the rotary switch to " ⎓V " position.

2. Connect the black test lead to " COM " terminal and the red test lead to " ⊣◀ •ıl) ⊣⊢ V/Ω/Hz " terminal .

3. Touch the probes to the test points and read the display ,at same time,you can press Hz/DUTY button obtain the signal frequency and duty of voltage is in measured.

DC / AC Current measurement

⚠**Warning**

To avoid damage to the meter or injury if the fuse blows , never attempt an in-circuit current measurement where the open-circuit potential to earth is greater than 600V. To avoid damage to the meter , check the meter's fuses before proceeding . Use the proper terminals , function , and range for your measurement . Never place the probes in parallel with a circuit or component when the leads are plugged into the current terminals .

1. Turn off power to the circuit . Discharge all high-voltage capacitors .

2. Set the rotary switch to" ≂μA " 、" ≂mA "or "≂A" position

3. Press SELECT (yellow) to select DC or AC mode .

4. Connect the black test lead to " COM" terminal and the red test lead to " mA" or " A " terminal .

5. Touch the probes to the test points , turn on to the circuit and read the display ,at same time, you can press Hz/DUTY button obtain the signal frequency and duty of current is in measured..

Resistance measurement

⚠**Caution**

Capacitance measurement

⚠**Caution**

To avoid damage to the meter or to the equipment under test , disconnect circuit power and discharge all high –voltage capacitance before measuring capacitance . Use the DC voltage function to confirm that the capacitor is discharged .

1.Set the rotary switch to " ⊣⊢ " position .

2. Connect the black test lead to "COM" terminal and red test lead to " ⊣◀ •ıı) ⊣⊢ V/Ω/Hz" terminal .

3.Touch the probes to test point , if the capacitor is a polarity , the red test lead to position leg and black test lead to minus leg .

Frequency and duty cycle measurement

1. Set the rotary switch to " Hz " position .

2. Connect the black test lead to " COM " terminal and the red test lead to " ⊣◀ •ıı) ⊣⊢ V/Ω/Hz " terminal .

3. Press Hz/DUTY to select Hz or DUTY test mode .

4. Touch the probes to signal source and read display .

Note: When the rotary switch at voltage or current measurement positions, press Hz/DUTY can measure frequency or duty cycle also.

Maintenance

⚠**Warning**

To avoid electrical shock or damage the meter . do not get water inside the case . If the meter fails to operate , check battery , test leads , fuse , etc., and replace them if necessary . If the meter still does not work , double check operating procedure as described in this manual .

Battery replacement

The meter is powered by R6P or 1.5V AA battery two pieces , Replace battery if the low battery sign " [+ −] " is displayed .

(1) Set the rotary switch to " OFF " position .

(2) Loosen screws on battery cover , pull up and move the battery cover .

(3) Replace the defective battery .

(4) Reverse the procedure of opening battery cover to close the battery cover .

Fuse replacement

(1) Set the rotary switch to " OFF " position .

(2) Loosen screws on bottom cover , pull up and move the bottom cover .

(3) Replace the defective fuse and use same size and rating install in the fuse holder ..

(4) Reverse the procedure of opening cover to close the bottom cover .