ATD-5519
Auto-Ranging Digital Multimeter
Owner's Manual

Features:

- (43) Test ranges, auto-ranging
- (10) Test functions
- Auto power off
- Data hold
- Dual fuse protection
- 10 Meg/Ohm input impedance

Made in China to ATD Tools, Inc. Specifications
Visit us at www.atdtools.com

WARNING

READ AND UNDERSTAND THIS MANUAL BEFORE USING THE INSTRUMENT.

Failure to understand and comply with the WARNINGS and operating instructions can result in serious or fatal injuries and/or property damage.

We thank you very much for purchasing ATD Tools, Inc. products. ATD meters are highly reliable, high-precision instruments designed and manufactured for us by Electronic Specialties, Inc. with state of the art technology.

Before you use your new meter, please read this Owner's Manual and completely familiarize yourself thoroughly with all function and connections. With proper use and care your digital multimeter will give you years of satisfactory service.

Safety:

- Use the meter only as specified in this manual.
- Never measure voltage when the test leads are set up to measure current.
- 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 resistance, continuity, or diode function.
- Be cautious when working with voltages above 60V DC or 42V AC, as such voltages may cause a shock hazard.
- To prevent shock when making measurements, keep your fingers behind the guards on the probes.
- Select the proper function and range for measurement to avoid damaging the meter. Disconnect the test leads from test points before changing functions.
- If the voltage or measuring frequency is too high the meter will go into a protection state and the display will not indicate a 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** indicator
Low battery indication : [+ -] symbol 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: 32°F to 104°F, ~75%RH. Storage temperature: -4°F to 140°F, <80%RH.
Power Supply (3V): R6P or 1.5V AA x 2
Power Consumption: 4.5mW (typical)
Size: 2.95" x 6.10" x 1.29" (75mm x 155mm x 33mm)
Weight: Approx. 9.7 oz. (260g) with battery

Table 1 - Terminals

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

Table 2 - Push Buttons

Button	Function	Operation Performed	Note
RANGE	DCV, ACV, DCA, ACA, Ω	Press RANGE to enter the manual range mode. Press RANGE for more than 2 seconds to return to auto range setting.	
SELECT	μ (m) A, A Ω	Press SELECT to select DC or AC and Ω, or mode.	Yellow Button
REL△	Any switch position except Hz	Press this button to enter relative measurement mode, the value is equaled test value minus reference value.	
HOLD	Any switch position except Hz and DUTY	Press HOLD meter enters data hold mode. Press HOLD again to exit data hold mode.	
Hz/DUTY	Switch at Hz/V/μA/mA/A position	Press this button to change Hz or duty cycle test mode.	Blue Button
RESET	Clear all values	All ranges	

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 is too high, the meter will not display the most accurate measurement. When you power on the meter it is in auto range mode. Press RANGE and the meter enters the manual range mode with "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 and 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 + number in last digit) at 73.4° ± 41°F, <75% RH

Table 3 - DC V

Range	Resolution	Accuracy	Note
400.0mV	0.1mV	± (0.5% of reading+5)	Input resistance; 10MΩ Overload protect: 400mV Range 250V RMS. The rest is 600V DC or 600V AC RMS
4.000V	1mV		
40.00V	10mV		
400.0V	1000V		
600V	1V	± (0.8% of reading+5)	

Table 4 - AC V

Range	Resolution	Accuracy	Note
400.0mV	0.1mV	± (1.5% of reading+8)	Frequency Response: 50Hz-400Hz Input Resistance; 10MΩ Overload Protect: 400mV Range 250V RMS. The rest is 600V DC or 600V AC RMS
4.000V	1mV	± (0.8% of reading+5)	
40.00V	10mV		
400.0V	100mV		
600V	1V	± (1.2% of reading+5)	

Table 5 - DC A

Range	Resolution	Accuracy	Note
400.0µA	.01µA	± (2.0% of reading+5)	Overload Protect: Fast Fuse 0.5A/250V & Fast Fuse 10A/250V. 10A for 15 seconds maximum. Input voltage drop <0.4V.
4000µA	1µA		
40.00mA	10µA	± (1.5% of reading+5)	
400.0mA	100µA		
4.000A	1mA	± (2.0% of reading+5)	
10.00A	10mA		

Table 6 - AC A

Range	Resolution	Accuracy	Note
400.0µA	0.1µA	± (2.5% of reading+3)	Overload Protect: Fast Fuse 0.5A/250V & Fast Fuse 10A/250V. 10A for 15 seconds maximum. Input voltage drop <0.4V. Frequency Response: 50Hz-400Hz.
4000µA	1µA		
40.00mA	10µA	± (2.0% of reading+5)	
400.0mA	100µA		
4.000A	1mA	± (2.5% of reading+5)	
10.00A	10mA		

Table 7 - Resistance (Ω)

Range	Resolution	Accuracy	Note
400.0Ω	100mΩ	± (1.0% of reading+3)	Overload Protect: 250V RMS
4000kΩ	1Ω		
40.00kΩ	10Ω		
400.0kΩ	100Ω		
4.000MΩ	1kΩ		
40.00MΩ	10kΩ	± (2.0% of reading+5)	

Table 8 - Capacitance

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

Table 9 - Diode

Range	Description	Note	
	10pF	± (3.5% of reading+10)	Overload Protect: 250V RMS
	100pF	± (3.0% of reading+5)	
4.000µF	1nF		
40.00µF	10nF		
100.0µF	100nF	± (3.5% of reading+5)	

Table 10 - Frequency and Duty

Range	Resolution	Accuracy	Sensitivity	Note
5.12Hz - 10Mhz	0.001Hz-10kHz	± (0.1% of reading+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% of reading+5)	1.5V RMS	

Operation

AC Voltage Measurement:
I. Set the rotary switch to ~V position.
2. Connect the black test lead to "COM" terminal and the red test lead to ⊣◀ •)) ⊣⊢ V/Ω/Hz terminal .
3. Touch the probes to the test points and while reading the display at the same time, you can press Hz/DUTY button to obtain the signal frequency and duty of voltage measured.

DC Voltage Measurement
I. Set the rotary switch to ⎓ V position.
2. Connect the black test lead to "COM" terminal and the red test lead to ⊣◀ •)) ⊣⊢ V/Ω/Hz terminal .
3. Touch the probes to the test points and while reading the display at the same time, you can press Hz/DUTY button to obtain the signal frequency and duty of voltage measured.

AC / DC Current Measurement

⚠ WARNING

To avoid injury or damage to the meter 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 AC or DC 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 to obtain the signal frequency and duty of current measured.

Resistance Measurement:

⚠ WARNING

To avoid electrical shock or damage to your meter, if the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.
1. Connect the black test lead to COM terminal and the red test lead to ⊣◀ •)) ⊣⊢ V/Ω/Hz terminal .
2. Set rotary switch to desired Ω position.
3. Connect test leads to circuit being measured and read resistance value on digital display.

Capacitance Measurement:

⚠ WARNING

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 the red test lead to ⏩ •)) ⊣⊢ V/Ω/Hz terminal .
3. Touch the probes to test points. If the capacitor is polarized, connect the red test lead to positive leg and the black test lead to negative leg.

Frequency and Duty Cycle Measurement:

l. Set the rotary switch to "Hz" position.
2. Connect the black test lead to COM terminal and the red test lead to ⏩ •)) ⊣⊢ V/Ω/Hz terminal .
3. Press Hz/DUTY button to select Hz or DUTY test mode .
4. Touch the probes to the signal source and read display.

Note: When the rotary switch is set on the voltage or current measurement positions, pressing 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 falls to operate, check battery, test leads, and fuses and replace them if necessary. If the meter still does not work, double check operating procedure as described in this manual.

Battery Replacement:

This meter is powered by R6P or 1.5V AA battery (x2). Replace batteries 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 with the same size and rating fuse installed in the fuse holder. See Below.
4. Reverse the procedure of opening cover to close the bottom cover.

*10A / 250V fuse - ESI-621
*.5A / 250V fuse - ESI-625

WARRANTY

1 YEAR LIMITED WARRANTY

THIS WARRANTY AND CONFIRMED RECEIPT(S) SHOULD BE *RETAINED BY THE CUSTOMER* AT ALL TIMES

PURCHASED FROM: _____

DATE PURCHASED: _____

INVOICE/RECEIPT NUMBER: _____

Your ATD-5519 is warranted for a period of 12 months from the original purchase date.

For a period of one (1) year from your purchase date, ATD Tools Inc. will repair or replace (at its option) without charge, your ATD product if it was purchased new and the product has failed due to a defect in material or workmanship which you experienced during normal use of the product. This limited warranty is your exclusive remedy.

To access the benefits of this warranty, contact your supplier, or point of sale directly. You may be advised to return the product under warranty, freight prepaid, to your supplier for warranty determination.

If this ATD product is altered, abused, misused, modified, or undergoes service by an unauthorized technician, your warranty will be void. We are not responsible for damage to ornamental designs you place on this ATD product and such ornamentation should not cover any warnings or instructions or they may void the warranty. This warranty does not cover scratches, superficial dents, and other abrasions to the paint finish that occur under normal use. It also does not cover normal wear items such as but not limited to brushes, batteries, drill bits, drill chucks, pads or blades.

Subject to the law in your state:
(1) Your sole and exclusive remedy is repair or replacement of the defective product as described above.
(2) ATD is not liable for any incidental damages, including but not limited to, lost profits and unforeseeable consequences.
(3) The repair and replacement of this product under the express limited warranty described above is your exclusive remedy and is provided in lieu of all other warranties, express or implied. All other warranties, including implied warranties and warranties of merchantability or fitness for a particular purpose are disclaimed and, if disclaimer is prohibited, these warranties are limited to one year from your date of purchase of this product.

Some states' laws do not allow limited durations on certain implied warranties and some states' laws do not allow limitations on incidental or consequential damages. You should consult the law in your state to determine how your rights may vary.

NOTE: This one year warranty does not cover dead batteries and blown fuses.
For warranty and service coverage, please return this product to your dealer for processing and evaluation as described above OR, return it directly to:

Electronic Specialties, Inc.
139 Elizabeth Ln.
Genoa City, WI 53128
262-279-1400
WWW.ESITEST.COM

Defective units being returned to your dealer or to the factory should include proof of purchase date.
Any testers that do not function due to misuse or abuse will be subject to out of warranty service charges.