

5.4 DIODE TEST MEASUREMENTS

The special Diode Test function allows relative measurement of forward voltage drops across diodes.

5.4-1 DIODE TESTS

1. Connect red test lead to the + input connector and black test lead to the COM input connector.
2. Set Function/Range Switch to the diode test position.
3. If the semiconductor junction being measured is connected to a circuit, turn off power to circuit being tested and discharge all capacitors.
4. Connect test leads to the device.
5. Read forward value on digital display.
6. If the digital display read overrange OL, reverse the lead connections. The placement of the test leads when the forward reading is displayed indicates the orientation of the diode. The red lead is positive and black leads is negative. If overrange OL is displayed with both lead connections, the junction is open. If a low-reading (less than 1000) is obtained with both lead connections, the junction is shorted internally or (if junction is measured in circuit) the junction must be disconnected from the circuit in order to verify its operation.

5.5 CONTINUITY MEASUREMENTS

1. Set the selectors switch to the position.
 2. Continuity between probe tips will be indicated by the audible buzzer when resistance is below 100 ohm.
1. Set the Function/Range switch to the Hz position.
 2. Connect the red test lead to the "+, " jack and the black test lead to the "COM" jack.
 3. Connect the test leads to the point of measurement and read the frequency from the display.

5.6 Frequency Measurements

- WARNING**
Remove test leads being measured
1. Set the Function/Range switch to the "C" position.
 2. Connect the temperature transition adaptor to the meter and make sure "+, " and "-, " polarity is right position.
 3. Connect a Type K thermocouple to the jack on the transition adaptor. Place the probe/thermocouple tip on or in the material to be measured and take the temperature reading directly from the display.

5.8 Capacitance Measurements

1. Set the Function/Range switch to the "-fL-" range.
2. Connect the test leads to the "+, " jack and the black test lead to the "COM" jack.
3. Connect the red test lead to the capacitor and read the capacitance directly from the display.

SEC-6 BATTERY REPLACEMENT

WARNING
TO AVOID ELECTRIC SHOCK, DISCONNECT MEASURING TERMINALS BEFORE REMOVING COVER.

1. The battery is installed inside the case.
2. Remove the screw on the back of the battery cover for battery replacement.

SEC-7 RETURN FOR REPAIR

Before returning your instrument for repair make sure the failure to operate is not caused by:

- (1) Weak or de-energized battery
 - (2) Broken test leads
 - (3) Data Hold or Peak Hold is on
- If all these conditions are checked to be fine and your instrument still does not operate properly then send it back freight prepaid to:

A.W. Sperry Instruments, Inc
245 Marcus Blvd.
Hauppauge, NY 11788

Include all accessories and a note explaining what is wrong with the instrument. Should you require an estimate please indicate "ESTIMATE ONLY" on your note. Be certain to include your return address and day time phone number should we need to contact you.

LIFETIME LIMITED WARRANTY

The attention to detail of this fine snap-around instrument is further enhanced by the application of A.W. Sperry's unmatched service and concern for detail and reliability. These A.W. Sperry's snap-arounds are internationally accepted by craftsmen and servicemen for their unmatched performance. All A.W. Sperry's snap-around instruments are unconditionally warranted against defects in material and workmanship under normal conditions of use and services, our obligations under this warranty being limited to repairing or replacing, free of charge, at A.W. Sperry's sole option, any such A.W. Sperry snap-around instrument that malfunctions under normal operating conditions at rated use. 1

REPLACEMENT PROCEDURE

Securely wrap the instrument, and its accessories in a box or mailing bag and ship prepaid to the address below. Be sure to include your name and address, as well as the name of the distributor, with a copy of your invoice from whom the unit was purchased, clearly identifying the model number and date of purchase.

A.W. SPERRY INSTRUMENTS, INC.
ATTN: Customer Service Dept.
245 Marcus Boulevard
Hauppauge, NY 11788

1. The warranty is not applicable if the instrument has been: misused, abused, subjected to loads in excess of specifications, has had unauthorized repair or has been improperly assembled or used.
- * Note: Recommended calibration interval should not exceed one year. Calibration service charges are not covered under terms and conditions of warranty.

A.W. SPERRY INSTRUMENTS, INC.

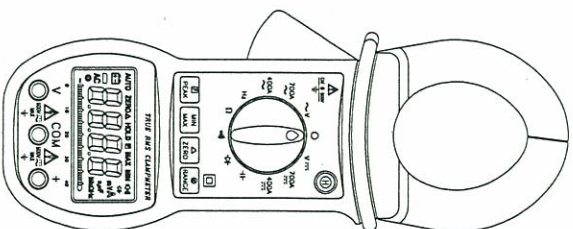
245 Marcus Boulevard, Hauppauge, NY 11788
Phone 800-645-5398 TOLL-FREE or 516-231-7050
Telex: 645104 SPERRYINC HAUP
FAX: 516-434-3128

Printed in Taiwan

Operating Instructions

DIGISNAP™ DIGITAL SNAP-AROUND VOLT-OHM-AMMETER

MODELS	
DSA-700	2000 counts, AC current
DSA-710	2000 counts, AC current, Peak-hold
DSA-720	2000 counts, Trms AC current, Peak-hold
DSA-730	2000 counts, AC current, Peak-hold, °F
DSA-740	2000 counts, DC/AC current
DSA-750	2000 counts, Trms DC/AC current, EL panel LCD
DSA-760	4300 counts, AUTO, DC/AC current, Peak-hold
DSA-770	4000 counts, AUTO, DC/AC current, Peak-hold, Bar-Graph
DSA-780	4300 counts, AUTO, DC/AC current, Peak-hold, Bar-Graph



A.W. SPERRY INSTRUMENTS, INC.

245 MARCUS BLVD., HAUPPAUGE, N.Y. 11788
800-645-5398 or 516-231-7050
FAX: 516-434-3128, TLX: 645104 SPERRYINC HAUP

FREQUENCY MEASUREMENT

MODEL	DSA-710	DSA-720	DSA-730	DSA-740	DSA-750	DSA-760	DSA-770	DSA-780
Range: 2.000KHz, 20.00KHz Accuracy: $\pm(0.1\%+3)$ Sensitivity: 80Vrms min.(10-1999 reading)	AUTO	AUTO	AUTO	AUTO	AUTO			
Range: 100.00Hz, 1.0000KHz, 10.000KHz, 100.00KHz 500.0KHz Accuracy: $\pm(0.1\%+2)$ Sensitivity: 1Vrms min.(100-9999 reading)								AUTO
Range: 430.0Hz, 4.300KHz Accuracy: $\pm(1\%+3)$ Sensitivity: 1Vrms min.(100-4300 reading)						✓	✓	

TEMPERATURE MEASUREMENT

MODEL	DSA-730	DSA-770
Range: -4°F-2000°F(1°F), Accuracy: $\pm(2\%+6)$ at -4°F-932°F, $\pm(3\%+4)$ at 932°F-2000°F	✓	
Range: -20°C-850°C(1°C), Accuracy: $\pm(0.5\%+3)$, Range: -4°F-1562°F(1°F) Accuracy: $\pm(0.5\%+6)$		✓

OL-Protection: 600V DC or ACrms

DC VOLTAGE

MODEL	DSA-700	DSA-710	DSA-720	DSA-730	DSA-740	DSA-750	DSA-760	DSA-770	DSA-780
Range: 2.000V, 20.0V, 600V Accuracy: $\pm(0.5\%+1)$	✓								
Range: 600V, Accuracy: $\pm(0.5\%+1)$		✓	✓	✓	✓	✓			
Range: 400.0mV, 4.000V, 40.00V, 400.0V, 600V Accuracy: $\pm(0.25\%+1)$									AUTO
Range: 4300mV(manu), 4.300V, 43.00V, 430.0V, 600V Accuracy: $\pm(0.25\%+1)$							AUTO	AUTO	

Input impedance: >10M Ω , OL-Protection: 600V DC or AC rms.

AC VOLTAGE(50Hz-500Hz)

MODEL	DSA-700	DSA-710	DSA-720	DSA-730	DSA-740	DSA-750	DSA-760	DSA-770	DSA-780
Range: 200.0V, 600V Accuracy: $\pm(1.2\%+4)$ at 50-60Hz, $\pm(2.0\%+4)$ at 40-500Hz	✓	✓	TRMS	✓	✓	TRMS			
Range: 4.000V, 40.00V, 400.0V, 600V Accuracy: $\pm(0.75\%+4)$ at 50-60Hz, $\pm(2.0\%+4)$ at 40-500Hz									AUTO TRMS
Range: 4.300V, 43.00V, 430.0V, 600V Accuracy: $\pm(0.75\%+4)$ at 50-60Hz, $\pm(2.0\%+4)$ at 40-500Hz							AUTO	AUTO	

Input impedance: >10M Ω , OL-Protection: 600V DC or AC rms.

DC CURRENT(PUT CONDUCTOR AT THE CENTER OF THE JAWS)

MODEL	DSA-740	DSA-750	DSA-760	DSA-770	DSA-780
Range: 200.0A, 700A, Accuracy: $\pm(1.5\%+5)$	✓	✓			
Range: 400.0A, 700A, Accuracy: $\pm(1.5\%+5)$					✓
Range: 430.0A, 700A, Accuracy: $\pm(1.5\%+5)$			✓	✓	

OL-Protection: 1000A dc max. for 1 minute

AC CURRENT(PUT CONDUCTOR AT THE CENTER OF THE JAWS)

MODEL	DSA-700	DSA-710	DSA-720	DSA-730	DSA-740	DSA-750	DSA-760	DSA-770	DSA-780
Range: 20.00A, 200.0A, 700A Accuracy: $\pm(1.5\%+4)$ at 50-60Hz, $\pm(3.5\%+5)$ at 40-500Hz	✓	✓	TRMS	✓					
Range: 400.0A, 700A Accuracy: $\pm(1.75\%+4)$ at 50-60Hz, $\pm(3.5\%+5)$ at 40-500Hz									TRMS
Range: 430.0A, 700A Accuracy: $\pm(1.75\%+4)$ at 50-60Hz, $\pm(3.5\%+5)$ at 40-500Hz							✓	✓	
Range: 200.0A, 700A Accuracy: $\pm(1.75\%+4)$ at 50-60Hz, $\pm(3.5\%+5)$ at 40-500Hz					✓	TRMS			

OL-Protection: 1000A ac max. for 1 minute

SEC-1 FEATURES

- Limited Lifetime Warranty
- Ellipse shaped jaws
- Industry standard safety Test Leads
- Access Safety Designed 3 Input Terminals
- "Data Hold" Button (all Models)
- "Peak Hold" Button (DSA-710, DSA-720, DSA-730, DSA-760, DSA-770, DSA-780)
- Overload Protection on all Range (600VDC/600VACrms)
- Continuity Buzzer
- DC voltage and AC voltage ranges
- Diode Test
- Frequency Measurement (except DSA-700)
- Capacitance Test (DSA-780)
- High speed Bar Graph (DSA-780)

SEC-2 SPECIFICATION

- Display: 3 1/2 (3-1/2) DIGIT LCD maximum reading 4300, 4000, 2000 with automatic sign AC, Batt. and annunciators
- OVERRRANGE INDICATION: "OL" is display (except DSA-780 display becomes "4000" with significant digit blinks. In range, the display becomes with most significant digit blinks) LCD is displayed "EET" when the battery voltage drops below the operating voltage
- LOW BATTERY: 2.5 measurement per second nominal
- MEASUREMENT RATE: 20 measurement per second (DSA-780)
- BAR GRAPH RATE: 0°C to 50°C (32°F to 122°F)
- OPERATING TEMPERATURE: -20°C TO 60°C (0°F to 140°F)
- 0-75%RH
- STORAGE TEMPERATURE: 0-80%RH
- ACCURACY: 23±5°C (73.4°F±9°F) less than 75%RH accuracy
- TEMPERATURE COEFFICIENT: 0.1 times the applicable specification per°C from 0°C to 18°C and 28°C to 50°C (32°F to 64°F and 82°F to 122°F)
- POWER: 9V transistor type battery (NEDA 1604) AWS part #B-4
- DIMENSION: 9.7"(247mm) long 3.7"(94mm) wide 1.8"(46mm) high
- MAXIMUM CABLE SIZE: ACA 1.8" ϕ (46mm) DCA/ACA 1.9" ϕ (48mm)
- WEIGHT: ACA 13.4oz (380g), DCA/ACA 15oz (430g)

2-1 ELECTRICAL SPECIFICATION

accuracy are \pm (reading plus number of digits) at 23±5°C <75%RH

***Button:**(DSA-750)

Press ***Button**, turn on the backlight.

***Button:**(DSA-750)

Press ***Button**, turn off the backlight.

DCA ZERO Button:(DSA-750)

In DC current function, Press (DCA ZERO) button to toggle in and out of the Relative mode, the "ZERO" annunciator turn on, zero the display, and store the displayed reading as a reference value.

MIN / MAX Button:(DSA-760, DSA-770)

Press (MAX/MIN) to enter the MAX MIN AVG Recording mode (manual range only). The RECORD annunciator turns on and the automatic power-off feature is disabled.

Push (MAX/MIN) to cycle through the maximum(MAX), minimum(MIN), average(AVG) and present readings. (AVG) is average last ten times reading can be displayed. Press and hold down the (MAX/MIN) for 2 seconds to exit and erase recorded reading.

MIN / MAX button:(DSA-780)

Press (MIN /MAX) button to enter the MIN MAX Recording mode. The minimum, maximum values are then reset to the present input, the readings are stored in memory, and the "HOLD" annunciator turns on. Push the button to cycle through the minimum (MIN), maximum (MAX), and present readings. The MIN or MAX annunciator turns on to indicate what value is being displayed. In the MIN MAX Recording mode, press (HOLD) button to stop the recording of readings, press again to restart recording. If recording is stopped, the minimum, maximum, or present values and analog display are frozen. In the MIN MAX Recording mode, when a new minimum value is exceeded the actual minimum readings or a new maximum value is overload, the minimum or maximum value will hold on the display, but the analog display continues to be active. AC current ranges without MINMAX function.

A ZERO Button:(DSA-760, DSA-770)

In voltage, current, frequency and double functions, Press (AZERO) button to toggle in and out of the Relative mode, the "ZERO" annunciator turn on, zero the display, and store the displayed reading as a reference value.

A ZERO Button:(DSA-780)

Press (AZERO) button to enter the Relative mode, the "AZERO" annunciator turn on, zero the display, and store the displayed reading as a reference value. Press and hold down the (AZERO) button for 2 seconds to exit the relative mode.

RANGE Button:(DSA-760, DSA-770)

Press (RANGE) button to select the Manual Range mode and turn on the "R" annunciator. (The meter remains in the range it was in when manual ranging was selected).

In the Manual Range mode, each time you press (RANGE) button, the range (and the input range annunciator) increments, and a new value is displayed. To exit the Manual Range mode and return to autoranging, press and hold down (RANGE) button for 2 seconds. The "R" annunciator will disappear.

RANGE Button:(DSA-780)

Press (RANGE) button to select the Manual Range mode and turn off the "AUTO" annunciator. (The meter remains in the range it was in when manual ranging was selected). In the Manual Range mode, each time you press (RANGE) button, the range (and the input range annunciator) increments, and a new value is displayed. To exit the Manual Range mode and return to autoranging, press and hold down (RANGE) button for 2 seconds. The "AUTO" annunciator turns back on.

SEC -4 SAFETY PRECAUTIONS:

- The following safety precautions must be observed to insure maximum personal safety during the operation, service and repair of this meter:
1. Read these operating instructions thoroughly and completely before operating your meter. Pay particular attention to WARNINGS which will inform you of potentially dangerous procedures. The instructions in these warnings must be followed.
 2. Always inspect your meter. Test leads and accessories for any sign of damage or abnormality before every use. If any abnormal conditions exist (eg-broken test leads, cracked cases, display not reading, etc.), do not attempt to take any measurements. Refer to Return for Repair section.
 3. Do not expose the instrument to direct sun light, extreme temperature or moisture.
 4. Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc., which might be at ground potential. Keep you body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material.
 5. To avoid electric shock use CAUTION when working with voltages above 40 Vdc or 20 Vac. Such voltages pose a shock hazard.
 6. Never exceed the maximum allowable input value of any function when taking a measurement. Refer to the specifications for maximum inputs.
 7. Never touch exposed wiring, connections or any live circuit when attempting to take measurements.
 8. Do not attempt to operate this instrument in an explosive atmosphere (i.e. in the presence of flammable gases or fumes, vapor or dust).
 9. When testing for the presence of voltage, make sure the voltage function is operating properly by reading a known voltage in that function before assuming that a zero reading indicates a no-voltage condition. Always test you meter before and after taking measurements on a known live circuit.

10. Calibration and repair of any instrument should only be performed by qualified and trained service technicians.
11. Do not attempt calibration or service unless trained and another person, capable of rendering first aid and resuscitation is present.
12. Do not install substitute parts or perform any unauthorized modification of the instrument. Return the instrument to A. W. Sperry Instruments for service and repair to insure that safety features are maintained.
13. Remember: Think safety. Act safely.

SEC -5 OPERATION:

Before making any measurements read section-Safety Precautions. Always examine the instrument and accessories to be used with the instrument for damage contamination (excessive dirt, grease etc.) and defects. Examine the test leads for cracked or frayed insulation and make sure the lead plugs fit snugly into the instrument jacks. If any abnormal conditions exist, do not attempt to take any measurements.

5-1 CURRENT MEASUREMENT:

WARNING

These Snap-Arounds are designed to take current measurements on circuits with a maximum voltage difference of 500VAC between any conductor and ground potential. Using the Snap-Arounds for current measurements on circuits above this voltage may cause electric shock, instrument damage and/or damage to the equipment under test. Before measuring current make certain that the test leads are removed from the instrument.

WARNING

- The Snap-Arounds is overload protected up to 500 VAC for up to 1 min. Do not take current readings on circuit where the maximum current potential is not known. Do not exceed the maximum currents that this instrument is designed to measure.
1. Set Function Switch to ACA 700A or DCA 700A range.
 2. Make sure that all Hold switch is not on.
 3. Open transformer jaws by pressing against the trigger.
 4. Enclose one conductor in transformer jaws and release trigger. Jaws should be completely closed before taking a reading.
 5. The reading will be indicated on the display.
 6. To hold the display press the "Hold" button.

5-3 RESISTANCE MEASUREMENTS

WARNING

Attempting resistance or continuity measurements on live circuits can cause electrical shock, damage to the instrument and damage to the equipment under test. Resistance measurements must be made on de-energized (DEAD) circuits only for maximum personal safety. The electronic overload protection installed in this instrument will reduce the possibility of damage to the instrument but not necessarily avoid all damage or shock hazard.

- All resistance range on the instrument are low-power ohms except for the 200-ohm range. The low power ohm allows accurate measurements of in circuit resistance, since the test voltage is below that necessary to turn on diode junction.
1. Connect red test lead to + Input connector and black test lead to the COM input connector.
 2. Set Function/Range Switch to desired ohm position. If magnitude of resistance is not known, set switch to highest range and reduce until a satisfactory reading is obtained.
 3. If the resistance being measured is connected to a circuit, turn off power to the circuit being tested and discharge all capacitors.
 4. Connect test leads to the circuit being measure (Fig. 5) When measuring high resistance, be sure not to contact adjacent points even if insulated, because some insulators have a relatively low insulation resistance.
 5. Read resistance value on digital display. If a high resistance value is shunted by a large value of capacitance allow digital LCD to stabilize.



Fig. 3



Fig. 4



Fig. 2



5-2 VOLTAGE MEASUREMENTS

1. Connect red test lead to V input connector and black test lead to COM input connector.
2. Set Function/Range switch to desired ACV or DCV position. If magnitude of voltage is not known, set switch to the highest range and reduce until a satisfactory reading is obtained.



Fig. 5