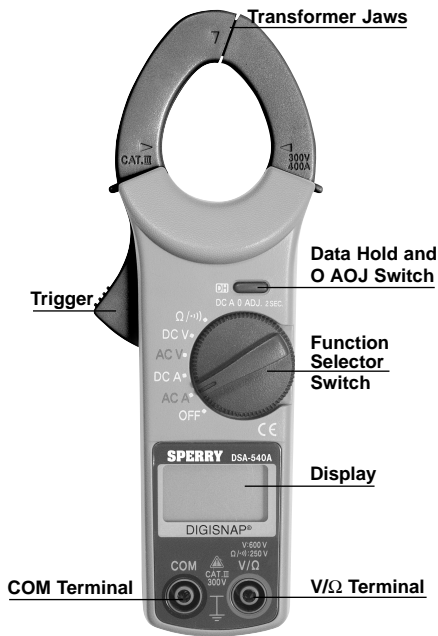


# OPERATING INSTRUCTIONS


## MODEL DSA-540A

### AC/DC DIGISNAP

### SNAP-AROUND



## 1. FEATURES


- Safety design conforming to the following provisions of IEC61010.
- Overvoltage category III 300V AC, pollution degree 2.
- Overvoltage category II 600V AC/DC, pollution degree 2.
- Protected throughout by double or reinforced insulation, indicated the International Electrical Symbol "  " on the bottom of the instrument.
- Data hold switch for easy reading in dimly light or hard-to-read locations.
- "Sleep" feature to extend battery life.
- Beeper permits easy continuity check.
- Provides a dynamic range of 4,000 counts full scale.
- Uses shrouded transformer jaws to further improve safety.


## 2. SAFETY WARNINGS

- This instrument has been designed and tested according to IEC Publication 61010: Safety Requirements for Electronic Measuring Apparatus. This instruction manual contains warnings and safety rules which must be observed by the user to ensure safe operation of the instrument and retain it in safe condition. Therefore, read through these operating instructions before using the instrument.

### **WARNING**

- Read through and understand instructions contained in this manual before using the instrument.
- Save and keep the manual handy to enable quick reference whenever necessary.
- Be sure to use the instrument only in its intended applications and to follow measurement procedures described in the manual.
- Be sure to understand and follow all safety instructions contained in the manual. Failure to follow the above instructions may cause injury, instrument damage and/or damage to equipment under test.

The symbol  indicated on the instrument means that the user must refer to related parts in the manual for safe operation of the instrument. Be sure to carefully read the instructions following each symbol in this manual.

 **DANGER** is reserved for conditions and actions that are likely to cause serious or fatal injury.

**⚠ WARNING** is reserved for conditions and actions that can cause serious or fatal injury.

**⚠ CAUTION** is reserved for conditions and actions that can cause minor injury or instrument damage.

**⚠ DANGER**

- Never make measurement on a circuit with a voltage higher than 600 V AC/DC.
- Do not attempt to make measurement in the presence of flammable gasses, fumes, vapor or dust. Otherwise, the use of the instrument may cause sparking, which can lead to an explosion.
- Transformer jaws are made of metal and their tips are not insulated. Where equipment under test has exposed conductive parts, be especially careful to avoid the hazard of possible shorting.
- Never attempt to use the instrument if its surface or your hand is wet.
- Do not exceed the maximum allowable input of any measurement range.
- Never open the battery compartment cover when making measurement.

**⚠ WARNING**

- Never attempt to make any measurement if any abnormal conditions are noted, such as broken case, cracked test leads and exposed metal part.
- Do not turn the function selector switch with plugged in test leads connected to the circuit under test.
- Do not install substitute parts or make any modification to the instrument. Return the instrument to your distributor for repair or recalibration.
- Do not try to replace the batteries if the surface of the instrument is wet.
- Always switch off the instrument before opening the battery compartment cover for battery replacement.

**⚠ CAUTION**

- Make sure that the function selector switch is set to the appropriate position before making measurement.
- Always make sure to insert each plug of the test leads fully into the appropriate terminal on the instrument.
- Make sure to remove the test leads from the instrument before making current measurement.
- Do not expose the instrument to the direct sun, extreme temperatures or dew fall.

- Be sure to set the function selector switch to the "OFF" position after use. When the instrument will not be in use for a long period of time, place it in storage after removing the battery.
- Use a damp cloth and detergent for cleaning the instrument. Do not use abrasives or solvents.

### 3. SPECIFICATIONS

Measuring Ranges and Accuracy (at 23±5°C., 45-75% relative humidity)

AC Current (A) Auto-ranging (50/60Hz)		
Range	Measuring Range	Accuracy
40A	0-40.00A	±3.0%rdg±8dgt
	15.0-299.9A	±3.5%rdg±6dgt
400A	300.0-400.0A	±4.0%rdg±6dgt

DC Current (A) Auto-ranging		
Range	Measuring Range	Accuracy
40A	0-40.00A	±3.0%rdg±8dgt
	15.0-299.9A	±3.5%rdg±6dgt
400A	300.0-400.0A	±4.0%rdg±6dgt

AC Voltage (V) Auto-ranging (50/60Hz)		
Range	Measuring Range	Accuracy
400V	0-400.0V	±2.0%rdg±5dgt
600V	150-600V	

DC Voltage (V) Auto-ranging		
Range	Measuring Range	Accuracy
400V	0-400.0V	±1.5%rdg±5dgt
600V	150-600V	

Resistance (Ω/Continuity) Auto-ranging (Buzzer beeps below 50±35Ω)		
Range	Measuring Range	Accuracy
400Ω	0-400.0Ω	±2.0%rdg±5dgt
4000Ω	150-4000Ω	

- **Operating System:**  
Dual Integration
- **Display:**  
Liquid crystal display (maximum count: 4199)
- **Low Battery Warning:**  
"BAT" is shown on the display
- **Overrange Indication:**  
"OL" is shown on the display
- **Response Time:**  
Approx. 2 seconds
- **Sample Rate:**  
About 2.5 times per second

- **Temperature and Humidity for Guranteed Accuracy:**  
23±5°C, relative humidity up to 85% without condensation
- **Operating Temperature and Humidity:**  
0–40°C, relative humidity up to 85% without condensation
- **Storage Temperature and Humidity:**  
-20–60., relative humidity up to 85% without condensation
- **Power Source:**  
Two R03 or equivalent(DC1.5V)batteries
- **Current Consumption:**  
Approx. 15mA max. (ACA, DCA Range)  
Approx. 5mA max. (ACV, DCV, O Range)
- **Sleep Function:**  
Automatically powered down in about 10 minutes after the last switch operation (power consumption in the sleep mode is about 35µA.)
- **Standards:**  
IEC61010-1  
CAT.III 300V AC, pollution degree 2  
CAT.II 600V AC/DC, pollution degree 2  
IEC61010-2-031  
IEC61010-2-032
- **Overload Protection:**  
AC current ranges: 480A AC/DC for 10sec  
AC voltage ranges: 720V AC/DC for 10sec  
Resistance ranges: 300V AC/DC for 10sec
- **Operating Environmental Conditions:**  
Indoor use, Altitude up to 2000m
- **Withstand Voltage:**  
3700VAC(RMS,50/60Hz)for 1 minute between electrical circuit and housing case
- **Insulation Resistance:**  
10MΩ or greater at 1000V between electrical circuit and housing case
- **Conductor Size:**  
Approx. 30 mm diameter max
- **Dimensions:**  
187(L) x 68.5(W) x 38.5 (D)
- **Weight:**  
Approx. 200g (including batteries)
- **Accessories:**  
Test leads, Two R03 batteries, Instruction manual

## 4. PREPARATION FOR MEASUREMENT

### 4-1 Checking Battery Voltage

Set the function selector switch to any position other than “OFF”. When the display is clear without “BAT” showing, proceed to measurement. When the display blanks or “BAT” is indicated, replace the batteries according to the instructions described in section 9 (Battery Replacement).

### NOTE

The sleep feature automatically turns the instrument off in a certain period of time after the last switch operation. Therefore, the display may be blank with the function selector switch set to a position other than “OFF”. To operate the instrument in this case, set the switch back to the “OFF” position, then to the desired position, or press any switch. If the display still blanks, the batteries are exhausted. Replace the batteries.

### 4-2 Checking Switch Setting and Operation

Make sure that the function selector switch is set to the correct position and the data hold switch is deactivated. Otherwise, desired measurement cannot be made.

## 5. CURRENT MEASUREMENT

### ⚠ WARNING

- Do not make measurement on a circuit with a voltage higher than 600 V AC/DC. Otherwise, shock hazard or damage to the instrument or equipment under test may result.
- Transformer jaw tips are designed to minimize the possibility of shorting conductors in the circuit under test. If equipment under test has exposed conductive parts, however, extra precaution should be taken to avoid possible shorting.
- Do not make measurement with the battery compartment cover removed.
- Do not make current measurement with the test leads connected to the instrument.

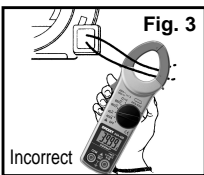
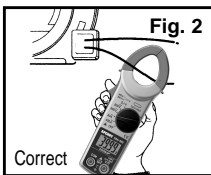
### NOTE

- During current measurement, keep the transformer jaws fully closed. Otherwise, accurate measurement cannot be made. The maximum conductor size is 30 mm in diameter.
- When measuring a larger current, the transformer jaws may buzz. This does not affect the instrument’s accuracy.

### 5-1 AC Current Measurement

- (1) Set the function selector switch to the “ACA” position.
  - (2) Press the trigger to open the transformer jaws and clamp onto one conductor only.
  - (3) Take the reading on the display.
- Be sure to use the instrument only in its intended applications and to follow measurement procedures described in the manual.
  - Be sure to understand and follow all safety instructions contained in the manual. Failure to follow the above instructions may cause injury,

instrument damage and/or damage to equipment under test.



### 5-2 DC Current Measurement

- (1) Set the function selector switch to the "DCA" position
- (2) With the transformer jaws closed and without clamping them onto the conductor, press the 0 ADJ. Switch for more than 2 seconds to zero adjust the display. (less than 2 seconds: Data Hold Function operates.) The 0 ADJ. Switch is enabled only on DC 40A range.
- (3) Press the trigger to open the transformer jaws and clamp onto one conductor only.
- (4) Take the reading on the display.

#### NOTE

When current flows from the upside to the underside of the instrument, the polarity of the reading is positive (+). Otherwise, the polarity of the reading is negative (-).

## 6. VOLTAGE MEASUREMENT

### ⚠ DANGER

- Never use the instrument on a circuit with a voltage higher than 600 VAC/DC. Otherwise, electric shock hazard or damage to the instrument or the circuit under test may result.
- Do not make measurement with the battery compartment cover removed.

### 6-1 AC Voltage Measurement

- (1) Set the function selector switch to the "ACV" position
- (2) Plug the red test lead into the V/Ω terminal and the black test lead into the COM terminal.
- (3) Connect the test lead prods to the circuit under test and take the reading on the display.

### 6-2 DC Voltage Measurement

- (1) Set the function selector switch to the "DCV" position
- (2) Plug the red test lead into the V/Ω terminal and the black test lead into the COM terminal.
- (3) Connect the test lead prods to the circuit under test and take the reading on the display.

## 7. RESISTANCE MEASUREMENT

### ⚠ DANGER

- Always make sure that the circuit under test is powered off.
- Do not make measurement with the battery compartment cover removed.

- (1) Set the function selector switch to the  $\Omega$  position
- (2) Plug the red test lead into the V/Ω terminal and the black test lead into the COM terminal.
- (3) Check that the display reads "OL." with the test lead prods shorted together, also check that the buzzer beeps and the display reads "0."
- (4) Connect the test lead prods to the circuit under test and take the reading on the display. The buzzer beeps the reading is below  $50 \pm 35 \Omega$ .

#### NOTE

- When shorting the test lead prods together, the display may show a very small resistance instead of "0." This is the resistance of the test leads.
- If one of the test leads has an open, the display reads "OL."

## 8. OTHER FUNCTIONS

### 8-1 Sleep Function

#### NOTE

The instrument still consumes small amount of battery power in the sleep mode. Make sure to set the function selector switch to the "OFF" position after use.

#### (1) Sleep Mode

This is a function to prevent the instrument from being left powered on in order to conserve battery life. This function causes the instrument to automatically enter the sleep (powered down) mode about 10 minutes after the last switch or button operation.

To exit the sleep mode, turn the function selector switch back to "OFF", then to any other position, or press any button.

#### (2) How to disable the sleep mode

To disable the sleep mode, Power the instrument on with the data hold switch pressed.

"P.OFF" is shown on the display for about 3 seconds after the instrument is powered on.

To enable the sleep mode, power the instrument off, then power it on without pressing the data hold switch.

### 8-2 Data Hold Function

This is a function used to freeze the measured value on the display. Press the data hold switch to freeze the reading. The reading will be held regardless of subsequent changes in input. "H" is shown on the upper left corner of the display while the instrument is in the data hold mode.

To exit the data hold mode, press the data hold switch again.



#### NOTE

- If the instrument in the data hold mode enters the sleep mode, the data hold mode will be cancelled.
- At DC 40A range, if the data hold switch is pressed for more than 2 seconds, 0 ADJ. Function operates.

### 9. BATTERY REPLACEMENT

#### ⚠ WARNING

To avoid electric shock hazard, make sure to set the function selector switch to "OFF" and remove the test leads from the instrument before trying to replace the batteries.

#### ⚠ CAUTION

- Do not mix new and old batteries
- Make sure to install battery in correct polarity as indicated inside the battery compartment.

When "BAT" is shown on the display, replace the batteries. Note that when the battery is completely exhausted, the display blanks without "BAT" shown.



- (1) Set the function selector switch to the "OFF" position.
- (2) Unscrew and remove the battery compartment on the bottom of the instrument.
- (3) Replace the batteries observing correct polarity. Use two new R03 or equivalent batteries.
- (4) Mount and screw the battery compartment cover.

### 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 service; 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 the date of purchase.

#### A.W. SPERRY INSTRUMENT INC.

ATTN: Customer Service Dept.  
245 Marcus Boulevard  
Hauppauge, N.Y. 11788-2075

1. 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. The Professional's Choice

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