EAGLOTEST

# S690P

## ROGOWSKI COIL POWER




# USER MANUAL

# CATALOG

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# SECTION 1

## Safety Warnings

- In any circumstances please be cautious while using the instrument.
- Please be aware of all warnings and symbols on the instrument.
- Ensure that the test leads are securely connected to the instrument terminal.
- DO NOT leave the instrument under direct sunlight or in environments with high
- temperatures or humidity.
- While replacing the batteries please be aware of the polarity. If the instrument is
- not going to be in use, please remove the batteries.
- DO NOT use the instrument if the battery cover is not securely fixed to the
- instrument.
- DO NOT use the instrument if any part of the housing or wire is cracked, or if any
- internal components are exposed.
- The use, disassembly, and maintenance of this instrument must be operated by the
- authorized and trained personnel only.
- Keep the instrument clean and maintain the instrument regularly. Do not use
- corrosive or abrasive materials to clean it. Only use soft cloths (such as cloth for glasses), dipped in lubricant/degreaser like WD-40, and gently wipe the instrument.
- If the continued usage of this instrument poses danger to the operator, then the
- instrument should be sealed immediately and hand it over to authorized
- organizations to dispose of it.
- DO NOT USE THIS INSTRUMENT FOR CIRCUITS EXCEEDING 1000V
- Please be aware of all the warning symbols  on the manual, operators must
- use the instrument safely.
- Please be aware of all the danger symbols  on the manual, operators must
- strictly follow the instructions of the warning information.



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# SECTION 2

## Introduction

Thank you for purchasing our Flexible Clamp Meter Series. For a better experience of using our product, please thoroughly read our instruction manual, so that the operator is completely familiar with the instrument, and also please follow all safety instructions.

The coil of our Flexible Clamp Meter is designed to be open and closed like a lid of a pen. Simply pull out of/push into the notch to disconnect/connect it, which is very easy to operate. It is widely used in many industries, and is especially suitable for testing applications such as wire systems of high density, transformer core grounding current, current of thick cables; power of motors and transformers; relays, thyristor-controlled rectifier, semiconductor switches, power electronic conversion equipment, and arc welding in industrial environments where current is severely distorted.

The flexible clamp uses Rogowski coil technology. The coil is uniformly wound around a non-ferromagnetic core.
The coil produces an output voltage proportional to the rate of change of the measured current. The instrument integrates this signal to determine AC current.
Use the measurement ranges and accuracy conditions in the Specifications section when interpreting the results.
The instrument provides AC current, AC voltage, power, phase angle and frequency measurements. It also includes Peak Value, Data Hold, Data Save and USB data transfer. Refer to the Specifications section for the applicable measurement ranges and conditions.



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# SECTION 3

## Specifications

| | |
|---|---|
| **Function** | AC current, voltage, power, frequency and phase angle |
| **Testing Method** | Flexible CT, Integration |
| **Power** | 3V DC (AAA 1.5V X 2) |
| **Display** | 4-bit LCD display, backlight function, suitable for dark ambient |
| **Measurement Range** | Current: 0.00A ~ 9999A |
| | AC Voltage: 0.00V~1000V |
| | Frequency:50~60Hz |
| | Phase Angle: 0°~360° |
| | Power: 0.0mW~9999kW |
| **Accuracy (26℃ ± 3℃, Below 70%RH)** | Current: ±2%±3dgt |
| | AC Voltage: ±1.5%±3dgt |
| | Frequency: ±0.5Hz |
| | Phase Angle: ±4° |
| | Power: ±2%±3dgt |
| **Resolution** | 10mA, 0.01V, 0.1Hz, 1°, 0.1mW |
| **Clamp Size** | Inner Diameter Φ200mm |
| **Coil Spec** | Thickness Φ7.5mm, length 650mm |
| **Data Storage** | 99 Sets, blinking of the "FULL" symbol indicates that memory is full. |
| **Position of Conductor** | Middle of the clamp/coil |
| **USB Port** | Data upload to a PC for better analysis |
| **Frequency** | 50Hz and 60Hz, Auto detection |
| **Range** | Auto |
| **Sampling Rate** | 2 Samples/second |



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# SECTION 3

| | |
|---|---|
| **Line Voltage** | Below AC 1000V |
| **Dimensions** | Instrument: 350mm×220mm×38mm (Coil expanded) |
| | Package: 285mmx175mmx63mm |
| **Data Hold** | Data hold function is indicated by the “DH” symbol. |
| **View Data** | Press and hold the MEM button to view data. |
| **Overload** | Overload is indicated by the “OL” symbol |
| **Peak Hold** | Capture and hold the highest magnitude of the measured parameter. |
| **Auto Shutdown** | The instrument will be shut down after 15 minutes of idle. |
| **Low Battery** | Please replace the batteries when the battery voltage is low. |
| **Weight** | 300g (with batteries), 750g （package） |
| **Operating Current** | 30mA |
| **Ideal Working Conditions** | -10℃ ~ 40℃, below 80%RH |
| **Ideal Storage Conditions** | -10℃ ~ 60℃, below 70%RH |
| **Safety Standards** | IEC1010-1, IEC1010-2-032, Pollution Category II, CAT IV(600V), CAT III (1000V) |



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# SECTION 4

## Structure




1. Flexible Coil
2. Current Direction
3. Product Model Label
4. LCD
5. Power Button
6. Up Button
7. Down Button
8. Voltage COM Terminal
9. Lanyard
10. USB Terminal
11. Voltage V Terminal (only S690P)
12. Double-color Molded Handle
13. Coil socket (Pull to disconnect)



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# SECTION 5

# Operation

## 5.1 Turn On/Off

Press the  button to turn on and off the instrument. The instrument will turn off automatically after 15 minutes of idle.

## 5.2 Modes

Once the Instrument has been turned on, press the 

button to toggle between different modes (Current, Voltage, Frequency, Phase Angle, Power).

## 5.3 Data Save & Data Hold

During testing press the 

to hold the data, press the 

button again to cancel. HOLD data is automatically saved and numbered. The instrument can save up to 99 sets of data. If the memory is full, a “FULL” symbol will be indicated.

## 5.4 View Data

Press and hold the 

button to view the saved data. Then press the 

or 

button to navigate the data sets. Press the  button to return to testing modes.

## 5.5 Peak Value

Press and hold the 

button to enable the Peak Function. The instrument will



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continuously measure the current, and keep the highest recorded magnitude when test is over. Press and hold the 

button again to cancel the function.

## 5.6 Delete Saved Data

While viewing saved data, press and hold the 

button to delete ALL data, and a "DEL" symbol will be displayed. Once the data is deleted it cannot be recovered.

## 5.7 Data Upload

Use a USB cable to connect the instrument and a computer. Once the connection is done, turn on the instrument and run the software on the computer. Users will be able to export data in txt or excel format.

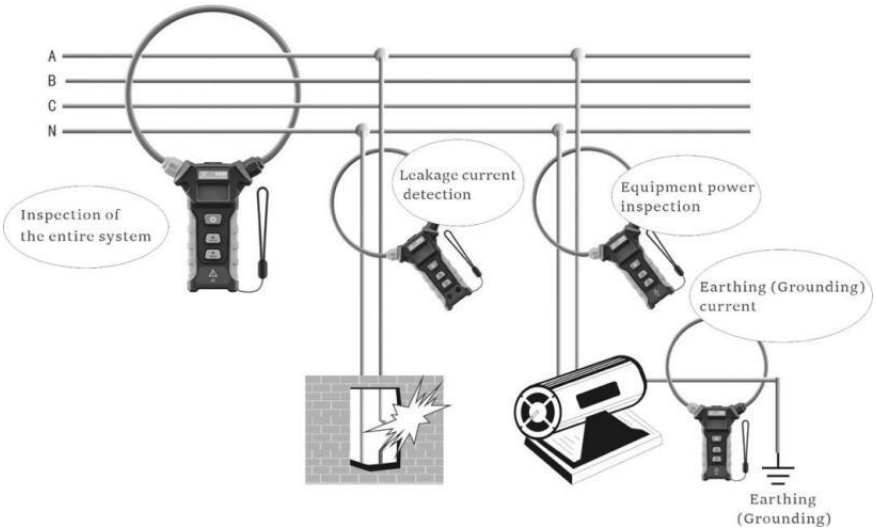
## 5.8 Testing

| | |
|---|---|
|  | Caution! Voltage is present! The use, disassembly, and maintenance of this instrument must be operated by the authorized and trained personnel only. Please strictly follow all the safety instructions, or it may lead to electrical shock and even pose a threat to life. |
| | DO NOT use the instrument for circuits above 1000 V. It can damage the instrument and injure the operator. |
| | Please ensure that the flexible clamp is closed before testing. |
| | Please periodically clean the instrument to maintain its proper function. |
| | To test the leakage current, clamp around the live and the neutral wire (clamp 2 wires) with the flexible clamp. |

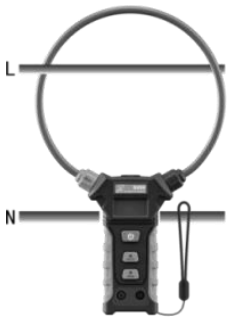


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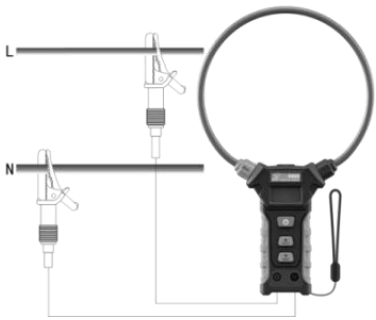
| | |
|---|---|
| | To test the Earth Current, clamp around the earthing (grounding) wire (only 1 wire). |
| | To test the leakage current in a 3-phase 4-wire system, clamp |




**Below Setup only Applies to S690P**




**Single-Phase Current Measurement**



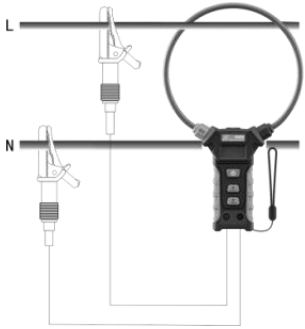

**Single Phase Voltage Measurement**



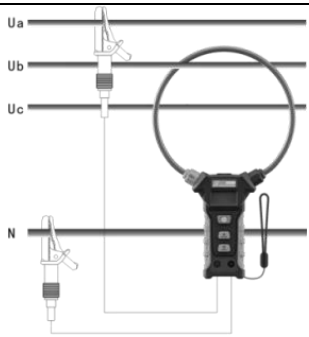
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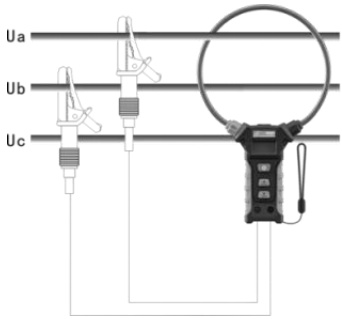
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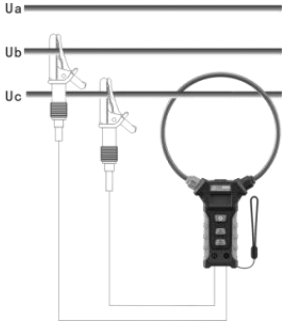

**Single-Phase Current, Voltage, and Power Measurement**




**3-Phase 4-Wire System, Ua Voltage and Ib Current Measurement**




**3-Phase 3-Wire System, Uab Voltage, Ia Current, and Power Measurement**




**3-Phase 3-Wire System, Ucb Voltage, Ic Current, and Power Measurement**

**3-Phase 4-Wire System (balanced load)**

| Phase Sequence | Phase Angle | Phase Sequence | Phase Angle |
|---|---|---|---|
| Ua-Ub | 120° | Ia-Ib | 120° |
| Ub-Uc | 120° | Ib-Ic | 120° |
| Uc-Ua | 120° | Ic-Ia | 120° |
| Ua-Uc | 240° | Ia-Ic | 240° |



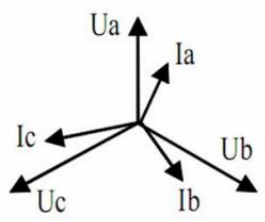
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# SECTION 5

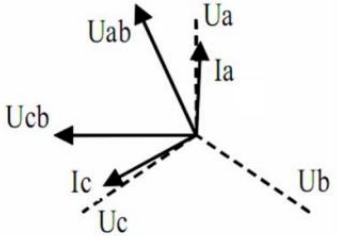
**3-Phase 3-Wire System (balanced load)**

| Phase Sequence | Phase Angle | Phase Sequence | Phase Angle |
|---|---|---|---|
| Uab-Ucb | 300° | Ia-Ic | 240° |
| Uab-Ia | 30° | Ucb-Ic | 330° |

**3-Phase 4-Wire and 3-Phase 3-Wire Vector Diagrams**




3-Phase 4-Wire Vector Graph




3-Phase 3-Wire Vector Graph



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# Battery Management

| | |
|---|---|
|  | Warning！ DO NOT perform any testing when the battery cover is not securely fixed to the instrument |
| | Please be aware of the polarity of the batteries, it could damage the instrument if placed wrong. |
| | Please replace the battery promptly when the batteries are low in voltage. |
| | Please remove the batteries if the instrument will not be used within 1 month. |

- Press the  button to turn off the instrument, then loosen the screws at the back of the instrument to remove the batteries. Please make sure that the instrument is turned off before removing the batteries.
- Once new batteries have been placed in, press the  button to turn it on. If the instrument does not turn on, please repeat step 1.



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# SECTION 7

## Packing List

| | |
|---|---|
| Instrument | 1 |
| Instrument Bag | 1 |
| Voltage Test Leads | 2 |
| USB Cable | 1 |
| Batteries (AAA 1.5V) | 2 |
| Manual and Certificate of Conformity | 1 of Each |

**Note:**

- We are responsible for other damages caused by the use of this product.
- The contents of this user manual do not justify the use of the product for special purpose.
- The company reserves the right to modify the contents of the user manual.In the case of modification,no further notice will be given.



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