



# GREENLEE 5124 Phase Sequence and Motor Rotation Meter Instruction Manual

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## GREENLEE 5124 Phase Sequence and Motor Rotation Meter Instruction Manual



### Description

The Greenlee 5124 is a hand held indication device that measures Phase Sequence and Motor Rotation. This device is designed to work with single phase and three phase motors.

## Safety

Safety is essential in the use and maintenance of Greenlee tools and equipment. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.

## Purpose of This Manual

This instruction manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the Greenlee 5124.

Keep this manual available to all personnel. Replacement manuals are available upon request at no charge at [www.greenlee.com](http://www.greenlee.com).

## Authorized Representative:

Gustav Klauke GmbH  
Auf dem Knapp 46  
42855 Remscheid  
Germany

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## Important Safety Information



### SAFETY ALERT SYMBOL

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.



### Danger

Immediate hazards which, if not avoided, WILL result in severe injury or death.



### Warning

Immediate hazards which, if not avoided, WILL result in severe injury or death.



### Caution

Immediate hazards which, if not avoided, WILL result in severe injury or death.



### Warning



**Read** and **understand** this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.



#### **Warning**



#### **Electric shock hazard:**

Contact with live circuits could result in severe injury or death.



#### **Do not discard this product or throw away!**

For recycling information, go to [www.greenlee.com](http://www.greenlee.com).

All specifications are nominal and may change as design improvements occur. Greenlee Tools, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

® Registered: The color green for electrical test instruments is a registered trademark of Greenlee Tools, Inc.



#### **Warning**

Electric shock and fire hazard:

- Do not expose this unit to rain or moisture.
- Do not use the unit if it is wet or damaged.
- Test leads or any other accessory, when used to make a measurement, create a System.

The System is rated for CAT III 600 V or CAT IV 300 V when using the test leads or accessories provided with the meter. The System CAT and voltage rating is limited by the lowest rated component in the System when using test leads or accessories not provided with the meter.

- Inspect the test leads or accessory before use.

They must be clean and dry, and the insulation must be in good condition. Do not use the test lead if the contrasting inner layer of insulation is visible.

- Use this unit for the manufacturer's intended purpose only, as described in this manual. Any other use can impair the protection provided by the unit.

Failure to observe these warnings could result in severe injury or death.



#### **Warning**

#### **Electric shock hazard:**

- Do not apply more than the rated voltage between any two input terminals, or between any input terminal and earth ground.

- Keep hands and fingers below the barriers on the test leads.

Failure to observe these warnings could result in severe injury or death.



### **Warning**

#### **Electric shock hazard:**

- Do not operate with the case open.
- Before opening the case, remove the test leads from the circuit and shut off the unit.

Failure to observe these warnings could result in severe injury or death.



### **Warning**

#### **Electric shock hazard:**

- Unless measuring voltage, shut off and lock out power. Make sure that all capacitors are discharged. Voltage must not be present.

Failure to observe these warnings could result in severe injury or death.



### **Caution**

#### **Electric shock hazard:**

- Do not attempt to repair this unit. It contains no user-serviceable parts.
- Do not expose the unit to extremes in temperature or high humidity. Refer to “Specifications.”

Failure to observe these precautions may result in injury and can damage the unit.



### **Warning**

#### **Electric shock and fire hazard:**

- Do not connect the unit to 500V or greater for longer than 10 minutes.
- If the unit has been connected to 500V or greater for 10 minutes, disconnect the unit for at least 10 minutes before using again.

Failure to observe these warnings could result in severe injury or death.

## **Identification**

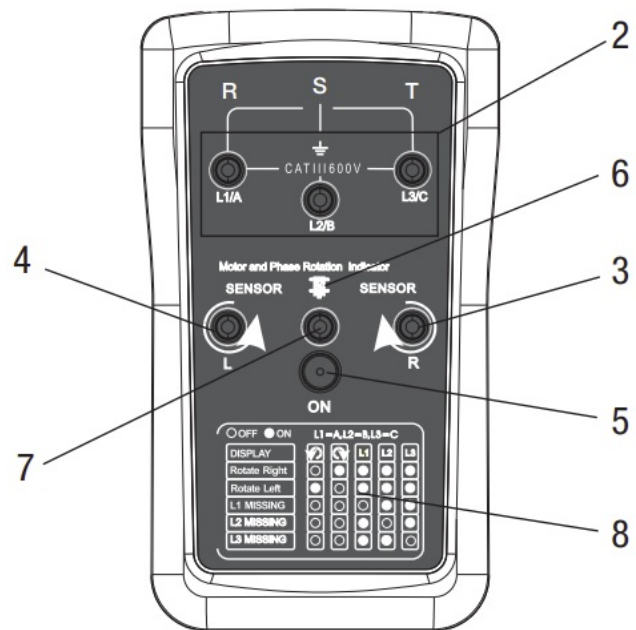
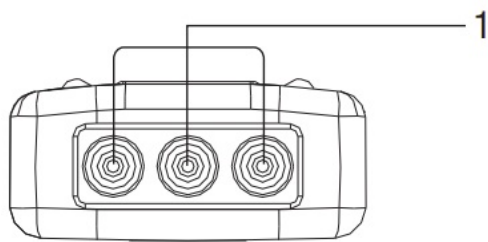









Figure 1

1. Phase input jack (R, S, T)
2. L1, L2, L3 phase indicators
3. Clockwise rotation LED indicator
4. Counter-clockwise rotation LED indicator
5. Power switch
6. Motor location indicator
7. Power LED indicator
8. Instruction Table

## Symbols on the Unit

	Risk of electric shock
	Warning
	Dangerous Voltage
	Double or Reinforced Insulation
	Grounding
	AC or DC
	Complies with European Union Directives
<b>CAT III</b>	Conforms to Overvoltage Category III, Pollution Degree 2 as per IEC61010-1

## Operation

### Determining Phase Sequence (Contact Type)

- Insert the test leads (L1, L2, L3) into the corresponding input terminals of the 5124 (R, S, T respectively) and then to the alligator clips.
- Connect the alligator clips in L1, L2, and L3 order to the three phases of the system.
- Press down the “ON” button and the 5124 power indicator will illuminate. Press and hold the “ON” button to conduct the test. During the test, the “Clockwise” (R) or “Counter Clockwise” (L) rotation indicator will illuminate to indicate whether the system is under a “Positive” or “Negative” phase sequence.

## Checking Rotary Field (Motor Rotation, Non-Contact Type)

- Remove all test leads from the 5124.
- Place the 5124 towards the motor, in parallel with motor shaft. The bottom of the instrument should face the shaft. The 5124 should be oriented such that it is opposite the front of the motor as shown in Figure 2. The motor location indicator is also shown on Figure 1.
- Press the “ON” button and the power indicator will illuminate and the test will begin. While the motor is running, the “Clockwise” (R) or “Counter clockwise” (L) will illuminate indicating the direction of rotation of the motor.

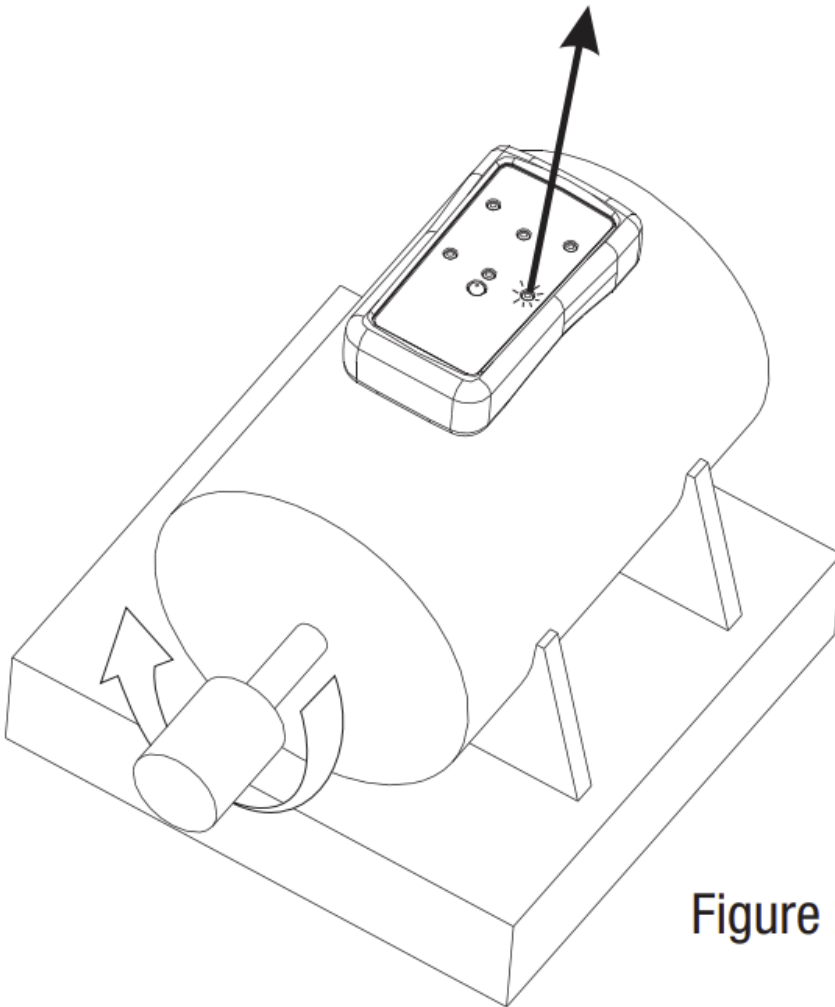


Figure 2

R LED indicator is on when the motor rotates clockwise

**Note: This non-contact test is applicable for both single-phase and three-phase motors. The instrument will be unable to indicate accurately with motors controlled by a frequency converter.**

### Detecting Magnetic Field

Place the 5124 into a location with suspected magnetic field. If either the “Clockwise” (R) or “Counter clockwise” (L) indicators illuminate while the “ON” button is pressed, then magnetic field exists in the location.

## Specifications

### Ambient

- **Working Temperature:** 0°C ~ 40°C (32°F ~ 104°F)
- **Storage Temperature:** 0°C ~ 50°C (32°F ~ 122°F)

- **Altitude:** 2000 m
- **Humidity:** ≤95%
- **Pollution Degree:** 2
- **IP Grade:** IP 40

## Mechanical

- **Dimensions:** 123mm X 71mm X 29mm (4.8in X 2.8in X 1.1in)
- **Weight:** 192g

## Safety

- **Compliances:** Complies with EN 61010-1, EN 61010-2-030, EN 61010-031, EN 61557-7 (Second Edition)
- **Maximum Operating Voltage:** 600V
- **CAT Rating:** CAT III 600V

## Electrical

- **Power:** 9V/6F22 battery
- **Battery Life:** Approximately 1 year of normal use

## Phase Indication

- **Nominal Voltage:** 110VAC ~ 600VAC
- **Frequency range:** 15Hz ~ 400HZ
- **Nominal Test Current (subject to each phase):** <3 mA

## Non-Contact Rotating Magnetic Field Indication

- **Nominal Voltage Rotating Direction Value:** 30VAC ~ 600VAC
- **Frequency range:** 15Hz ~ 400HZ
- **Nominal Test Current (subject to each phase):** <3 mA

## Measurement Categories

These definitions were derived from the international safety standard for insulation coordination as it applies to measurement, control, and laboratory equipment. These measurement categories are explained in more detail by the International Electrotechnical Commission; refer to either of their publications: IEC 61010-1 or IEC 60664.

- **Measurement Category II**

Local level. Appliances, portable equipment, and the circuits they are plugged into. Some examples include light fixtures, televisions, and long branch circuits.

- **Measurement Category III**

Distribution level. Permanently installed machines and the circuits they are hard-wired to. Some examples include conveyor systems and the main circuit breaker panels of a building's electrical system.



- **Measurement Category IV**

Primary supply level. Overhead lines and other cable systems. Some examples include cables, meters, transformers, and other exterior equipment owned by the power utility

## **Statement of Conformity**

Greenlee Tools, Inc. is certified in accordance with ISO 9001 (2000) for our Quality Management Systems. The instrument enclosed has been checked and/or calibrated using equipment that is traceable to the National Institute for Standards and Technology (NIST).

### **Maintenance**



#### **Warning**

#### **To prevent damage to the 5124:**

Repair or maintenance of the 5124 should only be performed by Greenlee authorized technicians. Do not use corrosive or solution since those substances will cause damage to the chassis of the 5124. Prior to cleaning, remove all test leads from the 5124.



#### **Warning**

#### **Electric shock hazard:**

To prevent electric shock, it is necessary to remove all testing leads from the 5124 prior to replacing the battery. The 5124 contains a 9V/6F22 battery, do not discard the battery with other solid wastes. The used battery should be disposed of properly in accordance with local government regulations.

### **Replacing the Batteries**

1. Remove all testing leads from the 5124.
2. Take off the protective casing.
3. Place the 5124 face down on a non-abrasive surface and unscrew the battery cover.
4. Remove the battery cover and remove the battery after loosening the battery buckle.
5. Replace the battery as shown in Figure 3.  
Ensure that the battery polarity is correct.
6. Reinstall the battery cover with screws.
7. Put the protective casing back over the 5124.

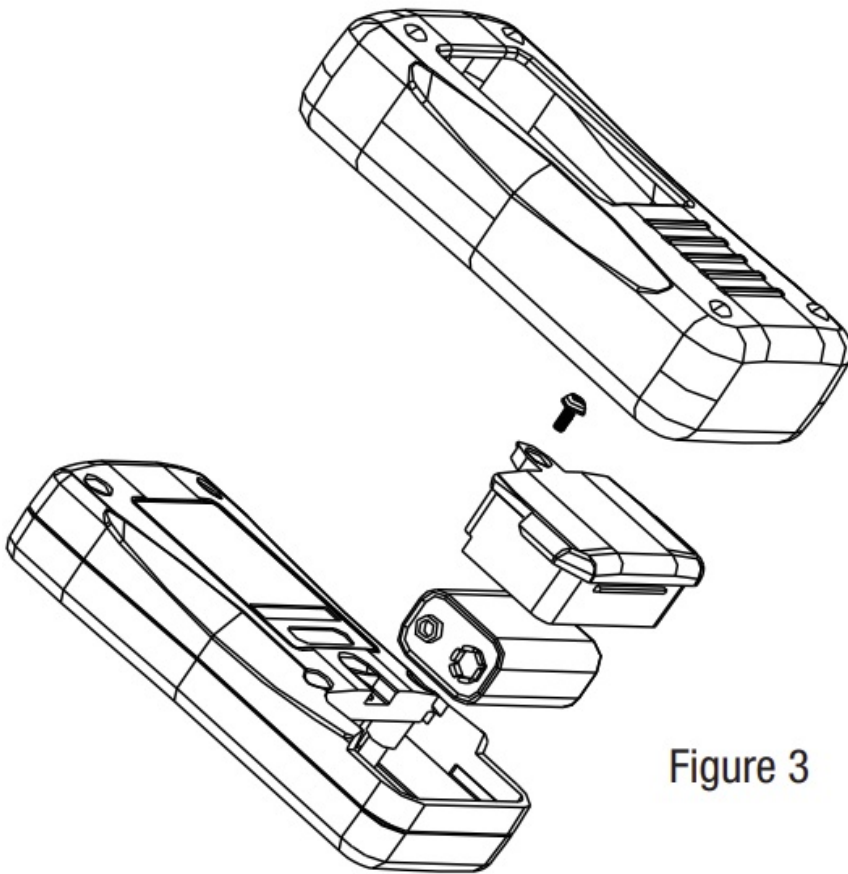


Figure 3

### Technical Support

4455 Boeing Drive  
Rockford, IL 61109-2988  
USA  
815-397-7070  
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An ISO 9001 Company  
<http://www.greenlee.com/>

### USA

Tel: 800-435-0786  
Fax: 800-451-2632


### Canada

Tel: 800-435-0786  
Fax: 800-524-2853

### International

Tel: +1-815-397-7070  
Fax: +1-815-397-9247



	<p><a href="#">GREENLEE 5124 Phase Sequence and Motor Rotation Meter</a> [pdf] Instruction Manual 5124, Phase Sequence and Motor Rotation Meter, Motor Rotation Meter, Phase Sequence Rotation Meter, Rotation Meter, Meter, 5124</p>
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