FLUKE®

9040

Phase Rotation Indicator

Users Manual

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9040

Introduction

The Fluke 9040 Phase Rotation Indicator (the 9040) is a handheld instrument designed to detect the rotary field of three-phase systems.

How to Contact Fluke

To contact Fluke, call one of the following telephone numbers:

- Technical Support USA: 1-800-44-FLUKE (1-800-443-5853)
- Calibration/Repair USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31 402-675-200
- Japan: +81-3-3434-0181
- Singapore: +65-738-5655
- Anywhere in the world: +1-425-446-5500

Or, visit Fluke's website at www.fluke.com.

To register your product, visit http://register.fluke.com.

To view, print, or download the latest manual supplement, visit http://us.fluke.com/usen/support/manuals.

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Unpacking the 9040

The 9040 is available in three configurations. Depending on your purchase, the 9040 ships with these items:

- **9040**
  - 3 self-retaining test probes, 1000 V CAT II
  - 3 alligator clips, 1000 V CAT III/600 V CAT IV
  - Users Manual
- **9040UK**
  - 3 fused test probes, 1000 V CAT III
  - 3 alligator clips, 1000 V CAT III/600 V CAT IV
  - Users Manual
- **9040EUR**
  - 3 Slim-Reach™ test probes (black) 1000 V CAT III/600 V CAT IV
  - 3 self-retaining test probes, 1000 V CAT II
  - 3 alligator clips, 1000 V CAT III/600 V CAT IV
  - Users Manual

⚠⚠ Warning

To prevent possible electrical shock, fire, or personal injury, do not exceed the Measurement Category (CAT) rating of the lowest rated individual component of a product, probe, or accessory.

If an item is damaged or missing, contact the place of purchase immediately.

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Safety Information

Caution identifies conditions and actions that may damage the 9040.
Warning identifies conditions and actions that pose hazard(s) to the user.

⚠⚠ Warning

To prevent possible electrical shock, fire, or personal injury:

- **Carefully read all instructions.**
- **Comply with local and national safety codes. Use personal protective equipment (approved rubber gloves, face protection, and flame-resistant clothes) to prevent shock and arc blast injury where hazardous live conductors are exposed.**
- **Use the product only as specified, or the protection supplied by the product can be compromised.**
- **Do not work alone.**
- **Do not use test leads if they are damaged. Examine the test leads for damaged insulation or exposed metal. Check test lead continuity.**
- **Do not touch voltages >30 V ac rms, 42 V ac peak, or 60 V dc.**
- **Keep fingers behind the finger guards on the probes.**

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- **Measurements can be adversely affected by impedances of additional operating circuits connected in parallel or by transient currents.**
- **Verify operation prior to measuring hazardous voltages (voltages above 30 V ac rms, 42 V ac peak and 60 V dc).**
- **Do not use the 9040 with any of the parts removed.**
- **Do not use the product around explosive gas, vapor, or in damp or wet environments.**

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Symbols

The following symbols appear on the 9040 or in this manual.

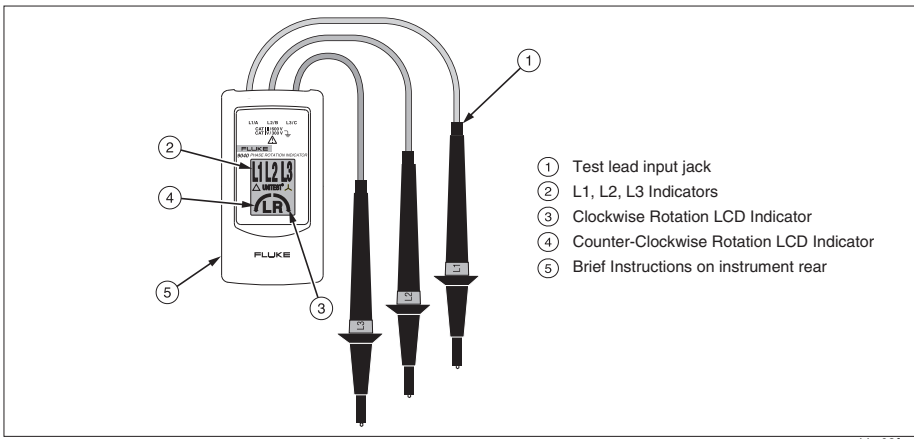
Table 1. Symbols

	Risk of Danger. Important information. See manual.		Earth ground.
	Hazardous voltage. Risk of electric shock.		Double Insulated.
CE	Conforms to requirements of European Union.		Conforms to relevant Canadian Standards Association directives.
CAT II	CAT II equipment is designed to protect against transients from energy-consuming equipment supplied from the fixed installation, such as TVs, PCs, portable tools, and other household appliances.		
CAT III	CAT III equipment is designed to protect against transients in equipment in fixed-equipment installations, such as distribution panels, feeders and short branch circuits, and lighting systems in large buildings.		
CAT IV	CAT IV equipment is designed to protect against transients from the primary supply level, such as an electricity meter or an overhead or underground utility service.		

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Elements of the 9040

Indicators, buttons, and jacks are shown in Figure 1.



bbx02f.eps

Figure 1. The 9040 Phase Rotation Indicator

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Determine the Rotary Field Direction

To determine the rotary field direction:

1. Connect the test probes to the end of the test leads.
2. Connect the test probes to the three mains phases.
3. The green ON indicator shows that the instrument is ready for testing.
4. Either the clockwise or counter-clockwise rotary indicator illuminates showing the type of rotary field direction present.

⚠⚠ Warning

The rotary indicator lights even if the neutral conductor, N, is connected instead of L1, L2, or L3. Refer to the back of the 9040 for more information.

Note

The 9040 is powered from the installation under test.

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Maintaining the 9040

⚠ Caution

To prevent damage to the 9040:

- **Do not attempt to repair or service the 9040 unless qualified to do so.**
- **Make sure that the relevant calibration, performance test, and service information is being used.**
- **Do not use abrasives or solvents. Abrasives or solvents will damage the 9040 case.**

The only maintenance the 9040 requires is inspection and cleaning. Periodically wipe the case with a damp cloth and mild detergent. Clean only with soap and water and remove any residue afterwards.

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Replacing the Fuse (9040UK only)

⚠⚠ Warning

For safe operation and maintenance of the product:

- **Use only specified replacement fuses. See Specifications section.**
- **Before you replace the fuse, disconnect the accessory (cable or probe) at both ends.**

To replace the fuse:

1. Check the fuse using a simple continuity test.
2. Hold the probe in front of the finger guard and unscrew the tip in a counter-clockwise direction.
3. Remove the defective fuse from the fuse holder.
4. Insert a new fuse in the fuse holder and reassemble the probe.

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Specifications

Environmental

Operating Temperature
0 °C to +40 °C

Pollution Degree
2

Type of Protection
IP 40

Mechanical Specifications

Size
124 x 61 x 27 mm (4.9 x 2.4 x 1.1 in)

Weight
200 g (0.44 lb)

Fuse

500 mA / 1000 V/ FF / 50 kA / 6.3 x 32 mm (0.25 x 1.26 in)

Electrical Specifications

Power Supply
From unit under test

Safety Specifications

Electrical Safety

IEC 61010-1/EN 61010

IEC 61557-7/EN 61557-7

Maximum Operating Voltage (Ume)
690 V

Protection Levels
CAT III/600 V to ground

CAT IV/300 V to ground

Determine Rotary Field Direction

Nominal Voltage
40 to 690 V ac

Frequency Range (f_n)
15 to 400 Hz

Current Pickup
1 mA

Nominal Test Current (in per phase)
1 mA

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