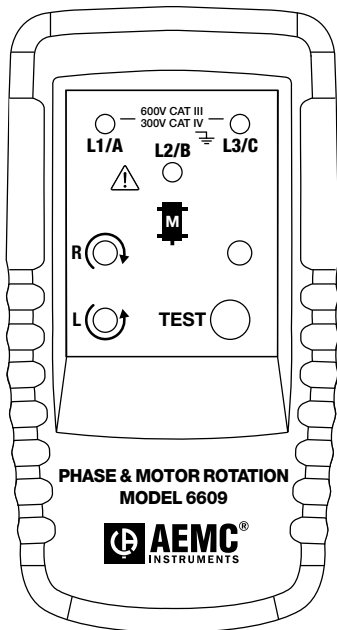


- PHASE & MOTOR ROTATION METER
- PROBADOR DE FASE & ROTACIÓN DE MOTOR

6609



ENGLISH

ESPAÑOL

User Manual

Manual de instrucciones



Statement of Compliance

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments certifies that this instrument has been calibrated using standards and instruments traceable to international standards.

We guarantee that at the time of shipping your instrument has met its published specifications.

The recommended verification interval for this instrument is 12 months and begins on the date of receipt by the customer. For verification, please use our calibration services. Refer to our repair and calibration section at _____.

Serial #: _____

Catalog #: 2121.11

Model #: 6609

Please fill in the appropriate date as indicated:

Date Received: _____

Date Verification Due: _____



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INTRODUCTION








Warning



- This instrument complies with safety standard IEC 61010 - 1, Ed 2 of February 2001.
- For your own safety, and to prevent any damage to your instrument, you must follow the instructions given in this manual.
- This instrument can be used on CAT III electrical circuits not exceeding 600V with respect to earth. It must be used indoors, in an environment not exceeding pollution level 2, at an altitude of not more than 2000m. The instrument can therefore be used in complete safety on 400V three-phase networks in an industrial environment.
- For safety reasons, you must use only measurement leads having a voltage rating and category at least equal to those of the instrument and compliant with standard IEC 61010-031.
- Do not use if the cover of the battery compartment is missing or if the housing is damaged or not correctly closed.
- Do not place your fingers near unused terminals.
- If the instrument is used other than as specified in this manual, the protection provided by the instrument may be impaired.
- Do not use this instrument if it seems to be damaged.
- Check the integrity of the insulation of the leads and of the housing. Replace damaged leads.
- Be prudent when working in the presence of voltages exceeding 70V_{DC} or 33V_{rms} and 46.7V_{pp}; such voltages can cause a risk of electrocution. The use of individual protections is recommended in some cases.
- Always keep your hands behind the physical guards of the probe tips or alligator clips.
- Always disconnect all leads from the measurement and from the instrument before opening the housing.

1.1 International Electrical Symbols

	Instrument is protected by double or reinforced insulation.
	CAUTION - DANGER! Read the User Manual.
	Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.
	The CE marking guarantees conformity with European directives and with regulations covering EMC.
	The trash can with a line through it means that in the European Union, the product must undergo selective disposal for the recycling of electric and electronic material, in compliance with Directive WEEE 2002/96/EC.

1.2 Definition of Measurement Categories

CAT I: Measurement category I corresponds to measurements taken on circuits not directly connected to the network.

CAT II: Measurement category II corresponds to measurements taken on circuits directly connected to the installation.
Example: measurement for electrodomeestic units, portable tools and analogue devices

CAT III: Measurement category III corresponds to measurements on building installations.
Example: measurement on distribution panels, cabling, etc.

CAT IV: Measurement category IV corresponds to measurements taken at the source of low-voltage installations
Example: metering and measurements on overvoltage protection devices.

1.3 Receiving Your Shipment

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage. Save the damaged packing container to substantiate your claim.

1.4 Ordering Information

Phase and Motor Rotation Meter Model 6609 Cat. #2121.11

Includes meter, three color-coded test leads (red, black, blue), three alligator clips (black), one 9V battery, soft carrying case and a user manual.

1.4.1 Accessories and Replacement Parts

Soft carrying case..... **Cat. #2121.54**

Set of 3 color-coded leads with
black alligator clips CAT III 1000V 10A..... **Cat. #2121.55**

PRODUCT FEATURES

2.1 Description

This three-in-one test tool is a must for any plant maintenance staff and will identify proper sequencing for three phase power very quickly and easily.

This is also an ideal tool for measuring the proper rotation of motors, conveyors, pumps and other electrical devices interconnected on the power line system before installation.

NOTE: The Model 6609 does not require fusing because the inputs are protected by a high impedance circuit which limits the current to a safe value.

This meter provides the following functions:

- Determination of the direction of phase rotation
- Presence or absence of phase
- Determination of the direction of rotation of a motor with or without connection
- Determination of the activation of a solenoid valve without connection

2.2 Control Features

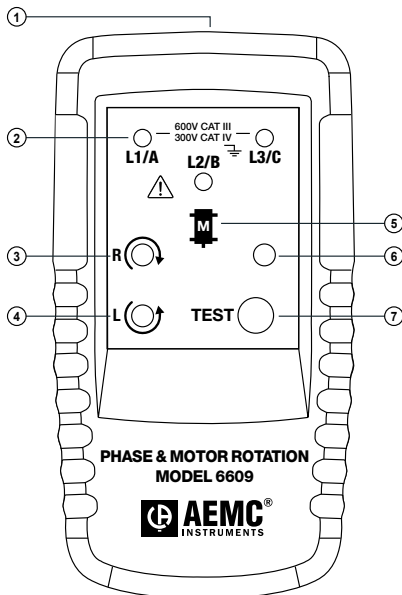


Figure 1

1. Test lead input terminals
2. Phase indicators L1, L2, and L3
3. Green clockwise rotation LED
4. Red counter-clockwise rotation LED
5. Symbol for correct orientation on the motor
6. Green LED indicating the unit is ON
7. ON/OFF button

CHAPTER 3

SPECIFICATIONS

ELECTRICAL	
Operating Voltage	With connections: 40 to 600V _{AC} between phases Without connection: 120 to 400V _{AC} between phases
Frequency	15 to 400Hz
Test Current	< 3.5mA
Power Source	9V battery (6LR61, NEDA 1604)
MECHANICAL	
Dimensions	5.1 x 2.7 x 1.3" (130 x 69 x 32mm)
Weight	6 oz (170g)
ENVIRONMENTAL	
Operating Temperature	32° to 104°F (0° to 40°C)
Storage Temperature	-4° to 122°F (-20° to 50°C); RH < 80%
SAFETY	
Safety Rating	600V CAT III IEC 61010-1, DIN VDE 0411; IEC 61557-7, DIN VDE 0413-7; Tightness : IP 40 (as per IEC 60529 Ed.92)
Double Insulation	Yes
CE Mark	Yes

OPERATION



WARNING: Use only on motors rated 600V or less

4.1 Phase Rotation Direction

On a three-phase electrical network:

1. Connect the three leads to the instrument, matching the markings.
2. Connect the three alligator clips to the 3 phases of the network to be tested.
3. Press the ON (TEST) button. The Green LED indicates that the instrument is in operation.
4. When the indicators of all three phases are lit, the clockwise (or counter-clockwise) rotation indicator indicates the direction of phase rotation.

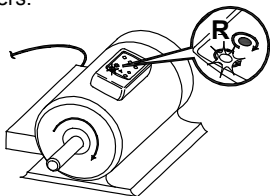
Warning: The wrong direction of rotation may be displayed if a lead is connected in error to the neutral conductor.

Refer to the instrument's back label for a summary of the various display possibilities.

4.2 Indication of Direction of the Rotating Field, or Direction of Rotation without Connecting Test Leads

1. Do not connect any test leads to the instrument.
2. Position the instrument on the motor, within 2.5 cm, parallel to the shaft in the direction indicated by the symbol on the front panel.
3. Press the ON (TEST) button. The Green LED indicator indicates that the instrument is in operation.
4. The clockwise or counter-clockwise rotation indicator lights to indicate the direction of the rotating field.

Note: The instrument does not work on motors controlled by frequency converters.



The table below summarizes the conditions necessary to obtaining a reliable test result.

Number of pairs of poles	Number of rotations of the rotating field (per minute) as a function of frequency (Hz)			Angle between poles	Minimum Ø of the motor casing
	16 2/3	50	60		
1	1000	3000	3600	60	5.3
2	500	1500	1800	30	10.7
3	333	1000	1200	20	16.0
4	250	750	900	15	21.4
5	200	600	720	12	26.7
6	167	500	600	10	32.1
8	125	375	450	7.5	42.8
10	100	300	360	6	53.5
12	83	250	300	5	64.2
16	62	188	225	3.75	85.6

4.3 Determining the Direction of Connection of the Phase Wires to a Motor

1. Connect the three leads to the instrument, matching the markings.
2. Connect the three alligator clips to the three phase connections on the motor being tested.
3. Press the ON (TEST) button. The Green LED indicator indicates that the instrument is in operation.
4. Rotate the motor shaft to the right at a few RPM's to get a stable reading on one of the LED rotations.
5. The clockwise or counter-clockwise rotation indicator lights, indicating whether or not the order of connection of the phase wires is correct.

4.4 Solenoid Valve Activation Indication

1. Do not connect any test leads to the instrument
2. Place the instrument as close as possible to the solenoid valve.
3. Press the ON button. The Green LED indicator indicates that the instrument is in operation.
4. The clockwise or counter-clockwise rotation indicator lights, indicating the presence of the field generated during the activation.

MAINTENANCE

5.1 Battery Replacement



WARNING: Always disconnect all leads before replacing a battery or fuse.

To replace the battery, proceed as follows:

- Remove the screw on the bottom back of the instrument.
- Remove the back cover.
- Take out the battery and replace with a new 9V battery. (Type NEDA 1604, 6LF22, 6LR61)
- Replace the back cover on the case.

5.2 Cleaning and Storage



To avoid electrical shock or damage to the meter, do not get water inside the case.

- Periodically wipe the case with a damp cloth and mild detergent
- Dry completely before using again.
- Do not use abrasives or solvents.
- If the meter is not to be used for a period of longer than 60 days, remove the battery and store them separately.

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be submitted to our factory Service Center at one-year intervals for inspection, or as required by other standards or internal procedures.

For instrument repair and calibration:

You must contact our Service Center for a Customer Service Authorization Number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container.

Ship To:

(Or contact your authorized distributor)

NOTE: You must obtain a CSA# before returning any instrument.

Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, mail, fax or e-mail our technical support hotline:

NOTE: Do not ship Instruments to our Foxborough, MA address.

Limited Warranty

The Model 6609 is warranted to the owner for a period of two years from the date of original purchase against defects in manufacture. This limited warranty is given by AEMC® Instruments, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused or if the defect is related to service not performed by AEMC® Instruments.

For full and detailed warranty coverage, please read the Warranty Coverage Information, which is attached to the Warranty Registration Card (if enclosed) or is available at www.aemc.com. Please keep the Warranty Coverage Information with your records.

What AEMC® Instruments will do: If a malfunction occurs within the warranty period, you may return the instrument to us for repair, provided we have your warranty registration information or a proof of purchase. AEMC® Instruments will, at its option, repair or replace the faulty material.

Warranty Repairs

What you must do to return an Instrument for Warranty Repair:

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

NOTE: You must obtain a CSA# before returning any instrument.