MODEL 108A
MODEL 108D

Line Voltage & Phase Sequence Detector



- **Indicates Normal Condition**
- **Shows Missing Phase**
- **Indicates Phase Sequence ABC or CBA**
- **Color-coded Leads**

DESCRIPTION

The Model 108A & 108D Line Voltage & Phase Sequence Detectors permit contractors and maintenance personnel to quickly and easily determine the proper phase sequence (either ABC or CBA), in order to install, or make wiring changes to motors, watt-meters, transformers, electrical installations, power factor meters or generators.

Available in 50/60 Hz and 400 Hz versions, this tool can also show that all phases are present, or if one or more phases are lost, it indicates which of the phases are missing.

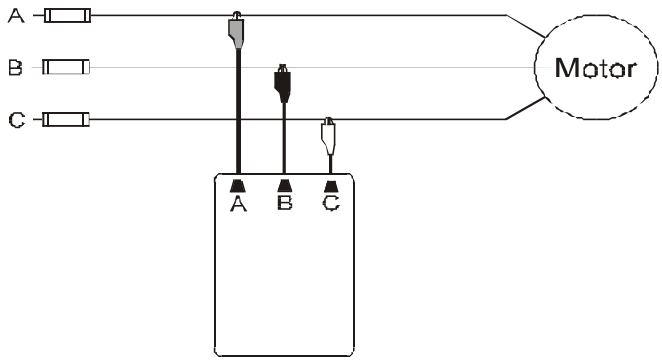
To use, connect the Detector to any 3-phase circuit from 90 to 600 volts, Wye or Delta. In proper phase sequence, and with all phases present, the ABC lamp, and the three line voltage lamps will illuminate. An open phase condition will illuminate both rotation lamps and only two line voltage lamps. See the Condition Chart.

SPECIFICATIONS

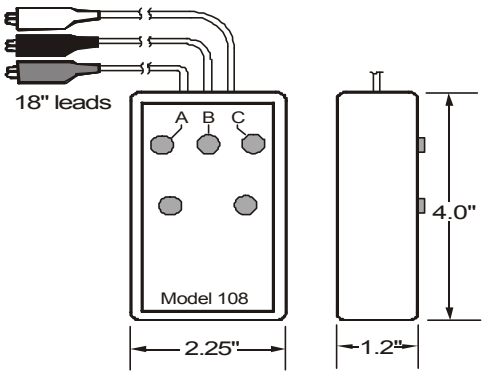
MODEL	108A	108D
Frequency	50/60 Hz	400 Hz
Phase Sequence Indicator	90 - 600 VAC	
Line Voltage Indicator	175 - 600 VAC	
Connection Time	90-480 V: Continuous Over 480 V: < 15 minutes	
Leads	18" color-coded	
Lead Termination	Alligator clips	
Weight	8 oz. max.	
Enclosure Material	ABS plastic	

CONDITION CHART	LAMP(S) LIT				
	ABC	CBA	A	B	C
ABC ROTATION	•		•	•	•
CBA ROTATION		•	•	•	•
PHASE **A** MISSING	•	•		•	•
PHASE **B** MISSING	•	•	•		•
PHASE **C** MISSING	•	•	•	•	

TYPICAL APPLICATION



DIMENSIONS



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MODEL 108A
MODEL 108D

Line Voltage & Phase Sequence Detectors

READ ALL INSTRUCTIONS BEFORE INSTALLING, OPERATING OR SERVICING THIS DEVICE.
KEEP THIS DATA SHEET FOR FUTURE REFERENCE.

GENERAL SAFETY

POTENTIALLY HAZARDOUS VOLTAGES ARE PRESENT AT THE TERMINALS OF THE MODELS 108A OR D DETECTORS. ALL ELECTRICAL POWER SHOULD BE REMOVED WHEN CONNECTING OR DISCONNECTING WIRING. THIS DEVICE AND WIRING SHOULD BE INSTALLED AND SERVICED BY QUALIFIED PERSONNEL.

OPERATOR INSTRUCTIONS

CONNECTION

Connect the three clip leads to the 3-phase power source.

Apply AC power. One of the detector lamps should illuminate indicating the phase sequence as connected. If the desired phase sequence is not lit, change any two of the three leads.

Read the 3-phase designation on the front panel; then connect corresponding leads to your equipment. If both lamps illuminate, check for a loss of voltage on one of the three phases. If neither lamp illuminates, check for a loss of voltage.

3-PHASE POWER BASICS

In 3-phase power, there are three lines which carry the voltage normally designated as A-B-C. In some installations, however, they may be designated L1-L2-L3, or T1-T2-T3. The phase sequence as generated is A-B-C.

As the voltage on these lines rotates through 360 degrees, phase B lags phase A by 120 degrees; while phase C lags phase A by 240 degrees. The voltage on each of these lines vary as shown in *figure 1*, a graph of voltage versus degrees of rotation.

figure 1.

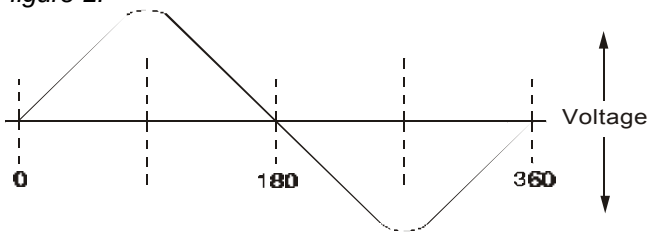
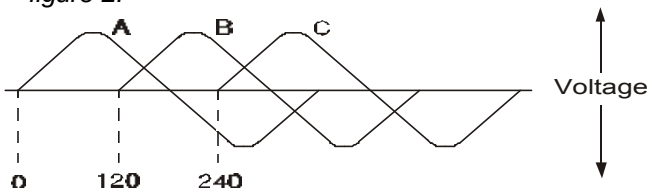


figure 2.



If all phases are shown on the same graph, they would appear as shown in *figure 2.*

Pictured on a rotating phasor diagram, the angle between each phase is fixed at 120 degrees as they rotate in unison at the line frequency (see *figure 3*).

From *figure 4,* you can see if any two phases are reversed, the direction of rotation will be in the opposite direction. This reversal of the rotating sequence will cause motors to run in the opposite direction. Many other types of equipment are phase sensitive and will not perform as intended if the phase sequence is incorrect.

figure 3.

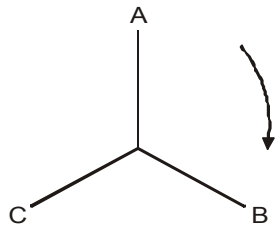
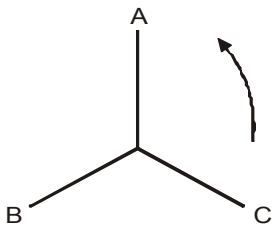


figure 4.



WARRANTY

The **Models 108A and 108D** are covered by Time Mark Corporation's exclusive **5-Year Unconditional Warranty.** Should this device fail, for any reason, within five years from the date of purchase, we will repair or replace it free. Contact the Time Mark Sales department, Monday through Friday; 8 a.m. to 5 p.m., CST, for further details.

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