

# INSTALLATION & OPERATION INSTRUCTIONS



## Thank You!

Thank you and congratulations for selecting a Phasemaster™. You will discover, as have thousands of others since 1960, Phasemaster™ Rotary Phase Converters are unsurpassed in our industry. Further, since 1972, Kay Industries and its subsidiaries have continually focused on designing, engineering and producing 3ph solutions to exceed installer and end-user expectation.

## Converter Configurations

These installation instructions apply to the following Phasemaster® converter configuration only.

### Model PI-240v

The Brands Phasemaster® and Phazpak Technologies™ are trademarks of Rohenas, LLC

## Table of Contents

- I - Thank you ..... 1
- II - Converter Configurations ..... 1
- III - Converter Accessories ..... 2
- IV - Before You Start ..... 3
- V - Safety Instructions ..... 4
- VI - Operation and Maintenance ..... 5
- VII - Electrical Specification ..... 6, 13 - 15
- VII - Do's and Don't ..... 7
- VIII - Record-keeping ..... 8
- IX - Warranty ..... 9
- X - Common Questions ..... 10
- XI - Lubrication ..... 11
- XII - Get a FREE 1yr extend warranty ..... 12

Kay Industries has designed the Phasemaster® Rotary Phase Converter to be installed by anyone having basic electrical knowledge and mechanical skills. If you do not thoroughly understand these instructions, we recommend you obtain the assistance of a licensed electrician.



## About PI-Model at 240v

PI -240v

- The basic general-purpose converter configuration. It is provided with a lead box with bolted lug or terminal blocks for line and load side connections. As of 9/1/2024, this model now includes a disconnect on-off control for the converter. However, 1ph will still pass through when the converter is in the off position. A field service disconnect is recommended.

## Before you start

Motors and electrical equipment built in North America are rated to operate at 230V ±10%. However, most 3-phase machines manufactured in Europe and Asia are actually designed for operation on 220V systems. Although they are capable of running at voltages up to 10% above 220V (242V), North American utility voltages can legally be as high as 252V. Utility companies generally will not accept responsibility for equipment damage unless the voltage exceeds this level.

If your voltage measures above 240V at any time, it is highly probable that it could go even higher on other occasions depending on the time of day or seasonal power load. This means your equipment is likely to see voltages in excess of 242V coming from the converter. If your machines are designed for European or Asian voltages, you should consider installing a buck-boost transformer AHEAD of the converter to reduce the utility supply voltage. This is particularly important if your machine incorporates a variable speed drive.

The buck-boost transformer will generally eliminate or minimize problems that result from excessive utility supply voltage. Contact Kay Industries for further explanation of this subject and for exact recommendations of the proper size buck-boost transformer for your application.

KAY INDUSTRIES

# NO 3 PHASE? NO PROBLEM!

# KAY INDUSTRIES ROTARY PHASE CONVERTERS

## Safety Instructions

- 1 - When in doubt, please obtain a licensed electrician.
- 2 - We present basic information, and we do not supersede or modify NEC or local code.
- 3 - Follow all OSHA, NEC requirements.
- 4 - Always ensure power is off when removing covers and connecting any wires.
- 5 - Install rotary converter as close to service entrance as practical and in a dry place.
- 6 - Fuse Converter according to Wire Chart.
- 7 - Use L1 and L2 to operate all electrical switch gear and any single phase load.
- 8 - Properly ground all equipment.
- 9 - Converter must be operating prior to using three-phase. It will take roughly 1 to 3 seconds to start.
- 10 - Check output line voltages. L2 and L3 should not read over 15% higher than the incoming L1 and L2 lines. Voltages will balance out once load is applied.
- 11 - Total 3 phase motor starting HP must not exceed 75% of the rated HP of the converter.
- 12 - Total 3PH running HP should not exceed 300% of the rated HP of the Phasemaster.

## Operation & Maintenance

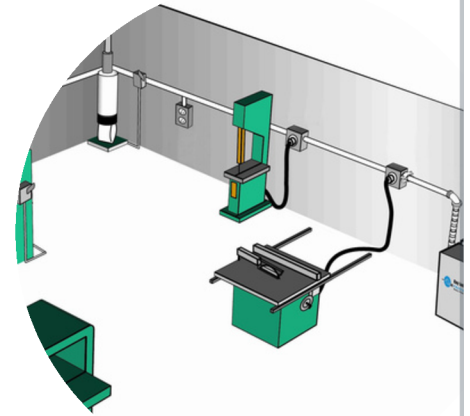
- Phasemaster® PI-240v converters are designed to operate continuously with or without a load.
- Always start the PI-240v before operating any loads.
- Try to start one load at a time if possible. When starting more than one load HP must not exceed 75% of the rated HP of the rotary converter.

## Lubrication

See Page 11



Do not bolt the converter to the floor or any other mounting surface. Rigid mounting amplifies noise, increases internal vibrations that can loosen terminals and can distort the frame causing the rotor to lock.



## Maintenance

- Phasemaster® PI-240v uses only heavy duty totally enclosed motors in its design.
- Check mounting bolts - Tighten if necessary.
- Annually check controls and power connections.

Whether this is your first phase converter installation or your one-hundredth, there are a few do's and don'ts that you should observe.

<b>DO:</b>	<b>DON'T:</b>
<p><b>DO:</b> Install a starter and fuses, or a fused disconnect switch (if your converter does not have internal fuses) after the single-phase circuit breaker but ahead of the converter. This is the best way to provide on-off control.</p> <p><b>DO:</b> Remove the converter from the skid</p> <p><b>DO:</b> Bolt or crimp all connections. Insulate all connections with rubber and plastic tape or heat shrinkable tubing.</p> <p><b>DO:</b> Connect all single-phase loads, including controls, only to utility lines L1 and L2.</p>	<p><b>DON'T:</b> Cut corners by using the circuit breaker for on-off control instead of a fused switch or starter. A breaker is not designed for as many operations as a switch and may wear out prematurely if subjected to many repeated converter starting cycles.</p> <p><b>DON'T:</b> Bolt the converter down.</p> <p><b>DON'T:</b> Use wire nuts or twist type connectors to connect the converter.</p> <p><b>DON'T:</b> Connect the manufactured leg T3 to any control circuits or to any single-phase loads.</p>

The Brands Phasemaster® and Phazpak Technologies™ are trademarks of Rohenas, LLC

## Record Keeping

Make a record of all voltages at each measurement point and retain these readings in a log for future reference. Large deviations could indicate problems with either the utility supply voltage or the load conditions.

Meter Point	Lines measured	Converter on Load off	Converter on Load running
A	L1-L2		
B	L1-L2		
B	L1-T3		
B	L2-T3		

Write down the full nameplate information including model and serial number.

MODEL NUMBER	SERIAL NUMBER
--------------	---------------

**NEED TECH SUPPORT**  
 (574) 780-7464  
**OR, FIELD SERVICE**

## Warranty

Kay Industries, Inc. (the manufacturer) guarantees all products of our manufacture against faulty material or workmanship for a period of five years from date of installation or 61 months from date of shipment from factory, whichever period first expires. In addition Kay Industries will replace all defective bearings regardless of cause for the life of the converter.

Any part that you return to us within this warranty period showing unmistakable defect in material or workmanship will be renewed or replaced at our option F.O.B. factory without charge. The final decision that an original defect existed shall rest with the manufacturer.

The liability is limited to the renewal or replacement of the defective part. In no case will Kay Industries be liable for damage or loss incurred because of interruption of service or for consequential damages, transportation, labor or expense required to repair or replace defective parts or units.

Kay Industries will not be responsible if its products have been improperly installed in any way. This warranty shall not apply to any of the manufacturer's products that must be replaced because of normal wear, that have been subjected to misapplication, misuse, neglect, accident or that have been repaired or altered outside of the manufacturer's factory unless expressly authorized by the manufacturer.

KAY INDUSTRIES



Kay Industries, Inc., is the worldwide industry leader in designing, manufacturing, and marketing the three phase converter known across the globe as the Phasemaster®.

# VISIT OUR WEBSITE

www.kayind.com

## Common Questions

### Can I place this outdoors?

This question is typically asked during the selection process, in which case we would introduce you to the PI models which consist of a TEFC frame and a NEMA 3R control panel enclosure. If the converter is going to be outdoors, it is recommended it sit about 2 inches off the ground. A concrete pad is desirable. Secondly, ensure there is at least 6 inches of space all around. The Phasemaster® will get very hot.



**KAY INDUSTRIES**  
Incorporated

### How loud is this Phasemaster® converter, and can I quiet it down?

While factors vary, each Phasemaster® is less than .75 decibels. We add a rubber stopper on the cover of the control panel to minimize rattling, and we no longer mount the capacitor box on top of the induction generator to help reduce sound generated by vibration. We recommend a 1" rubber mat to soften the noise heard at the base of the converter and the surface it sits on.

## Lubrication

Phasemaster® converter bearings are pre-packed with a heat, moisture, and rust resisting polyurea based lubricant rated to operate in the temperature range of -35 to +350° F. This initial charge plus a generous additional amount placed in the bearing housing during manufacturing is normally enough to last the lifetime of the bearing. Converters exposed to severe operating conditions of high heat, moisture, dirt or limited ventilation require periodic lubrication. To grease the bearings in a smaller converter not having grease fittings, remove the end-bells and remove the excess grease. Replace it with a generous supply of a compatible lubricant such as MOBIL Polyrex EM. To lubricate a larger converter, inject a small amount of grease slowly into the grease fittings. Do not use high-pressure equipment. Take care not to saturate the windings with grease over an extended time. Remember, this grease goes somewhere when it leaves the bearing. Lithium based lubricants are incompatible and may cause bearing failure.

## Free 1yr Extend Warranty

We have sold over 30,000 Phasemaster® Rotary Converters, yet as of this writing we have only 3 reviews on Google. Two of the reviews are fake. So, here is the deal. If you truly love your converter, and the service we provide, please leave Kay Industries a 5 Star Review. Then, email us your serial number with a message related to your Google Review. In turn, we will add one more year to your warranty.

Yep, it is that simple. Again. Thank for trusting the Phasemaster® brand of converters, and the service and detail provided by Kay Industries.

## PHASEMASTER®

# THE LEGENDARY CONVERTER BRAND™

Kay Industries, Inc., is the worldwide industry leader in designing, manufacturing, and selling the three phase converter known across the globe as the Phasemaster®.

# ROTARY PHASE CONVERTERS



**KAY INDUSTRIES**  
Incorporated

## Electrical Specifications

Model No.	Start HP	Max Run HP	Dimensions (inches)			
			L	W	H	Wt.
PI-6	2	4	13	16	14	120
PI-10	3	6	14	16	14	136
PI-15	5	10	17	20	14	207
PI-20	7.5	15	20	21	20	307
PI-30	10	20	22	21	20	372
PI-40	15	30	25	26	20	503
PI-50	20	40	26	28	21	720
PI-60	25	50	28	28	21	770
PI-80	30	60	31	30	24	905
PI-100	40	80	31	30	24	1005
PI-120	50	100	33	34	28	1570

If feasible, it is always a good idea to temporarily connect the phase converter and the load to verify performance before proceeding with the permanent installation.



### Address

207 E Market Street  
Nappanee, IN 46550



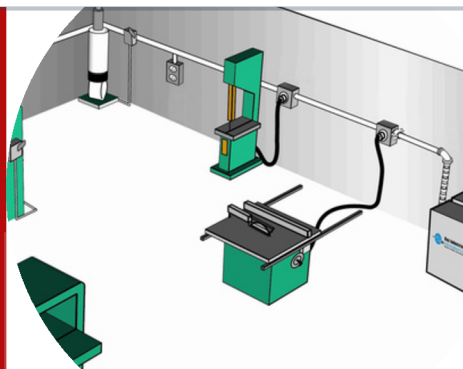
### Contact

support@kayind.com  
(800) 348-5257



### Website

www.kayind.com



## Wiring Diagram

L1 AND L2 ARE PARALLELED FROM ENTRANCE TO BOTH SINGLE PHASE AND THREE PHASE PANELS

