

PHASEMASTER® ROTARY PHASE CONVERTER ENGINEERING DESIGN SPECIFICATION

ALL CONVERTER TYPES

The World Leader in Single to Three-Phase Electric Power Conversion

I. GENERAL

Phase Converters for changing single-phase input to three-phase output shall be rotary type. Static converters using autotransformers and/or capacitors only shall not be used. Phase converter shall be capable of starting and running single or multiple motor loads at full rated capacity. The converter shall be capable of operating motor and resistance loads simultaneously.

II. CONSTRUCTION

The rotary phase converter shall be *single* piece construction and capable of starting the load *without* external or separate capacitor panels. The rotary frame portion of the converter shall be cast iron or rolled steel dripproof construction. If required by operating environment, converters shall be totally enclosed with all control components mounted in a NEMA 3R enclosure. Rotary converters shall be built on a NEMA frame at least two sizes larger than the frame size of the load. Manufacturer shall identify the frame size of the converter proposed. Rotary converters shall operate at not more than 1800 RPM. The converter shall have a high resistance rotor without cast fins.

All converter capacitors shall be sealed oil type with integral circuit interrupters. Electrolytic type or PCB filled capacitors are not acceptable. Individual capacitors shall be rated to withstand not less than 370 volts continuously on 240V converters, and 600V on 480V units. The capacitor compartment shall be mounted on top of the rotary base. Capacitor boxes mounted on the side of the rotary base are not acceptable except on converters of totally enclosed construction.

III. CONTROLS

Depending on the control requirements of the load to operated, rotary converters shall be designated as non-automatic, switched, or automatic. If not specified herein, bidder shall expressly identify which control type is being offered for each converter proposed.

Non-Automatic converters shall be supplied with a motor style conduit/connection box. Connection leads shall be clearly marked and supplied with crimped ring terminals. External switch and fuses will be supplied by others based on manufacturer's size recommendation.

Switched converters shall contain built-in disconnect switch and time delay fuses located in a side-mounted enclosure on the converter. Switched converters shall be equipped with input and output terminal blocks to accommodate the recommended input and output feeders. The switch shall provide on-off converter control and shall isolate all three output lines in off position .

Automatic converters for unattended load operation shall be equipped with magnetic controls to start converter on demand from a load controller. Controls shall be located in a side-mounted compartment and shall at a minimum include primary fuses, contactor, timing relay and terminal blocks sized for input and output feeders. Converter control scheme shall enable it to start from at least two separate external pilot devices. The controller shall lock out the load until the converter has reached full operating speed. Manufacturer shall submit a control diagram to show how this will be accomplished.



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IV. ELECTRICAL RATINGS

The converter shall be rated to operate on 208, 230 or 460 volts at 60 hertz or, 220 or 380/415 volts at 50 hertz. **Non-automatic** converters to 50 HP shall be field changeable to operate at 230 or 460 volts. It shall be capable of supplying a balanced three-phase output voltage and current into a total induction motor load equal to three times the nameplate rating of the largest motor to be started. All converters shall be capable of starting on half voltage without damage to windings or other components and shall be capable of operating continuously under no-load without overheating.

V. SOUND LEVELS

The maximum overall noise level output from the phase converter shall not exceed ** DBA as measured at a distance of one meter from the converter surface according to procedures defined by Industry Standard IEEE-85 Test Procedure for Airborne Sound Measurements on Rotating Electric Machinery.

** Refer to factory for maximum sound level specification for the converter model specified

VI. TESTING

The converter shall carry an approval listing from a recognized national or international independent testing agency such as Canadian Standards Association (CSA) or Underwriters Laboratories (UL). Each converter supplied under this specification shall have been tested to CSA Std. C22.2 and UL Std. 508. at the manufacturer's site to verify compliance with this specification. Additional production tests shall include:

- Measurement of output voltage at no-load
- Measurement of output voltage at full load
- Measurement of no-load input current
- One minute high potential test at 2.5 KV
- Half voltage acceleration time test
- Noise level test

Purchaser shall have the right to witness all tests prior to shipping provided manufacturer is given sufficient advance notice.

Prior to shipment:

Manufacturer shall submit copy of test agency approvals showing model numbers of the units being supplied.

At time of shipment:

Manufacturer shall submit certified production test reports on each converter shipped.

VII. FIELD SERVICE

If requested, Manufacturer shall provide at buyer's expense, a field service engineer to assist in start-up or resolution of operating problems. Manufacturer shall also provide a contact number for technical support outside of regular business hours.

VIII. ACCEPTABLE CONVERTER

Converter shall be **Phasemaster** type as manufactured by Kay Industries, Inc. of South Bend, IN, USA.

VIII. TECHNICAL DATA REQUIRED

Bidder to submit with proposal:

1. Converter model number
2. Nameplate starting HP rating, maximum total running HP
3. Rotary converter frame size and RPM
4. Weight and dimensions
5. Starting current and no-load idle current
6. Recommended single and three-phase feeder sizes
7. Control voltage (Automatic converters)
8. Fuse rating (Automatic and switched converters)
9. *Guaranteed* maximum output amps on manufactured leg at 230 Volts
10. Photograph of converter proposed
11. Connection diagrams
12. Phone number of technical support contact during non-business hours