



THREE-PHASE POWER RESOURCE GUIDE

AMERICAN ROTARY ADVANTAGE

American Rotary has been making premium rotary phase converters for more than a decade. For more than 10 years, American Rotary has led the industry in innovation and design. We have introduced, field-tested, and proven several technologically advanced features which have driven increases in the reliability and precision voltage balancing capabilities of phase conversion, unmatched in the industry.

We provide the industry leading telephone support for technical, application and sizing issues. We stand behind our products with the best warranty in the industry. We use premium components to ensure that our products perform for you. American Rotary is a UL Certified Control Panel Builder, and our rotary phase converters are available UL Listed to US and Canadian Safety Standards. We have partnered with Baldor Electric, one of the world's largest and most respected manufacturers, to supply our custom-engineered idler/generators. The engineers at American Rotary worked with the engineers at Baldor for over a year designing a custom induction generator for phase conversion, which reduced the inrush current on start-up so drastically that American Rotary's induction generator was granted a Soft Start rating, and a resulting reduction in operating cost!

American Rotary is listed with D&B as well as the Better Business Bureau, and we are committed to high ethical and privacy standards.

WHAT IS A PHASE CONVERTER?

A phase converter is simply a machine that converts single-phase electricity into three-phase. Three-phase power is often needed to operate machines and other industrial equipment, making a phase converter a great tool to have where three-phase power is not readily available or too expensive to install.

The two most popular converter styles are:

1 ROTARY PHASE CONVERTERS

These are much more sophisticated units that create true three-phase power, often more precise than utility-supplied three-phase power.

American Rotary manufactures two types of Rotary Phase Converters:

Pro Series: Our AR General Purpose Series provides utility-grade power with voltage on all three lines being +/- 10% of one another. Typically designed for light/medium duty general purpose loads.

Digital Smart Series: Models AD, ADX, AUL, AMP and AI all carry most benefits from our Digital Smart Series. These units have more precise electronics that keep the voltage tolerance between +/- 5% or less. This is appropriate for more sensitive loads including CNC machinery.

2 STATIC PHASE CONVERTERS

These straightforward units will start a 3 phase load but run it only under single phase power. The load is limited to about 2/3 of its rated capacity.

NOTE

Check out more frequently asked questions by following the link below!

www.americanrotary.com/faqs

WHO ARE PHASE CONVERTERS FOR?

Now that you know what a phase converter is, you can probably imagine all the possibilities where three-phase power is used and even more, needed with the use of a phase converter.

The primary industries of application for who might need three-phase power are as follows:



AGRICULTURE

Often, farms are located in areas which do not have access to the 3-phase power grid. Paying the power company to bring 3-phase power onsite is expensive, and often cost-prohibitive. American Rotary phase converters provide reliable and cost-effective phase conversion for any agricultural setting.



FOOD SERVICE

All of American Rotary phase converters have been designed to provide the precision output voltage needed for voltage sensitive applications such as pizza ovens, regular ovens, rotisseries and ice cream machines. This type of quality performance is ideal for Hobart mixers, wine presses, coffee grinders and other types of food processing machines.



INDUSTRIAL/OTHER

General Industrial Machinery accounts for so many different applications; there are too many to list! American Rotary phase converters convert single phase power to 3-phase power so any shop environment can take advantage of the tremendous advantages of 3-phase equipment, without being burdened by demand charges and expensive installation by the power company. American Rotary phase converters are quiet, easy to install, reliable, and robust enough to handle even the most demanding applications.



WOODWORKING

While a single phase converter can be used to operate a single piece of machinery, woodworkers often need to start and run multiple 3-phase machines (sometimes simultaneously), which also have varying load conditions. The balanced output of American Rotary phase converters allows for the safe operation of very small, lightly loaded 3-phase machinery on the same rotary 3-phase converter as larger, hard-starting equipment.



MACHINING/CNC APPLICATIONS

CNC phase converters are phase converters that meet the requirements of 3-phase CNC applications by maintaining at least a +/-5% voltage balance. The voltage balance obtained with CNC phase converters are optimal for any application. The more balanced the output of the rotary phase converters are, the better a piece of equipment will operate and the longer it will last. By balancing the output voltages, rotary CNC phase converters can be used on any type of equipment especially voltage sensitive equipment such as CNC machining centers, milling machines, lathes, PLC's, EDM's, and any other type of equipment that relies on balanced input power.



METALWORKING

Phase converters are perfectly suited for precision metalworking equipment such as wire EDM's, CNC lathes, CNC mills, and other voltage-sensitive applications. General Metal Fabrication equipment such as grinders, welders, shears, brakes, and benders, are often run on American Rotary phase converters. When converting from single phase to three-phase power, American Rotary phase converters produce balanced 3-phase output to accommodate both very small, lightly loaded machines and very large or heavily loaded machines...all with just one phase converter.

TYPES OF CONVERTERS

American Rotary offers 7 different types of Rotary Phase Converters.

AR GENERAL PURPOSE



The AR Rotary Phase Converter provides utility-grade power and is designed for light/medium duty general purpose loads.

Best for: Light to medium duty, general-purpose loads such as; mills, single speed lathes and drill presses.

AD DIGITAL SMART SERIES



The AD Rotary Phase Converter is specifically suited for CNC, VFD, rectified and any other voltage sensitive equipment.

Best for: Any load, especially resistive, rectified and computer loads such as CNC, VFD, EDM, and battery chargers.

ADX EXTREME DUTY SMART SERIES



The ADX Smart Series Rotary Phase Converter is designed for high inertia/friction loads. The ADX rotary phase converters have current control to provide consistent torque while starting high inertia, extremely hard starting loads, yet are precise enough for CNC applications.

Best for: High Inertia/friction loads such as pumps, fans, compressors, blowers, dust collectors and flywheels.

AUL UL LISTED SERIES



UL licensed units may be required by your state or local inspector. If you require a UL licensed unit our AUL model is the right model for you delivering all the power and features of our ADX and AI units.

NOTE

Shown in optional floor mount style.

AI INDUSTRIAL GRADE ROTARY PHASE CONVERTER



The AI Industrial was designed specifically for the demands of industrial and agricultural applications. Our AI Industrial digital phase converter is designed with a Type 3R enclosure for ultimate protection.

AI Industrial can save you thousands of dollars a year over utility and diesel generated power sources.

Lead times may exist. Call us for further details.

AMP MOBILE



The AMP Mobile rotary phase converter is plug-and-play ready for a quick and cost-effective installation. Equipped to run 208-250V equipment in three tiers:

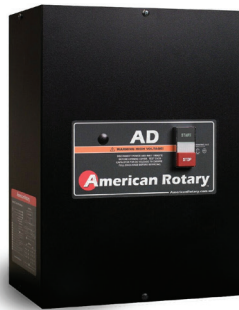
Tier 1: 1 Breaker and 1 Receptacle

Tier 2: 2 Breakers and 2 Receptacles

Tier 3: 3 Breakers and 3 Receptacles

These built-in features allow this unit to be little to no installation costs! In addition, this unit comes built with our top of the line Smart Series features to run any and all load types making this unit fully versatile for your needs!

PHASE CONVERTER PANEL



This DIY Rotary Phase Converter Panel is manufactured in the USA by American Rotary and can be paired with your stock motor. (Motor not included, this is the converter panel only).

A detailed installation manual and quick start guide are included.

REQUIRED: Delta wound connection, 3-phase stock motor, 60 Hz, recommended 1700-1750 RPM

PRODUCT LINE COMPARISON

American Rotary engineered the entire phase converter system to provide optimum performance. We are the only manufacturer that has developed a real induction generator, along with two separate optimized start and run circuits. For ease of installation, we build the starter into the converter.

BEST FOR	AR	AD	ADX	AMP	AI	AUL
Designed and Manufactured in USA	●	●	●	●	●	●
Powerful VIT Idler	●	●	●	●	●	●
Soft Start	●	●	●	●	●	●
Magnetic Starter W/ Controls	●	●	●	●	●	●
Expandable	N/A	●	●	N/A	●	●
Wall or Floor Mount Option	●	●	●	N/A	N/A	●
Automation Control Integration	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
480 Input Voltage Option	N/A	OPTIONAL	OPTIONAL	N/A	OPTIONAL	OPTIONAL
UL / CSA	N/A	N/A	N/A	N/A	OPTIONAL	●
Integrated Digital MicroSmart Controller	N/A	●	●	●	●	●
Nema 3R	N/A	OPTIONAL	OPTIONAL	N/A	●	OPTIONAL
Digital Voltage Monitoring	N/A	●	●	●	●	●
Smart Current Control (CTR)	N/A	N/A	●	OPTIONAL	●	●

N/A = Not Available

American Rotary has designed each one of its Rotary Phase Converters to serve the specific needs of its customers. Each Rotary Phase Converter is manufactured with the highest quality components available and supported by the industry's best warranty!

SIZING A PHASE CONVERTER

So how do you size a Phase Converter you might ask?

Sizing a Phase Converter doesn't have to be stressful or confusing. American Rotary offers a quick way to find the unit that is right for you by using our Phase Converter Wizard!

<https://www.americanrotary.com/sizingchart/>

BUYING...5 THINGS TO KNOW

These are our top 5 things you should know before buying a phase converter:

1. Verify you have enough single phase power available for your set up.
2. Understand your load - are you going to run a light, medium, or heavy duty load?
3. What is the size of your load? - Power specifications are needed when sizing for the proper converter.
4. Indoor or Outdoor? - American Rotary offers both Type 1 and Type 3R enclosures, but which one is right for you?
5. Who are you buying your phase converter from? - Make sure you are buying from a reputable company. American Rotary stands behind their products while leading the industry in technological advancements and customer support!

You can also reach one of our sales engineers via email at sales@americanrotary.com or by calling our office at 1-888-743-6832.

WIRE AND BREAKER SIZE RECOMMENDATIONS

For all voltages: Conductors recommended are based off minimum single-phase breaker which is sized based on largest starting load. For combined HP's greater than 50% of maximum total HP listed in the table below, consult NEC and local codes for conductor sizing. The below charts do not replace or supersede any requirements by local, state, or national electric codes.

						MINIMUM RECOMMENDED WIRE SIZE
MODEL	KVA	LARGEST LOAD FOR OPTIMAL PERFORMANCE HP (AMPS)	MAX TOTAL LOAD RUNNING HP (AMPS)	MIN 1-PHASE BREAKER SIZE (AMPS)	1-PHASE INPUT	3-PHASE OUTPUT (IDLER + LOAD)
5	2.5	2.5 (7)	5 (14)	20	12	12
10	5	5 (14)	10 (26)	40	10	12
15	7.5	7.5 (21)	15 (42)	50	8	12
20	10	10 (28)	20 (56)	60	6	10
25	12.5	12.5 (35)	25 (70)	80	4	8
30	15	15 (42)	30 (84)	100	3	8
40	20	20 (56)	40 (112)	125	1	6
50	25	25 (70)	50 (140)	150	1/O	4
60	30	30 (84)	60 (168)	175	2/O	3
75	37.5	37.5 (105)	75 (210)	200	4/O	2

CASE STUDY SUMMARIES

FOOD INDUSTRY



THE KNOTTED CONE

"My American Rotary converter powers my machinery that I have directly from Italy. They run on three phase power and my electrician recommended their converters to help reduce the amount it needed."

— Kathy Turek

Kathy Turek is the founder of The Knotted Cone Gelato Company in Appleton, WI. Inspired by a trip to Europe, she found a passion to bring gelato to the dairy state. While The Knotted Cone is sold out of a food truck, the gelato is made in Kathy's lab with industrial food service equipment, requiring three-phase power. Kathy's lab is located where three-phase power is not available. She needed a solution and American Rotary was able to help. After looking into what machinery would be needed, she spoke with American Rotary's team and came to the solution that the ADX40 would be the best fit. In 2016, Kathy officially opened her truck for business and has been bringing gelato to the Fox City area since!

WOODWORKING



MOUNTAIN HEART WOODWORKS - A MOUNTAIN OF POSSIBILITIES

"Never have had any issues and never bogs down. These converters do their job very well for us. We've been really pleased with how this has turned out!"

— Garrett Pickrel

Mountain Heart Woodworks is a family owned and operated lumber yard and wood design shop. Originally operated off of gas motors, they soon realized they needed to find a more efficient way to keep up with demand. About four hours away from true three phase power, bringing in three phase to their remote location wasn't feasible. After calling American Rotary, they determined that the best solution would be the heavy duty industrial-grade AI-150 converter. Since the AI-150 installation, the crew was able to move all operations indoors, increasing production and efficiency and have been running their entire business off of 2 American Rotary AI Industrial phase converters.

INDUSTRIAL/OTHER



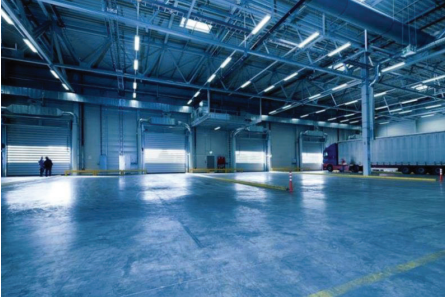
OLIVETTI BICYCLE COMPANY - CYCLING TO THREE PHASE

"The machines that I run are old manual machines, the two mills are from about 1952 and they need three phase power. Being a residential garage shop, all I have is single phase. I needed a way to get these machines to power up. The American Rotary Phase Converters have been a great solution to this problem of not being able to get the power that I need directly through the line."

— Peter Olivetti

Peter Olivetti is the owner and founder of Olivetti Bicycle Company in Boulder, CO. Peter found in the early stages of starting his business that he would need three-phase power to run a few pieces of his necessary shop equipment. He found it is quite cost-prohibitive to bring in three phase power to his shop. Peter learned through an American Rotary phase converter, he is able to take his incoming single phase power and produce clean, three phase power for his equipment. Since the installation of his American Rotary Phase Converter, Peter has been able to successfully run his two mills without issue - allowing him to grow his business and satisfy the needs of each of his customers.

REAL ESTATE



MAXIMIZING REAL ESTATE OPPORTUNITIES THROUGH THREE PHASE POWER

Amy is a real estate agent in Buffalo, NY who specializes in renting out commercial properties. A majority of her clients require three phase power to perform their daily operations and Amy needed a solution to get three phase readily available. The American Rotary team reviewed the single phase power available at each location and verified her clients' needs. They came to the solution that the industrial AI-150 unit would be a great fit. Since installing phase converters, Amy has continued to lease out properties that fit her client's three phase spaces for their needs. A business park that has sat vacant for over a year now is home to a cabinet shop and meat processing facility!

MACHINERY



YATES PRECISION MANUFACTURING

"YPM currently has 4 CNC Machines: a Mori Seiki MV-40M 5-axis mill, a Mazak QT-10 2-axis lathe, a Haas VF-2SS 4-axis mill, and a Tsugami M08SY twin spindle y-axis lathe. We run all of our machines of of an American Rotary ADX60. With our shop being in a rural area, three-phase power isn't readily available. Without American Rotary and their fantastic phase converters, none of this would have been possible."

— Jacob Yates

Yates Precision Manufacturing is owned and operated by Jake and Ashley Yates in Southwestern PA. Jake found that with an increase in his product demand, came a need for production equipment that would be able to keep up. He found that most of the equipment required strictly three phase power, which their shop did not have. He called up American Rotary and discussed the specifications on the CNC equipment that he needed to power. Together, they found that the ADX60 Digital Smart Series™ was the best fit for their needs. With the addition of the American Rotary Converter, Jake and Ashley have been successfully powering all of their three phase equipment and continues to grow and expand their business.

AGRICULTURE



FARM IRRIGATION

When Dusty and his father Richard chose to lease out their 30 acres of farmland in Indiana, they wanted to get the greatest return possible. To do so, they'd need irrigation pumps & pivot towers that require three-phase power - an amenity that many farms like Dusty and Richard's lack. Paying a hefty sum to have three-phase power installed wasn't their top choice. They turned to the American Rotary team, who helped them zero in on the right product for their farm: the 150hp American Rotary AI Industrial PAD. By investing in a phase converter from American Rotary, Dusty and Richard were able to increase the revenue from their land by over 60% and the farmers were able to increase their production, making them more profitable, too!