

KLR™ Series Three Phase Reactors

PRODUCT SPECIFICATIONS

- Lifetime Warranty
 - Performance Guarantee
 - K-Rated, UL/ULC-Recognized; CSA-Certified
 - 3 Phase, 600V Class
 - Gapped Iron Core Inductor
 - All Copper Windings
 - 40° C Ambient Temp.
- Available with Terminal Options and in NEMA 1
 - High quality Bobbin Construction, units 80A and below
 - Distributed Gap™ Technology, units 110A and above
 - Can tolerate 200% rated I, for at least 3 minutes
 - Universal Footprint



Applications

TCI KLR™ series three phase AC reactors are intended for use as input filters for adjustable speed DC drives and as input or output filters for AC-PWM variable frequency drives. Drive performance is significantly improved, the drives input rectifier is protected from failure or damage, and drive harmonic demands are tamed with the addition of a K-rated reactor. KLR reactors act as interface buffers between solid state power circuits and the line or the motor. (Not unlike the surge protector for your desk-top PC). All drives, in any application, will benefit when applied with KLR series reactors.

Before KLR

Drives are susceptible to problems caused at their interface to the line or motor. Some of these issues include AC voltage waveform line notching or cross-talk, DC bus overvoltage trips, inverter overcurrent and overvoltage, and poor total power factor. Since all drives demand nonlinear current and voltage, drives demand currents rich in harmonics.

After KLR

KLR reactors provide additional circuit inductance which slows rapid changes in current that are the heart of the problems listed above.

1.) Voltage line notching, or commutation notching, is caused by SCR phase-controlled rectifiers. KLR reactors provide a voltage-dividing impedance which reduces the depth and rounds the edges of the notches, thereby eliminating drive cross-talk, interference, and equipment damage.

2.) Transient voltages (See Figure 1) on the AC power lines can cause inrush currents to an AC-PWM drive, resulting in an overvoltage condition of the DC bus.

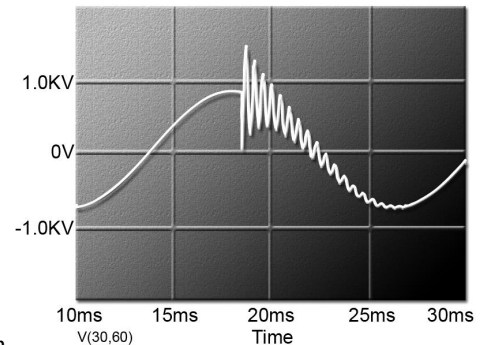


Figure 1



These transient voltage conditions are often caused by utility capacitor switching and will cause VFDs to shut down without warning. The addition of a KLR reactor will limit the magnitude of inrush current, preventing trips and component failures. (See Figure 2.)

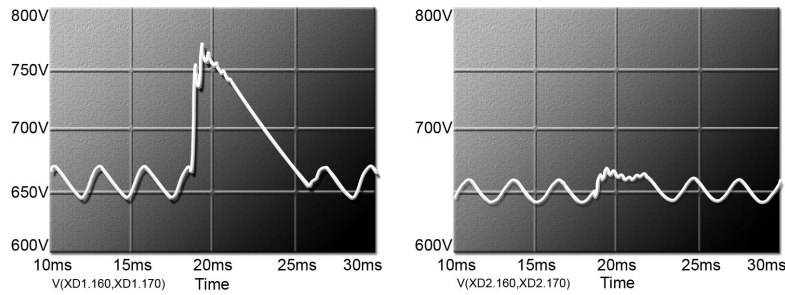


Figure 2

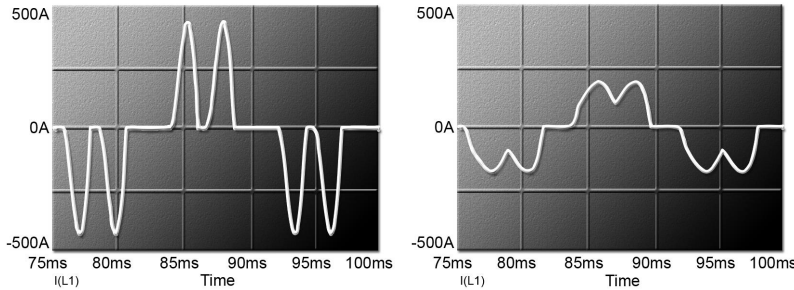
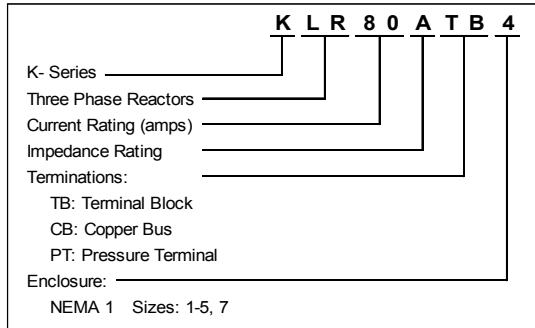


Figure 3



3.) When used as output filters, KLR reactors prevent inverter instantaneous overcurrent trips because they provide needed inductance when the load on an inverter has an abnormally high capacitance. For example, if a single inverter is powering multiple motors, the load may look capacitive, causing inverter shutdown.

4.) The addition of a KLR reactor limits inrush current to the rectifier, rounding the waveform, reducing peak currents, and lowering harmonic current distortion. High peak currents may cause “flat-topping” of the voltage waveform. Reducing those peak currents also reduces total harmonic voltage distortion. (See Figure 3.)

5.) The addition of a KLR reactor reduces total RMS current without affecting the work being done. Therefore, total power factor is improved.

Application Instructions

Line reactors are current-rated devices. Therefore, in order to apply one, you simply need to know the full load AMPs of the drive with which it will be used and the amount of impedance that is necessary in the application. (See NEC Table 430.250 for HP Full Load Currents.)

Recommended impedance levels:

- 2.4 to 3% eliminates bus overvoltage tripping.
- 5 to 6% protects against physical damage to most drive components and offers harmonic reduction without added capacitance.
- 1.5% is the recommended input minimum to protect the drive and is the recommended maximum impedance when the filter is used as an output device.

Distributed Gap™ Technology

As reactors and their required air-gaps get bigger, flux fringing and eddy currents can cause heating and insulation breakdown. TCI has addressed this issue in larger KLR reactors by utilizing Distributed Gap™ technology - a construction technique that subdivides a large gap into two or more smaller gaps. A KLR reactor built with this technique will run cooler and last longer than the competition's cheaper single gap products.

Universal Footprint/Termination Options

KLR reactors are available with a universal mounting design. This makes installation much easier for large distributors, systems integrators, and drive manufacturers who have pre-drilled back panels or customers with pre-drilled back panels. Termination options make handling and connection easier.

Drawings/Specifications

AutoCad compatible *.dxf drawings and Sample Bidding Specifications of all KLR units are available at www.transcoil.com or by calling (800) 824-8282.

Manufacturer's Warranty

KLR reactors are warranted against manufacturer's defect for the life of the drive they are installed with.

Performance Guarantee

Properly sized for the application, a KLR reactor is guaranteed to end an AC Drive overvoltage tripping problem. If you install a KLR reactor and a tripping problem remains, TCI will take back the reactor and pay shipping both ways. (Offer valid for 60 days from date of purchase.)

The information contained in this brochure is subject to update without notice.