FAQ - Can I use the 690 volt KDR and KLR reactors on the output of my drive?

690 volt reactors are available to be placed on the output of a drive.

FAQ - Can reactors be considered "IGBT-protected" by passing a 4000V hipot test?

"IGBT protected" is a fabrication. A reactor applied at the output terminals of an IGBT based drive will see a maximum of 680V for a 480V system. A hipot test is a method of testing insulation integrity, and is a destructive test. In the real world, the only time that a reactor might see excessive voltages is when it is applied at the end of a long set of motor leads, which is an ill-advised and improper installation. This technique is used as a last ditch effort, in an attempt to batter the reactor with high overshoot voltages, instead of the motor. It will eventually lead to insulation destruction in the reactor, regardless of the reactor's ability to pass a one or two-time 4000V hipot test back at the factory. In addition, this sacrificial lamb technique does nothing to protect the insulation of the motor lead wires, another susceptible system component. The appropriate solution to dv/dt longlead motor failures is the V1k output filter.

FAQ - What is the impedance of the KDR reactors?

KDR Low Z reactors are 3% and High Z reactors are 5%. The output reactors are 1.5% Z.

FAQ - How do I size a three-phase reactor for a single-phase application?

Single-phase applications of the three-phase reactors are acceptable, however, it is important to size the unit based on the single phase Full Load Amperage of the VFD. The input and output connections should be on terminals A and C to ensure proper performance.

FAQ - Is a DC bus choke the same thing as a line reactor?

No, they're very different. The addition of DC bus chokes of significant inductance in 6 pulse AC drives will result in lower harmonic line currents as compared to drives without those chokes. However, the DC bus choke does not guarantee against the possibility of inverter shut down on DC bus over-voltage trips because in normal operation the magnetic structure is near saturation. (The inrush current that is delivered to the bus capacitor when a 2000V AC line voltage transient occurs easily saturates the DC choke, resulting in no circuit inductance.) The drive still trips, bus choke or no bus choke. Drives have a bus over-voltage trip mechanism to prevent against high bus voltages seen when the motor tries to regenerate, and to protect the diode bridge from high line-side voltages. Since the bus choke is not positioned in front of the diode bridge, it is unable to protect the drive from the former. A line reactor drops the high frequency transients that cause short DC bus over-voltage conditions, allowing the drive to continue operation through the transient period.

FAQ - What lead lengths should I apply an output line reactor?

Line reactors should be placed on the output of the variable frequency drive at lead lengths of up to 100 feet (30m). dv/dt output filters should be applied at the output of the drive at lead lengths more than 100 feet, up to 3,000 feet (1000m).

690V Reactors

FAQ - How do the KDR/KLR reactors have a 600v rated insulation, but be labeled a 690 volt reactor?

We are allowed to label reactors at 690 volts maximum based on additional insulation added and testing performed at the time of UL approved/witnessed heat runs.

FAQ - Do 690 volt KDR and KLR reactors have the same terminations as other reactors?

Units rated 14 amps and lower have Quick Disconnect (QD) terminations. Units rated between 14 amps and 80 amps have Ring Lugs (RL) terminations. Units rated above 80 amps have Copper Bus (CB) terminations.

FAQ - What is the peak voltage for the 690 volt KDR and KLR reactors?

690 volt reactors have a peak voltage of about 976 volts.

FAQ - Have the impedances changed for 690V KDR/KLR reactors? What will my impedance be at 690 volts?

The units will have the same design as the 600 volt reactors, thus impedance is proportionately lower. Impedance is down to 4.3% (from 5%) or 2.6% (from 3%). 600/690 = 86.9% multiplied by 5% results in 4.3% (or multiplied by 3% results in 2.6%). Current ratings are standard 600 volt ratings.

DIN RAIL MOUNTED Reactors

FAQ - What are the benefits of KDR or KLR DIN Rail Reactors?

DIN Rail Drive Reactors reduce installation time. They have all of the capabilities of the smaller KDR and KLR Line Reactors. The convenient DIN Rail mounting assembly reduces installation time by over 75%. Simple 3 lines in, 3 lines out means clean cable layouts and improved cabinet organization.

FAQ - Would I be able to purchase a KDR and KLR DIN Rail mounting assembly without the reactor?

DIN Rail Drive Reactors are already assembled with the appropriate DIN Rail mount due to the weight limitations of DIN Rails. However, the mounting assembly is available upon request.

FAQ - What size KDR or KLR DIN Rail Drive Reactors are available?

DIN Rails can support a limited amount of weight. DIN Rail Drive Reactors weigh 8 pounds or less and are equipped with a DIN Rail mounting assembly.

FAQ - What type of DIN Rail can KDR and KLR DIN Rail Reactors mount to?

DIN Rail Drive Reactors mount to either “Standard Steel High Profile” or “Heavy Duty Steel” DIN Rails.

KDR and KLR Enclosures

FAQ - What is the intended use of NEMA 1 enclosures for KDR or KLR?

NEMA 1 enclosures are best used when your application is indoors and you need protection against dust. The vent slot size provides cooling for the unit. KDR and KLR Reactors fit mechanically in the smaller NEMA 1 enclosures.

FAQ - What is the intended use of UL Type 1 enclosures for KDR or KLR?

When your application is indoors and requires a larger space for wire bending, UL Type 1 enclosures are the optimal choice. UL Type 1 enclosures provide protection against a limited amount of falling dirt

as well as a vent slot size that provides cooling for the unit. This larger enclosure provides the necessary space for heat dissipation.

FAQ - What is the intended use of UL Type 3R enclosures for KDR or KLR?

Outdoor applications require an enclosure that provides a degree of protection against falling rain and the formation of ice on the enclosure. UL Type 3R enclosures are intended for outdoor use. This larger enclosure provides space for wire bending and adequate space for heat dissipation.

FAQ - What type of enclosure do I need for my KDR or KLR Reactor?

The enclosure you select for your reactor will depend on two things: the degree of protection the reactor must have against indoor and outdoor environments as well as the certification requirements of the installation. TCI offers NEMA 1 enclosures, UL Type 1 enclosures and UL Type 3R enclosures.

FAQ - What's the difference between NEMA and UL enclosures for KDR or KLR?

The National Electrical Manufacturers Association (NEMA) develops standards for the electrical manufacturing industry. Underwriters Laboratories Inc. (UL) is an independent, non-profit, product-safety testing and certification organization. Their ratings are based on similar application descriptions and expected performance. Installations require varying levels of standards and ratings to which TCI offers a range of products that meets those requirements.

FAQ - Why does there seem like there is a lot of empty space in my KDR or KLR enclosure?

Larger enclosures provide space for additional heat dissipation as well as room for the agency required wire bending space.