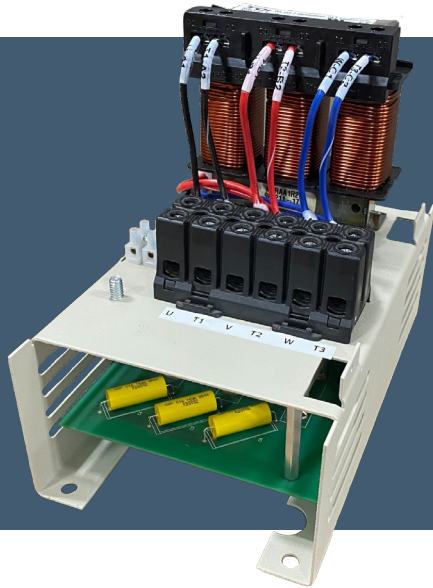




# dV/dt OUTPUT FILTER



Peak voltages on a 480 V system can reach 1,600 V, and on a 600 V system can reach 2,100 V. These high peak voltages will cause a rapid breakdown of motor insulation, leading to motor failure. The V1K dV/dt filter is an output device that prevents voltage spikes from variable frequency drives (VFD) from exceeding 1,000 V. The V1K minimizes these voltage wave amplitudes and slows the rate of voltage increases.

## Reflective Wave Phenomenon

Voltage wave reflection is a function of the voltage rise time (dV/dt) and the length of the motor cables. If the impedance on either end of the cable run does not match, the voltage pulses will be reflected back in the direction from which it arrived. As these reflected waves encounter other waves, their values add, causing higher peak voltage. As wire length or carrier frequency increases, the overshoot peak voltage also increases. V1K dV/dt filter reduces these peak voltages to prevent damage to motors and cables.

## Features of V1K Filter

- Limits voltage spikes to below 1,000 V for applications with lead lengths up to 1,000 ft on 480 V systems.
- Reduces motor heating, noise and vibration.
- Prevents motor failure with protection against motor insulation breakdown.
- Reduces Common Mode by a minimum of 30%.
- Improves system productivity by increasing motor bearing life
- 208 - 600 VAC system compatibility
- 2 - 750 Amps range
- Heavy Duty model available for higher carrier frequency (6 kHz)
- Optional Thermal switch

## Typical VFD/Motor Applications

- Submersible pumps
- Wastewater pumping stations
- HVAC cooling systems
- Process automation facilities
- Agriculture irrigation systems

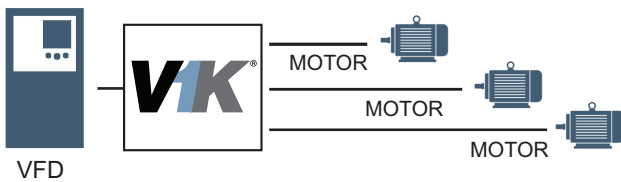


## Technical Specifications

|                                      |  |
|--------------------------------------|--|
| Current Range                        | 2 - 750 Amps; 208 - 600 VAC  |
| Carrier Frequency                    | 2 - 4 kHz (consult TCI for applications over 8 kHz if the cable lengths exceed 400 feet) |
| Insulation Rating                    | 600 V Class  |
| Insulation Class                     | Class H (180° C) or better   |
| Efficiency                           | ≥ 98%  |
| Lead Length                          | Up to 1,000 ft (consult factory for applications above 1,000 feet)                       |
| Fundamental Frequency                | 0 - 60Hz (derating required for applications up to 120Hz)                                |
| Over-Load Rating                     | 200% rated current for 2 minutes per hour<br>150% rated current for 5 minutes per hour   |
| <b>Environmental Conditions</b>      |  |
| Ambient Temperature                  | Enclosed: 40° C (104° F)   |
| Operating Altitude                   | 2,000 m (6,600 ft)<br>Derating necessary above 2,000 m                                   |
| <b>Reference Technical Standards</b> |  |
| Agency Approvals                     | cULus Listed   |
| Enclosure Options                    | Open, UL Type 1, UL Type 3R  |
| Warranty                             | One year of useful service, not to exceed 18 months from date of shipment.               |

**NOTE:** The V1K is classified as an UL508 Auxiliary Device, not an industrial control panel. Under UL and NFPA/NEC guidelines, an SCCR rating or marking is not required.

## Multiple Motor Application



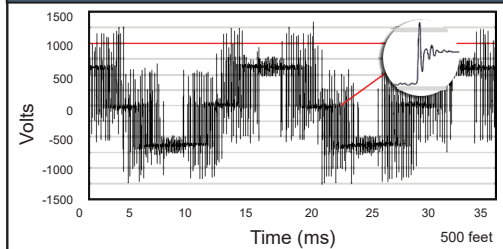
Please see web site for configuration guidelines.

## Part Numbering

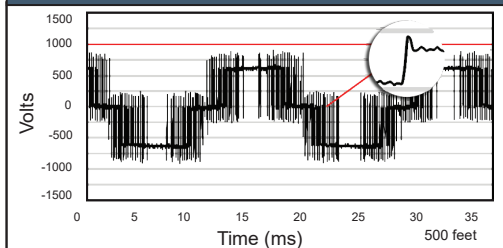
**V1K 80 A01 EX T**

Series: \_\_\_\_\_  
 Current Rating (amps): \_\_\_\_\_  
 Enclosure:  
 A00 - Open  
 A01 - UL Type 1  
 A03 - UL Type 3R  
 Option: \_\_\_\_\_  
 (Blank) - No Option  
 EX - Heavy Duty Model  
 Option: \_\_\_\_\_  
 (Blank) - No Option  
 T - Thermal Switch

## Voltage Without V1K



## Voltage With V1K



**Performance Guarantee** - Properly sized and applied, TCI guarantees that the V1K will limit motor terminal peak input voltage to 150% of the bus voltage with a wire lead length of 1,000 feet and a carrier frequency of 4 kHz. Maximum lead length and carrier frequency can vary depending on wire lead type. If a properly selected, installed and loaded V1K filter fails to meet the guaranteed performance levels, TCI will provide the necessary components or replacement filter at no additional charge. TCI does not take responsibility for additional installation or removal costs to include, but not limited to, replacement of third party equipment. Please see TCI's website for minimum requirements.