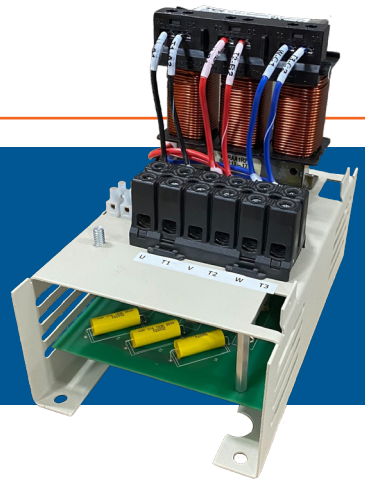
Allient Power
TCI | An Allient Company



dV/dt Output Filter Offerings

V1K Product Family

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.

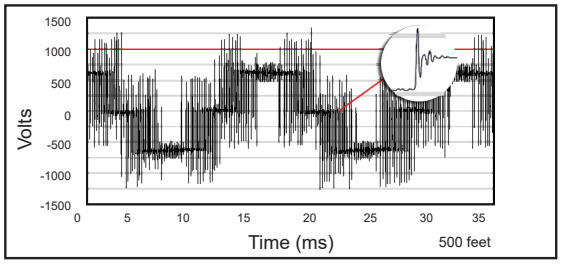
REFLECTIVE WAVE PHENOMENON:

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.

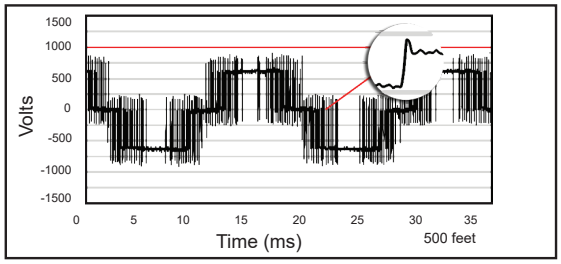
FEATURES:

- 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.

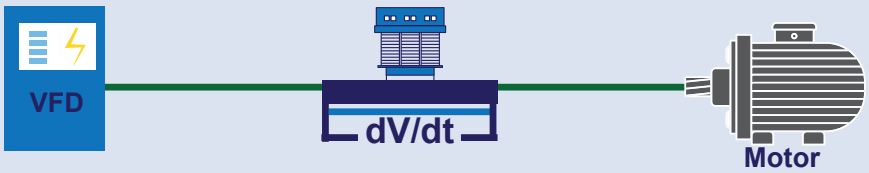
VOLTAGE WITHOUT V1K:



VOLTAGE WITH V1K:



OUTPUT PROTECTION OPTIONS:



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MADE IN THE UNITED STATES OF AMERICA

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Technical Specifications

Current Rating	2 - 750 Amps; 208 - 600 VAC
Carrier Frequency	2 - 4 kHz (consult factory for applications over 8 kHz if the cable lengths exceed 400 ft)
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 ft)
Fundamental Frequency	0 - 60 Hz (derating required for applications up to 120 Hz)
Over-Load Rating	200% rated current for 2 minutes per hour 150% rated current for 5 minutes per hour
Environmental Conditions	
Ambient Temperature	Enclosed: 40°C (104°F) without derating
Operating Altitude	2,000 m (6,600 ft) without derating
Reference Technical Standards	
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 UL 508 Auxiliary Device, not an industrial control panel. Under UL and NFPA/NEC guidelines, an SCCR rating or marking is not reuired.	

APPLICABLE ACROSS INDUSTRIES:

- Submersible pumps
- Wastewater
- HVAC cooling systems
- Process automation facilities
- Irrigation systems

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