Fuji Electric
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Technical Bulletin

FECA-TE-142A

Surge Protection Information for AC Drives

Inverter type	Frenic Series of AC Drives
Software version	All
Required options	None
Related documentation	Instruction and Users Manuals
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Date	07/23/15
Revision	A

Introduction

Surge voltages are damaging to electrical components when not properly accounted for. The most common source of a surge is by a lightning strike or induced voltage from lightning. Surges can also come from common connection points on a transformer to other businesses. Other sources can come from capacitor banks, switching activity, resonant circuits, thyristors, and system faults (Short circuit, arching, and grounding). This Technical Bulletin will help identify the electrical characteristics that Fuji VFDs have been tested to.

Specifications

Fuji drives have been tested to two IEC standards. These are IEC61000-4-5 and IEC61800-3.
This protection level is confirmed following Surge test performed 5 times each.
Common mode:
IEC 61800-3 Surge +/-2KV
IEC 61000-4-5 1.2 µs/50 µs voltage waveform to L1/R-G, L2/S-G, L3/T-G
Normal mode:
IEC 61800-3 Surge +/-1KV
IEC 61000-4-5 1.2 µs/50 µs voltage waveform to L1/R-L2/S-L2/S-L3/T, L3/T-L1/R

Resources

However, if there will be excessive surge to the drive, please use external Surge Protection Devices or SPD.
You can find and buy various devices on these sites.
http://www.digikey.com
http://www.automationdirect.com
http://www.grainger.com/

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Additional Information

Note)

IEC61800-3: This part of IEC 61800 specifies electromagnetic compatibility (EMC) requirements for power drive systems (PDSs). A PDS is defined in 3.1. These are adjustable speed a.c. or d.c. motor drives. Requirements are stated for PDSs with converter input and/or output voltages (line-to line voltage), up to 35 kV a.c. r.m.s.

IEC 61000-4-5:2014 relates to the immunity requirements, test methods, and range of recommended test levels for equipment with regard to unidirectional surges caused by over-voltages from switching and lightning transients. Several test levels are defined which relate to different environment and installation conditions. These requirements are developed for and are applicable to electrical and electronic equipment. The object of this standard is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to surges. The test method documented describes a consistent method to assess the immunity of an equipment or system against a defined phenomenon.