



ALLEN-BRADLEY BULLETIN 1336 UNGROUNDING DISTRIBUTION SYSTEMS

APPLICATION NOTE #1

January 2, 1997

DESCRIPTION

and

The 1336 family of AC drives are equipped with a MOV (metal oxide varistor) located between the input line terminals

the bridge rectifier section. This MOV provides voltage surge protection and is rated at 1600 volts peak withstand phase to phase. The 1336 design provides phase-to-phase and phase-to-ground protection which conforms with UL508 guidelines and also provides optimum drive protection against surges. UL508 is a recognized practice for the grounding of distribution systems, which states that all distribution systems must be grounded.

When the 1336 is applied in facilities with ungrounded distribution systems, (typically ungrounded delta configurations) the phase-to-ground connection on the MOV becomes a potential connection to ground for the system.

volts.

The phase to ground connection starts clamping at approximately 1450 volts (1 milliamp ground current). The maximum peak voltage where the MOV will clamp is 2200

On an ungrounded system, the drive could experience severe MOV failure, possible bridge rectifier failure and PC board failure due to high voltages. If necessary, install an isolation transformer with the neutral of the WYE secondary grounded. This ground will then serve as the distribution system ground.

over

If the MOV is not present on an ungrounded system, there is a risk of voltage surges arcing over to ground anywhere in the drive, if the surge exceeds the voltage clearance of parts on the drive. This is approximately 3000 volts. We maintain a 1/2" (12.7mm) clearance between ground for voltage carrying devices. The IEEE Std. 587-1980 voltage impulse test cannot be met without this MOV. IEEE Std. 587-1980 specifies a common mode voltage test without flash

impulse

from voltage surge transients that will reach 6000 volts.

With the MOV, we meet the IEEE Std. 587-1980 voltage

withstand rating of 6000 volts. This is a feature and specification many users benefit from when operating on grounded distribution systems.