Powerflex 753 & 755 stability voltage gain adjustments application note

Background:

When using a Powerflex 753 & 755 drive with our passive harmonic filter, drive default parameters will suffice.

When using a Powerflex 753 & 755 drive and our dV/dt filter, we recommend following the guidelines in the Allen-Bradley Application Guide “Parameter Settings for PowerFlex Drives Using Sine Wave Filters, dv/dt Filters, and Adjustable Voltage PowerFlex 750-Series, 700, and 700VC AC Drives”. Note, there is no capacitance in our dV/dt filter.

When using a Powerflex 753 & 755 drive and either one of our sine filters, we recommend following the guidelines in the Allen-Bradley Application Guide “Parameter Settings for PowerFlex Drives Using Sine Wave Filters, dv/dt Filters, and Adjustable Voltage PowerFlex 750-Series, 700, and 700VC AC Drives” and the MTE guidelines below.

Problem:

When using an LC device on the output of Powerflex 753 or 755 drive, the drives can fault on phase loss unless additional parameter changes are made to the drive.

Drive parameter adjustments:

First, set parameter 40, bit 11 Electrical Stability to 1.

Secondly, the Stability Volt Gain parameter (P51) must be tweaked.

The Stability Volt Gain parameter (P51) has an available set range from 0 to 10000000.

MTE completed testing to determine the impact to the system by varying parameter P51.

Stability Volt Gain (P51)	Result
0	Drive Trips on Phase Loss. Control Instability of DC Bus @70% Load.
500	Drive Trips on Phase Loss. Control Instability of DC Bus @82% Load.

750	Drive Trips on Phase Loss. Control Instability of DC Bus @92% Load.
1000	Drive runs as expected. No Issues.
1500	Drive runs as expected. No Issues.
2000	System made odd noises. Testing was stopped.
5322 (default)	Drive Trips immediately on startup. Drive faults on HW Overcurrent.

In our testing, we found the best results occurred when the Stability Volt Gain was set from 1000-1500.

Conclusion:

When the Stability Voltage Gain (SVG) is set too low the drive trips on Phase Loss. This can be corrected by slowly increasing the SVG until the drive no longer trips. For our system this occurred at 1000 however this value could be different for other systems.

If the SVG is set too high the drive trips immediately on HW overcurrent. To correct this the SVG must be reduced.

For each system there will be an optimal SVG value in which the system will be stable.

Additional Support?

Contact MTE Applications at appengrg@mtecorp.com or 262-946-2818