OU Trip Codes

This document pertains to all drive sizes for the Unidrive Classic and Unidrive SP

Trip Description:

The trip code OU (Over Voltage) occurs when the DC buss voltage exceeds the threshold levels as follows:

- Unidrive Classic
  - 400V Unidrive > 830 VDC
  - 200V Unidrive LV > 415 VDC
- Unidrive SP
  - 575V SP > 990VDC or > 960VDC for 30 seconds
  - 400V SP > 830VDC or > 810VDC for 30 seconds
  - 200V SP > 415VDC or > 405VDC for 30 seconds

Causes and Corrective Actions:

➔ There are several events that can cause a drive to OU trip. We must first determine when the drive is tripping. Is the drive tripping during deceleration, just after acceleration, constant motoring, or when the motor is idle?

➔ If the drive is tripping OU when the motor is at rest and not in RUN (in rdy or inh mode) it is probable transients on the supply line are causing the average buss voltage to rise.

- Commutation notches from nearby DC thyristor based drives can be notching the power line can cause OU trips.
- Monitor the supply power on an oscilloscope. Look for a good sinusoidal waveform free from voltage spikes, excessive noise, or line notching.
  - Check all three phases
  - Monitor the line during periods of increased activity and power consumption.
- If you do find transients on the supply application of a 3%-5% line reactors may help. These components add an extra margin of protection for AC and DC drives by reducing the devastating effects of power line transients resulting from PF correction capacitor switching, lightning storms and general power grid switching. You can find specifications on 3 phase line reactors beginning on page 281 of the link below:

http://www.emersonct.com/download_usa/literature/06catalogpdfs/06cat_y_power_accessories.pdf

➔ You could also install a braking resistor to dissipate the excess buss voltage although you will not be providing any protection for the front end of the drive. Specifications for braking resistors can be found at:

http://www.emersonct.com/download_usa/literature/06catalogpdfs/06cat_y_power_accessories.pdf

➔ If the OU trip occurs right after an acceleration or during deceleration of the motor, it is likely the motor/load inertia is great enough to cause the DC Buss to elevate to its' trip point. There are several things you can do to remedy a trip under these conditions.

- o Extend the deceleration rate at parameter #0.04.
  - This will allow the buss more time to recover absorb the energy
- o Enable S-Ramp at #2.06 and increase #2.07
  - S-Ramp will curve the top and bottom ends of the acceleration and deceleration ramps. This allows for a smooth transition of speed and lowers the total current needed to ramp the motor.
- o Install a braking resistor as per drive specifications. See the link above.
- o One could elect to reduce the Regen Current Limit #4.06 (down to 50% or so) so that the drive does not try to regenerate so aggressively.
- o One may need to set parameter #2.04 to Standard Ramps (Std_Ct) or Standard Hold (Std_Hd)

➔ Measure the AC supply line voltage and the DC buss voltage.

- o The AC supply should be with in 10% of the drives rated voltage
  - SPX20X/UNIX20X= 200V to 240V +/- 10%
  - SPX40X/UNIX40X= 380V to 480V +/- 10%
  - SPX50X = 500V to 575V +/- 10%

➔ Measure the DC buss voltage.

- o The buss voltage should be with in the specifications as calculated below. Measure and compare the DC buss voltage with #5.05. They should read the same.
- o You can use the simplified example below to calculate the value your buss voltage should be at unloaded.
  - Example: DC Buss = AC Supply X 1.4
  - DC Buss = 480VAC X 1.4
  - DC Buss = 678VDC
  - Note: The buss voltage may drop when the drive is loaded down.
- o Your calculated, measured, and drive (#5.05) voltages should be within about 10% of each other.

For questions call Control Techniques Technical Support-USA
at 716-774-1193
Grand Island, NY 14072