

## OI.AC Trip

This document pertains to all sizes of Unidrive and Unidrive SP

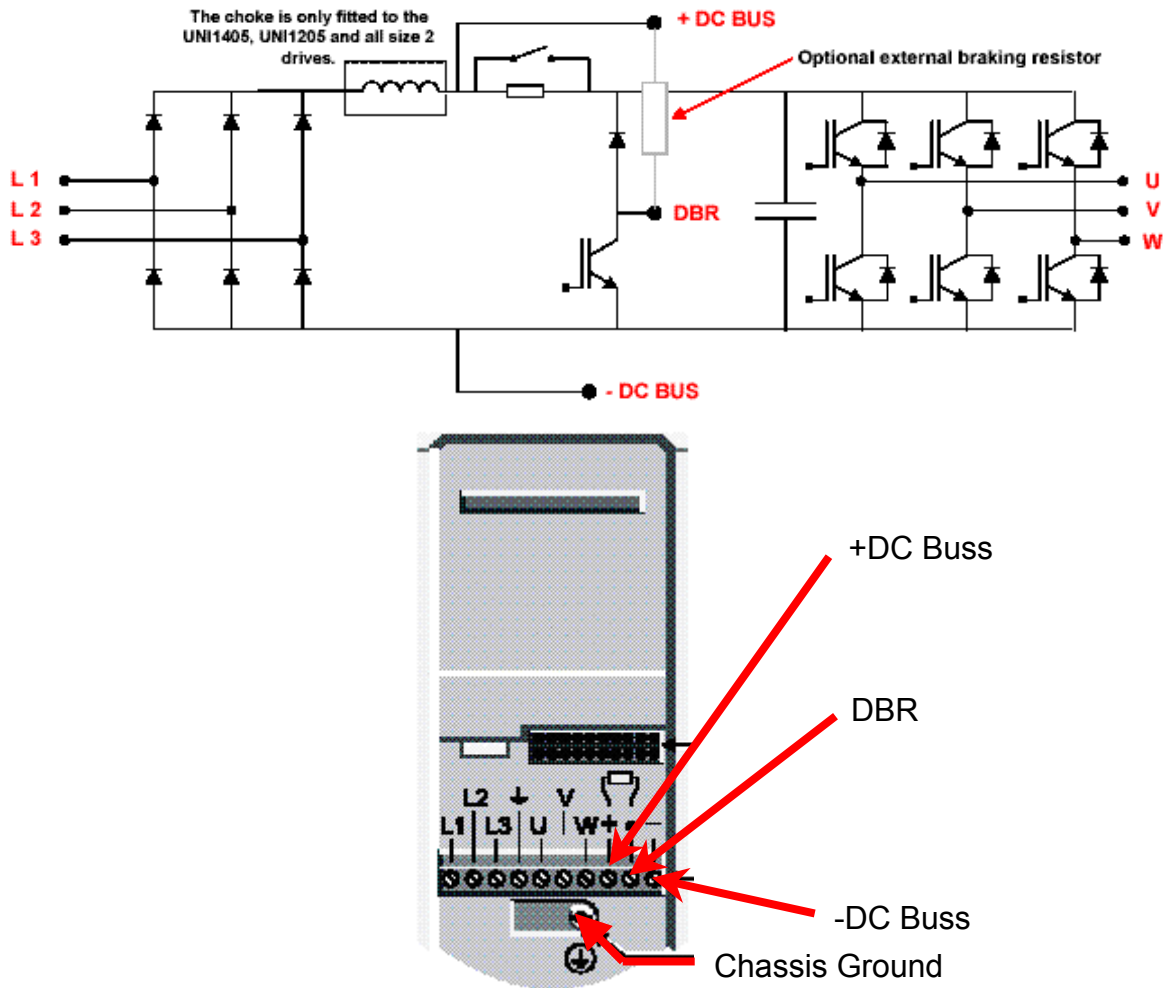
### Trip Description:

The drive will trip **OI.AC** ( Over Current. AC ) if the output current reaches 225% of rated full load current. The drives rated full load current is displayed at #0.32 in the SP and #0.33 in the Unidrive Classic.

### Causes and Solutions:

- 1) Make sure your motor nameplate information matches the motor map data in the drive.
  - a. Motor rated current
  - b. Motor rated speed (synchronous speed – slip speed)
  - c. Motor rated voltage
  - d. Motor rated power factor (Never 1.00 or greater)
  - e. Motor rated frequency
  - f. Motor number of poles:  $\text{Poles} = (\text{freq.} * 120) / \text{Synchronous speed}$
- 2) The cables to the motor should be inspected for shorts or insulation break down.
- 3) The motor should be checked for shorts or leakage. **The cables from the drive to the motor should be disconnected before this test is performed.**
  - a. Measure phase to phase on the motor with an ohmmeter.
  - b. Check phase to ground on the motor with a megger.
- 4) The output power devices on the drive could be faulty. You can test the IGBT's and input bridge inside the drive for shorts. We are more concerned about the status of the output devices for an **OI.AC** trip. Set a digital multimeter to diode checker and take the following measurements. They should be close to the expected results. If they are not there may be a problem with the drive. **The tests should be performed with the drive powered down. The drive should be powered down for at least 10 minutes before these tests are completed.**

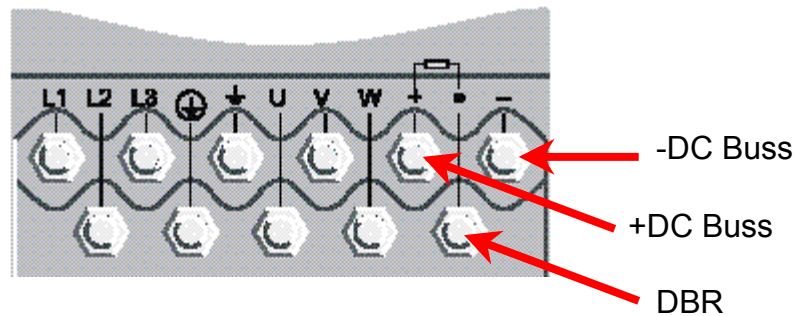
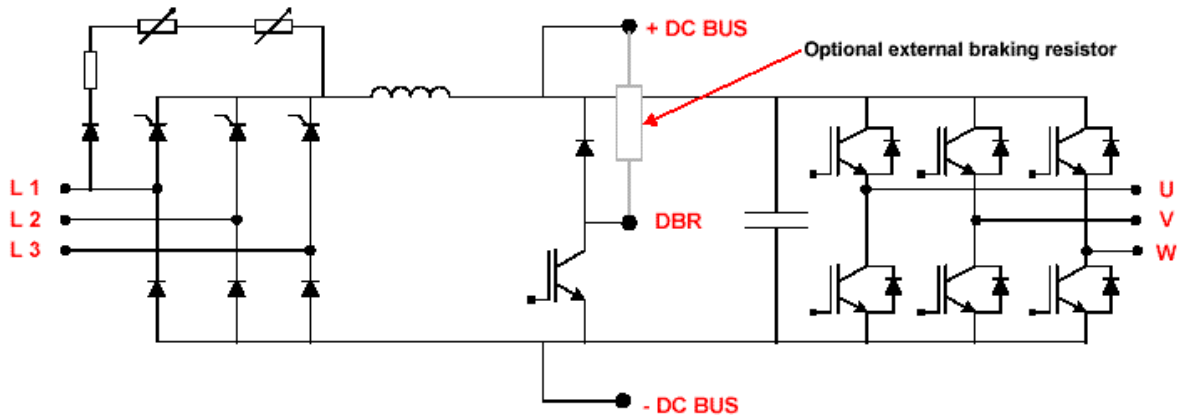
## Unidrive Classic Size 1 & 2 Power Layout



Neg. Meter Lead	Pos. Meter Lead	Expected Result
- DC Buss	+ DC Buss	Cap Charging OL
+ DC Buss	- DC Buss	0.47
W Phase	- DC Buss	0.39
V Phase	- DC Buss	0.39
U Phase	- DC Buss	0.39
L3	- DC Buss	0.46
L2	- DC Buss	0.46
L1	- DC Buss	0.46
+ DC Buss	W Phase	0.39
+ DC Buss	V Phase	0.39
+ DC Buss	U Phase	0.39
+ DC Buss	L3	0.46
+ DC Buss	L2	0.46
+ DC Buss	L1	0.46

**WARNING:** ALLOW SUFFICIENT TIME FOR THE DRIVE TO DISCHARGE  
Recommended Time is 10 minutes  
Measure from DC+ to DC- to ensure the buss voltage has discharged.

## Unidrive Classic Sizes 3 & 4



Neg. Meter Lead	Pos. Meter Lead	Expected Result
- DC Buss	+ DC Buss	Cap Charging
- DC Buss	DBR	Cap Charging
DBR	+ DC Buss	Cap Charging
- DC Buss	Any Terminal	Cap Charging/OL
+ DC Buss	W Phase	0.38
+ DC Buss	V Phase	0.38
+ DC Buss	U Phase	0.38
+ DC Buss	Motor Ground	OL
+ DC Buss	Chassis Ground	OL
+ DC Buss	L3	OL
+ DC Buss	L2	OL
+ DC Buss	L1	0.48
+ DC Buss	- DC Buss	0.46
W Phase	- DC Buss	0.34
V Phase	- DC Buss	0.34
U Phase	- DC Buss	0.34
Motor Ground	- DC Buss	OL
L3	- DC Buss	0.44
L2	- DC Buss	0.44
L1	- DC Buss	0.44
DBR	- DC Buss	0.34

**WARNING:** ALLOW SUFFICIENT TIME FOR THE DRIVE TO DISCHARGE  
Recommended Time is 10 minutes  
Measure from DC+ to DC- to ensure the buss voltage has discharged.

- 5) If your results are different than the ones above contact the Americas service Center at 1-800-367-8067 for repair information.
- 6) Readings for the Unidrive SP are not available at this time. They will be similar to the Unidrive Classic.
- 7) If you are in closed loop mode make sure your speed feedback device is configured and operating properly.
- 8) Checking the drive parameters for the feedback device.
  - a. #3.27 in the Unidrive and #3.29 in the UnidriveSP are the position counters. You can power up the drive but leave it disabled. When the motor shaft is rotated 360 Deg. the counter in the Unidrive classic should increment up to 16,383 then roll over to 0. The SP will increment to 65,535 then roll over to 0 **within 1 motor revolution**.
    - i. If the position counter rolls over at any other values than stated above the encoder could be bad or the PPR is programmed wrong.
    - ii. If a resolver module is being utilized the same test can be performed at the following parameters:
    - iii. SP = X.05 = position 0 to 65,535
    - iv. UNI Classic = 16.03 = position 0 to 16,384
  - b. When the drive trips look at parameters #3.01 and #3.02. #3.01 is speed demand and #3.02 is speed feedback. These two numbers should be the same. If they are vastly different it could mean the encoder/resolver is breaking up.
  - c. Read parameter #4.01. #4.01 is total motor current. This should be the same as the current measured in the motor cables. You can use a clamp on amp meter to read the real current to motor. It should be within 20% of parameter #4.01. If the current is found to be too high there could be mechanical binding or a possible motor problem.
- 9) To completely eliminate the speed feedback device as the cause of the OI.AC trip the drive could be put into **Open Loop mode**. It is important to have a copy of the drive parameters. **Changing operating modes will default the drive!!!** To default in open loop follow the procedure below.
  - a. Open the ENABLE (Pins 30-31)
  - b. Set Parameter #0.00 to 1254.
  - c. Set #0.48 to OPENLP ie. Open Loop
  - d. Press the red reset key
  - e. Enter your motor map parameters
  - f. Complete an autotune at #0.40 (Uncouple the motor shaft for rotation)
  - g. You can now run the drive. If the drive runs reliably after the mode was changed the speed feedback is the source of the trip.

- 10) Measure the current on all three phases going to the motor. The current should be balanced. If they are not balanced the drive could have instability that may be causing the **OI.AC** trip.
- 11) The **OI.AC** trip can be caused by an incorrect stator resistance calculation by the drives Ur\_I mode at #0.07. You can try to change the mode to Fd (Fixed Boost Mode). Set the boost value at #0.08 to 0% to start. It can be increase if necessary. If it is set to high you could cause high currents in the motor, which in them selves could cause over current trips.

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