

|                  |  |
|------------------|--|
| APPLICATION NOTE | PRODUCT: ULTIMATE ACTUATOR DRIVEBOX 48W,30A  |
| AN7006           | APPLICATION: Risk of damaging the UAD Actuator interface by long term miswiring of the actuator cable. |
| 1.1.2019         | TYPE: risk assessment  |
|                  | SERIAL NUMBERS: all serial numbers   |

Application notes is an integral part of the Manual for the product and the customer is obliged to follow it, to prevent damage to the product. If the product is damaged by use in conflict with the Manual or application notes, manufacturer reserves the right to reject warranty service and repair product to the customer's account

---

### Description:

There is Risk of damaging the UAD Actuator interface by long term miswiring of the actuator cable.

This issue is known weakness of UAD hw protection circuitry for sake of Actuator feedback accuracy.

Specifically, the Actuator Vcc line may broke. The result is Vcc providing less than 4.5V supply voltage.

---

The damage happens by long term (>1min) misconnection of the actuator cable in one specific way. In case the UAD +5V Vcc socket is connected to one of the UAD DC motor sockets thru low impedance actuator DC motor winding, See Picture. Such a miswiring causes max. current drawn from the +5V Vcc line and also may cause significant overvoltage on the Vcc line. The Vcc supply can safely withstand up to approx. 1 minute at such condition. If the misconnection takes longer, the damage to UAD may happen.

Countermeasure is simple. Always double check the actuator cable pinout. If not sure, you can use "try & error" approach, but have to immediately check if established connection setup is correct and actuator works. If actuator does not work, disconnect the actuator cable immediately and proceed with another combination

Even better method how to prevent mixing up of sensor lines with DC motor lines is following:

1. First Use only a Laboratory Power Supply and Set it to 5V/300mA.
2. Try various combinations of cable wires connected directly to the Power Supply. (note: 5V voltage won't damage the Actuator in any combination).
3. Try various combinations untill the Actuator DC motor starts moving. You just found DC motor wires which are presently connected to the Power Supply.
4. Now you can use UAD and find the correct sensor connection from the rest 3 wires. Try connecting them to the Vcc, Vout and GND sockets. When UAD shows correctly the Actuator Feedback, you found working combination and you can finally connect the DC motor wires to appropriate UAD Sockets.

Note: For this method you will need to get a Laboratory Power Supply and Actuator must have functional DC motor.

