

Advantech AE Technical Share Document

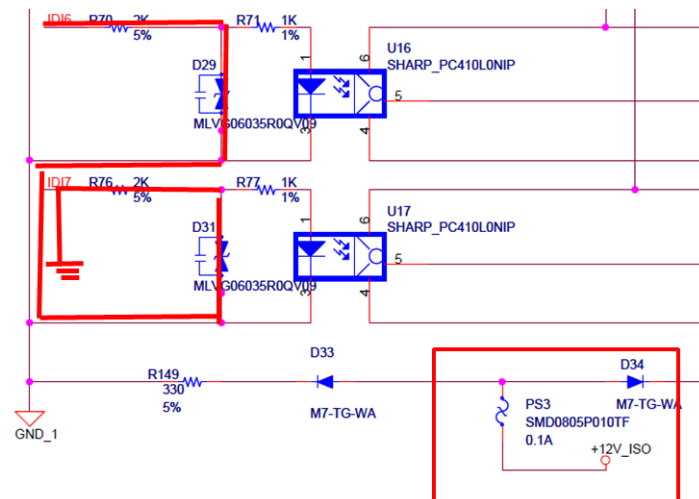
Date	2015/9/4	SR#	1-2215466573
Category	■ FAQ □ SOP	Related OS	NA
Abstract	The mix connection on IDI of PCI-1730 and PCI-1733		
Keyword	Dry contact, wet contact, mix connection		
Related Product	PCI-1730U, PCI-1733		

■ Problem Description:

When there are two types (both dry contact and wet contact) of connection parallel connect to the IDI of PCI-1730 or PCI-1733, sometimes the function of the IDI or device cannot work correctly if the connection among these three components. For example, there is a dry-contact sensor to let IDI know there's an input and simultaneously this signal is also used to control other device which is a wet-contact device. In this case the device will not be controlled if the connection is not correct. This FAQ will show some advises in the connections.

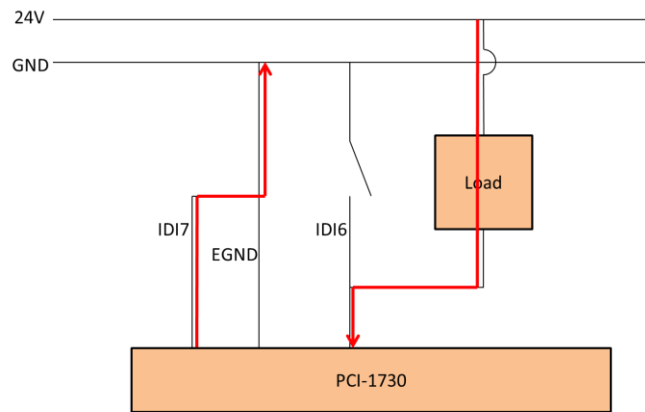
■ Problem Analysis:

The IDI of PCI-1730 and PCI-1733 are bi-direction conducted IDI which means they could receive the current from both directions, i.e. positive to negative reversed. When the connection of the IDI are all dry-contact, there will not be any exterior current flow into the card. However, if there is a mixed connection (both dry and wet contact) in an IDI channel, there will be an exterior current flow into PCI-1730 or PCI-1733 and then flow to ground when the other channel is closed(connect to GND). From the schematic of PCI-1730 below, the current input from IDI6 and there's a way flow to interior circuit and flow to IDI7 since IDI7 is connected to GND due to dry contact "close".



In this way if IDI6 is wet-contacted, the current will flow into the card and the device connect to IDI6 will always be ON if there's not a switch along this way.

The real case this FAQ could be applied to is the case below. IDI7 is closed and connect to ground and a switch on IDI6 try to control the load ON or OFF. On the other hand to let the system know the status of the switch, the switch is also connected to IDI6. As a result, the Load will always be conducted no matter the status the switch is due to the reason we explained previously through IDI7 to ground. That is, Load is un-controllable.

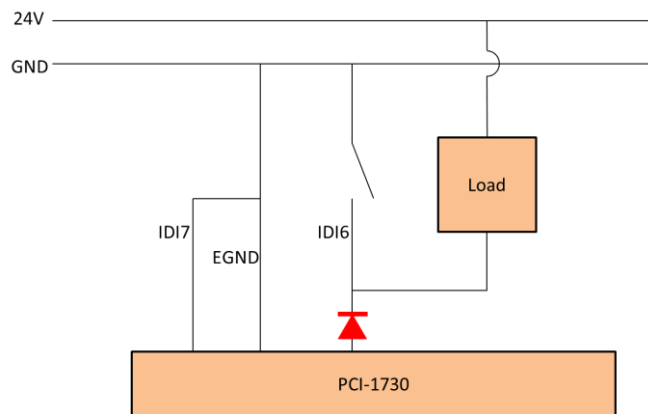


■ **Brief Solution - Step by Step:**

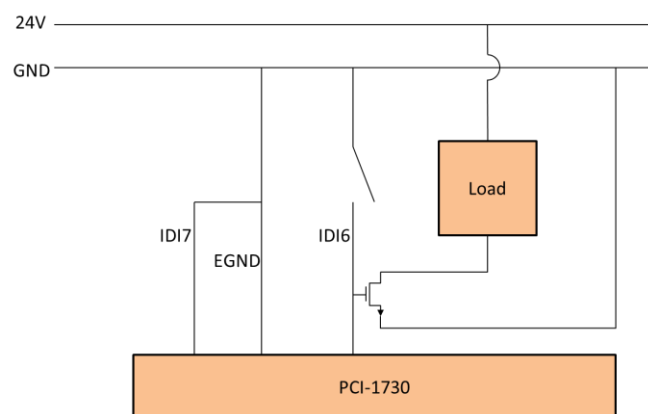
The main guideline to solve the problem is to block the way of the flow we don't want.

Here are two ways for reference:

1. A diode being connected outside the IDI.



2. A N-MOS being connected among switch, IDI and Load. The IDI will provide a 12V electric potential when un-conducted.



■ **Reference:**