Advantech AE Technical Share Document

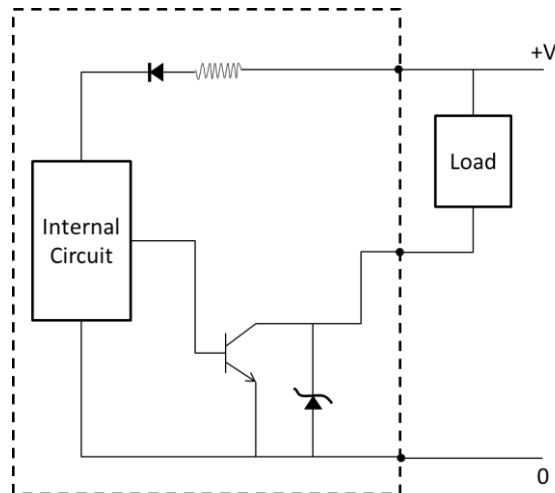| Date	2015/10/8	SR#	1-2263665119
Category	■ FAQ □ SOP	Related OS	NA
Abstract	NPN or PNP sensor type with Advantech DAQ DI function		
Keyword	NPN, PNP, Digital Input, Advantech DAQ		
Related Product	PCI-1706U, PCI-1710, PCI-1710HG, PCI-1710HGL, PCI-1710L, PCI-1711, PCI-1711L, PCI-1712, PCI-1712L, PCI-1716, PCI-1718, PCI-1721, PCI-1723, PCI-1727U, PCI-1730U, PCI-1733, PCI-1735U, PCI-1737U, PCI-1739U, PCI-1742U, PCI-1750, PCI-1751, PCI-1753, PCI-1754, PCI-1756, PCI-1757UP, PCI-1758UDI, PCI-1758UDIO, PCI-1760, PCI-1761, PCI-1762, PCI-1780U, PCI-1784U, PCIE-1730, PCIE-1751, PCIE-1753, PCIE-1754, PCIE-1760, PCIE-1810, PCIE-1816, PCIE-1816H, PCIE-1802, USB-4702, USB-4704, USB-4711A, USB-4716, USB-4718, USB-4750, USB-4751, USB-4761, PCM-3718H, PCM-3718HG, PCM-3718HO, PCM-3725, PCM-3730, PCM-3730I, PCM-3753I, PCM-3761I, PCM-3810I, PCM-27D24DI		

■ **Problem Description**:

There are many compatibility problems using different type of sensors. For example we usually heard questions like "My sensor type is NPN, is that compatible with PCI-17XX?" This FAQ will show how to choose an appropriate digital input board for different sensor types.

■ **Problem Analysis**:

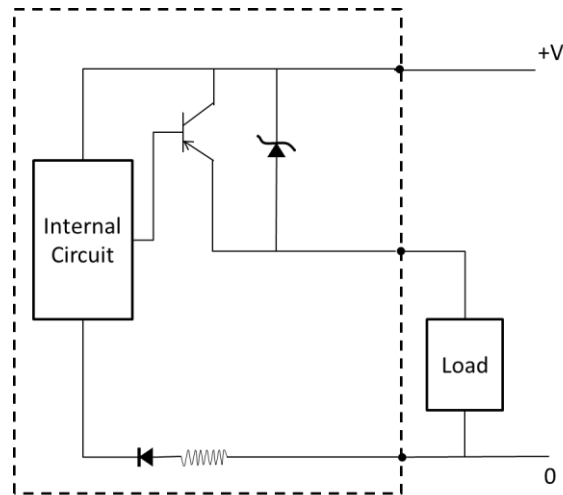Here are typical designs of the NPN and PNP sensors:

1. NPN sensor

Provide low level (0V) when conduction. Current will flow from the positive to negative end of the device.

2. PNP sensor

Provide high level (+V) when conduction. Current will flow from the negative to positive end of the device.

- **Brief Solution - Step by Step:**
  1. For wet contact application if the type of DI is TTL, the sensor type could only be PNP sensor so that we could connect one end to GND and another to the sensor output.**(DIx to output, DGND to GND)**
  2. For wet contact application with isolation DI, the sensor type could be PNP and NPN because isolation digital input implements bi-directional conduction. You could connect ECOM to either high(+V) or low(0V).**(IDIx to output, ECOM to +V for NPN or IDIx to output, ECOM to GND for PNP)**
  3. For dry contact application, you could only connect NPN sensor for application since PNP sensor will provide high level when conduction. This could be apply to both TTL and isolated digital input.

- **Reference:**