

APPLICATION DATA

# Solid State Sensors

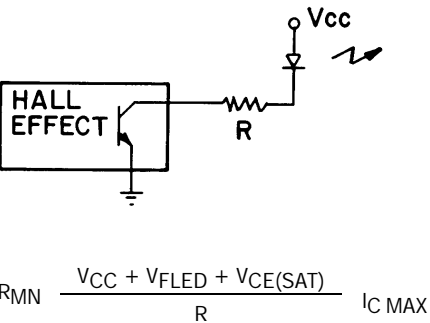
## Interfacing Digital Hall Effect Sensors

Hall effect sensors can be interfaced in many types of applications. This application note discusses the interfacing required for a few basic applications.

### DRIVING AN LED INDICATOR

The simplest interface is that shown for driving an LED indicator (Figure 1). The resistor R must limit current through both the output transistor of the Hall transducer and the LED.

Figure 1  
Driving an LED Indicator



Where:

$V_{FLED}$  is forward voltage drop of LED  
 $V_{CE(SAT)}$  is voltage drop of output transistor  
 $I_C \text{ MAX}$  is rated current of output transistor

### DIRECTION DETERMINATION

Two Hall effect sensors may be used to determine direction in a rotational application. The two are located close together, relative to the circumference of the rotating magnet (Figure 2). If the magnet rotates in the direction shown, the time for the South poles to pass between S1 and S2 will be short compared to the time to pass between S2 and S1. When direction is reversed, the time relationship is also reversed. Figure 3 illustrates an implementation.

Figure 2  
Rotational Direction

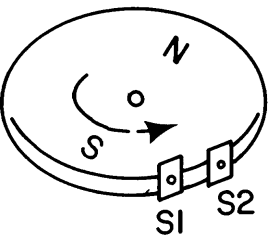


Figure 3  
Up/down Counter

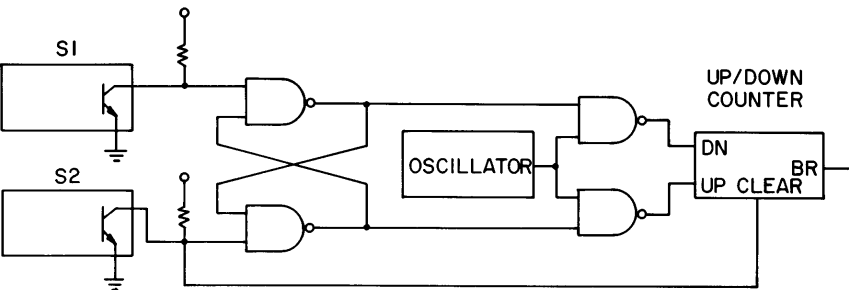


Figure 4  
Relay Interface

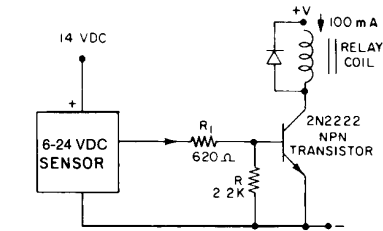


Figure 5  
SCR Interface

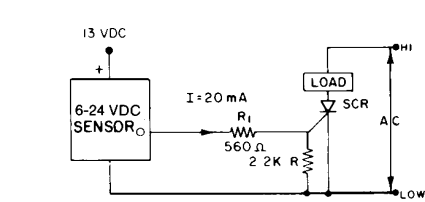


Figure 6  
TRIAC Interface

