Solid State Sensors

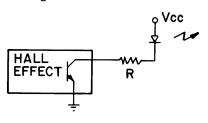
Interfacing Digital Hall Effect Sensors

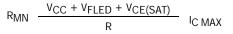
Hall effect sensors can be interfaced in many types of applications. This application note discusses the interfacing required for a few basic applications.

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:

VFLED is forward voltage drop of LED VCE(SAT) is voltage drop of output transistor

I_{C 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

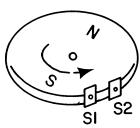
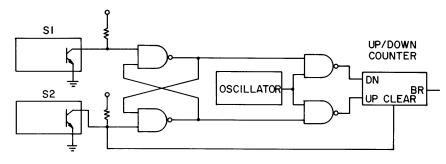


Figure 3 Up/down Counter

Figure 5

SCR Interface



Starting at S2, the counter will count "up"

oscillator pulses between S2 and S1, and

count "down" oscillator pulses between

S1 and S2. There will not be an output at

the borrow terminal of the counter if the

direction is as shown in Figure 2. If direc-

tion is reversed, there will be a pulse train

Hall effect transducers may also be used

to control large signals and power by in-

terfacing to a relay (Figure 4), an SCR

(Figure 5), or a TRIAC (Figure 6). These are simple applications of the transistor

interface previously discussed.

out.

Figure 4 Relay Interface

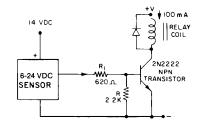


Figure 6 TRIAC Interface

