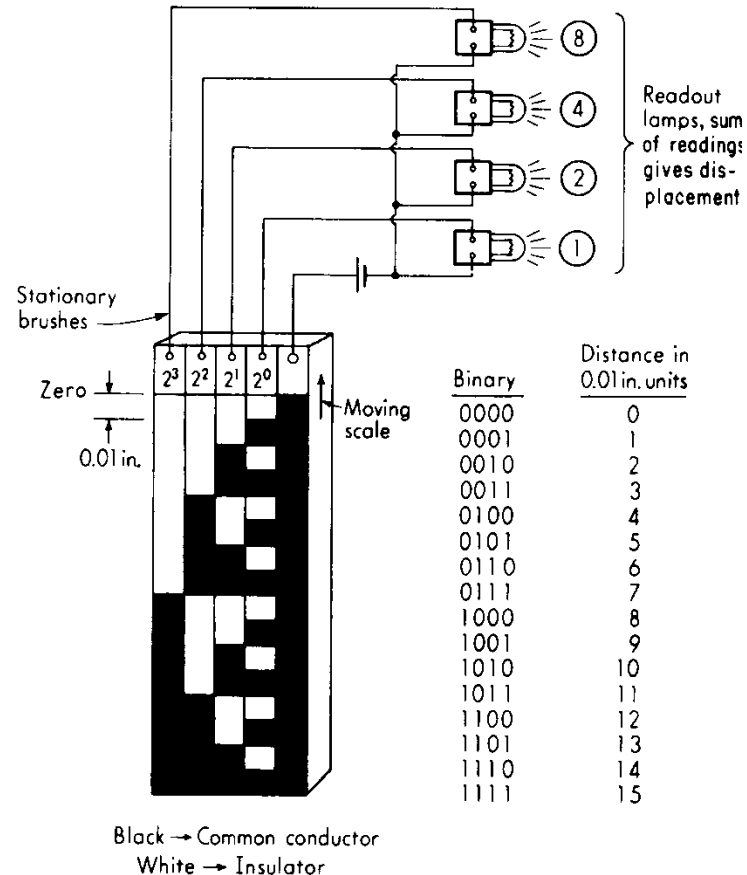
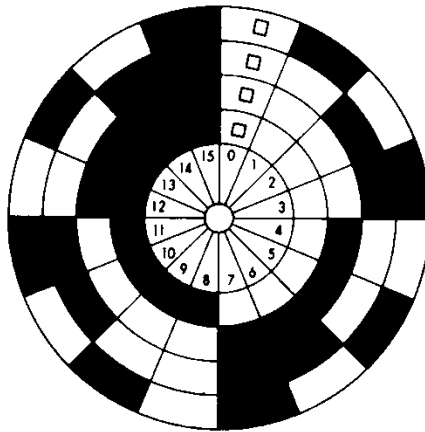


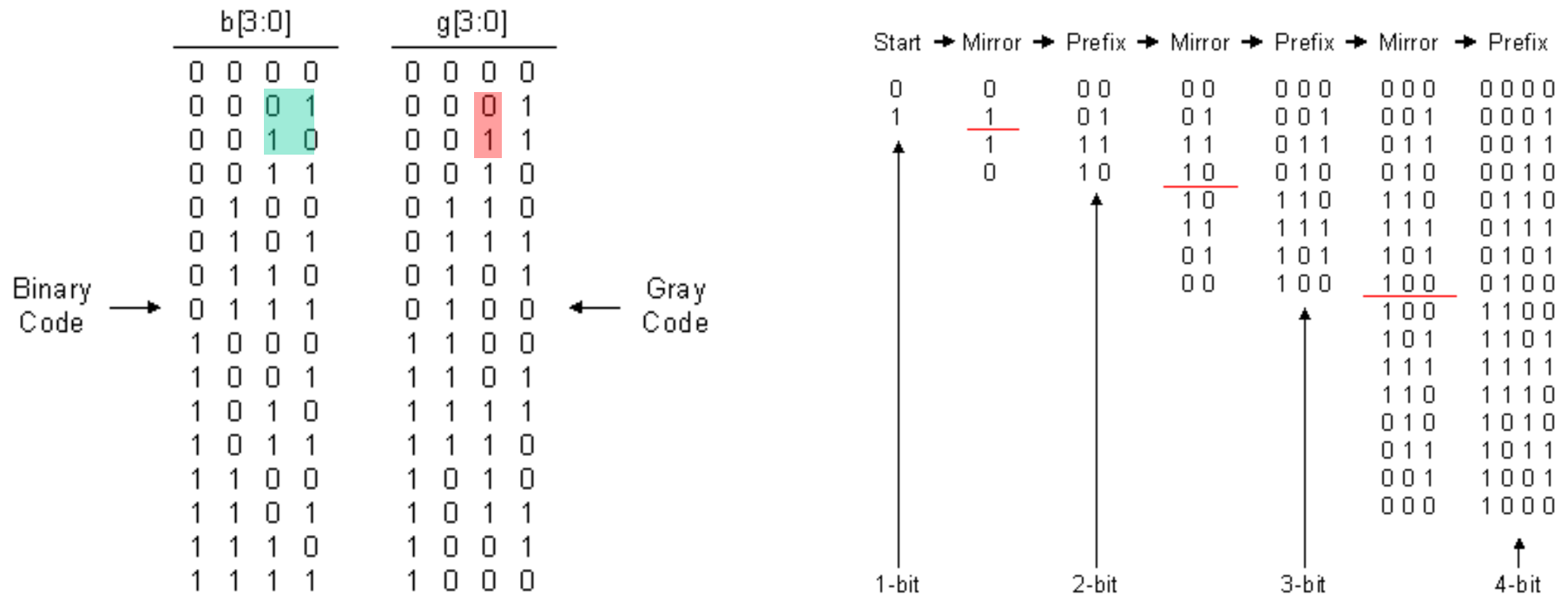
AE 242
Aerospace Measurements
Laboratory

Optical encoder

In circular encoders, circular tracks are similar to linear tracks. Sensors are placed to identify opaque or transparent segment. Output of this is in binary. This can be fed to binary to decimal circuit to obtain decimal number. The pattern can be made of conducting and non-conducting material, magnetic material etc.



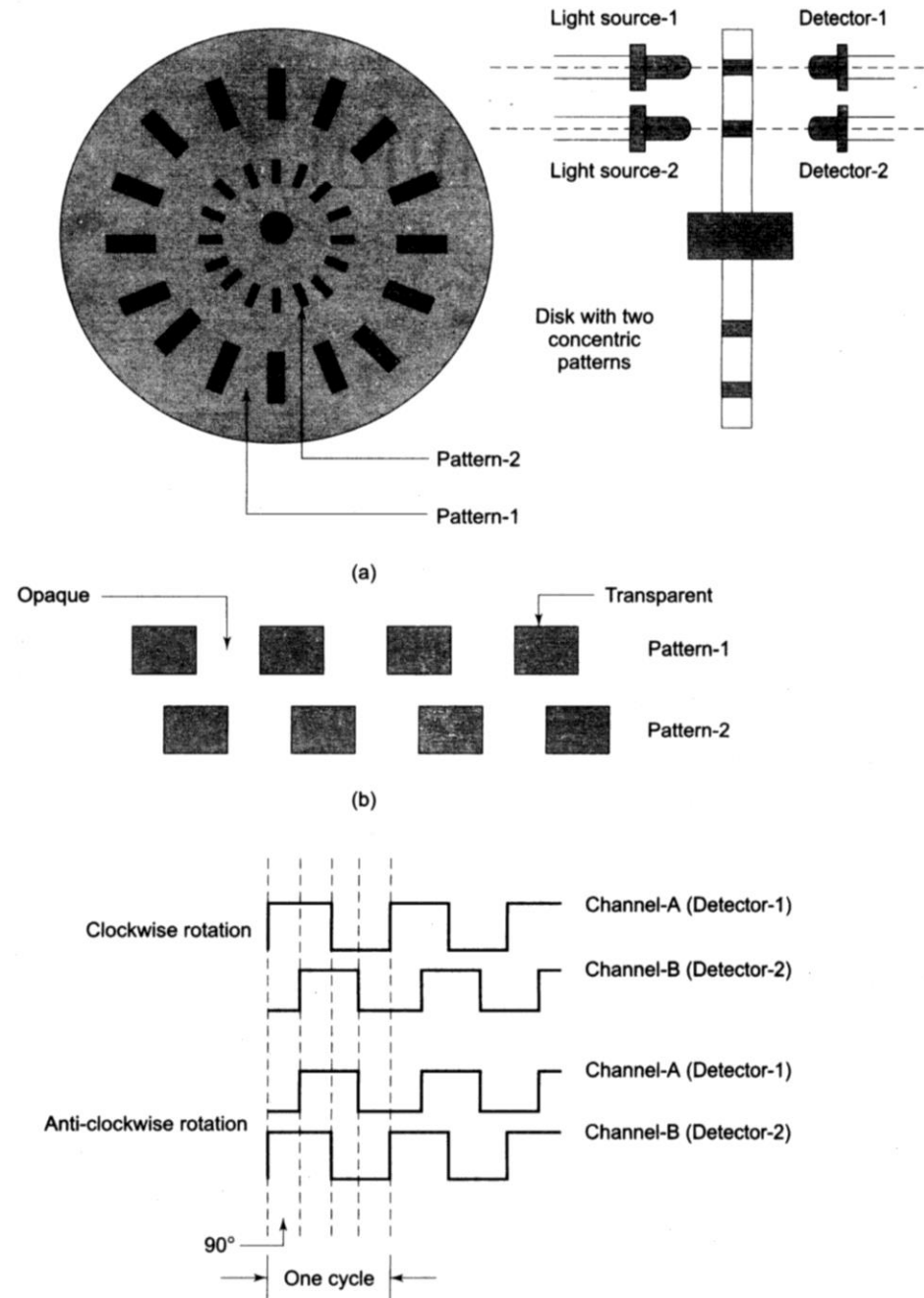
Optical encoder – Gray Code

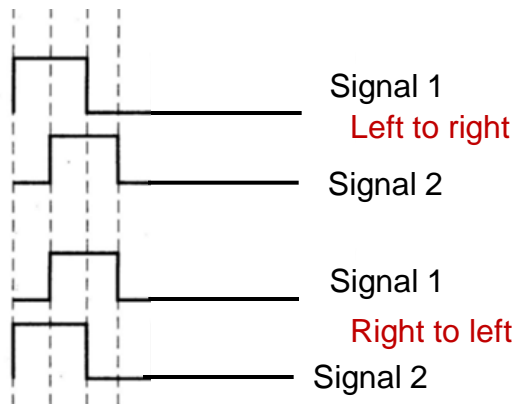
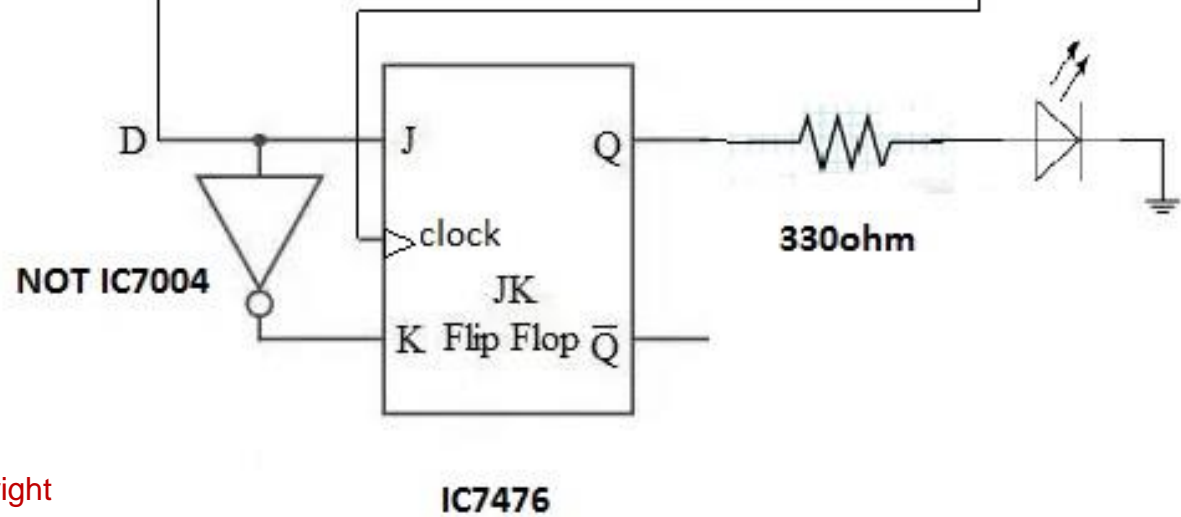
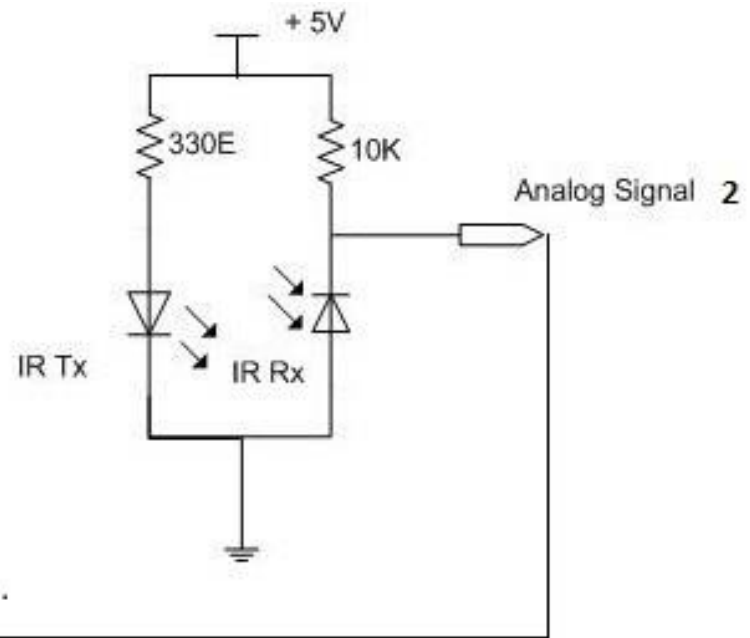
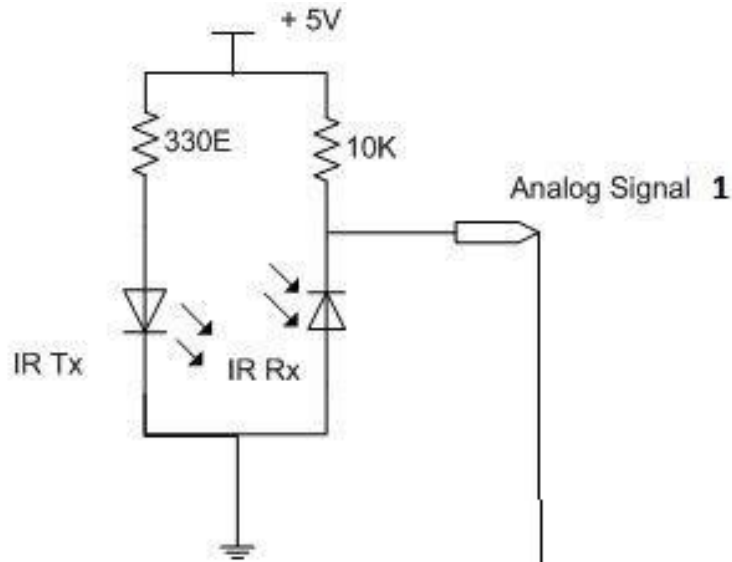


In Gray code only one bit changes when number is incremented. This minimizes error in detection of transitions.

Quadrature Optical encoder

Two square waves with 90 degree phase difference
“Quadrature square wave”. This feature is used to find the direction of the motion.





Detecting direction of motion