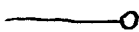
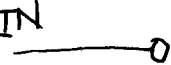
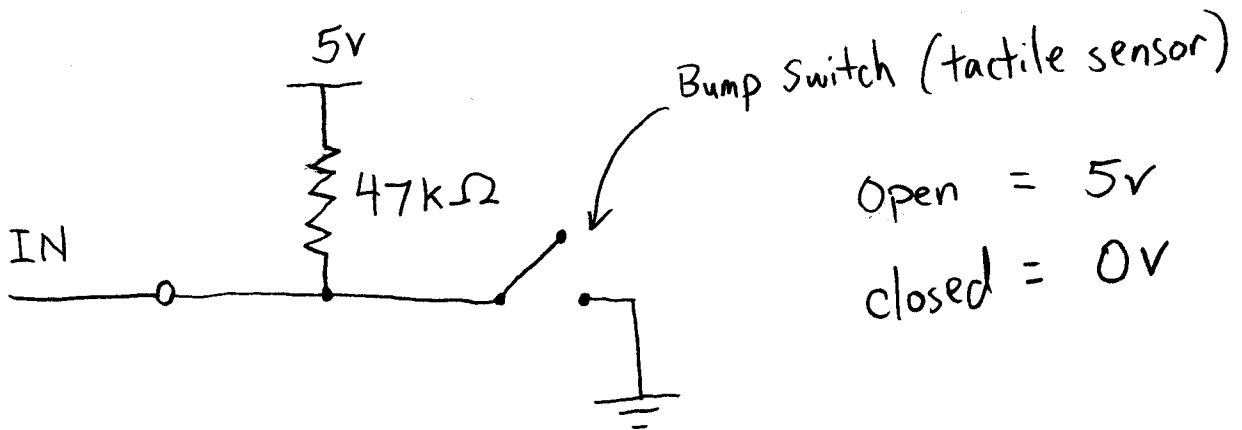


# Digital / Analog Sensing

IN  0v = logic 0      or      logic 1  
5v = logic 1      =      logic 0

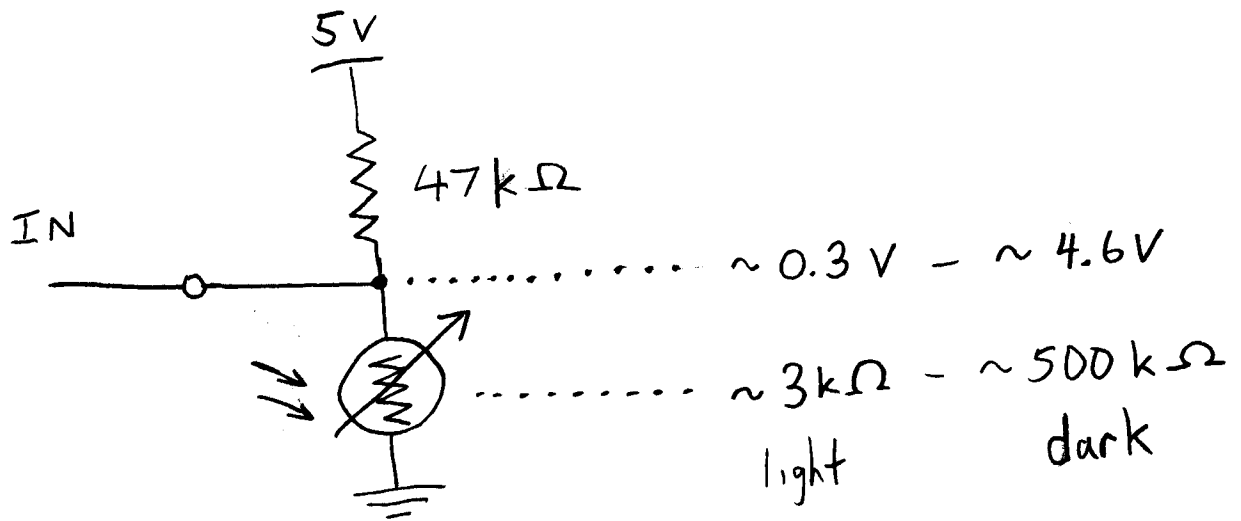
IN  range 0v-5v  $\rightarrow$  8-bit resolution  
byte representation  
0 - 255

# Contact / Bump Sensing



# Light Sensor (Cds Photocell)

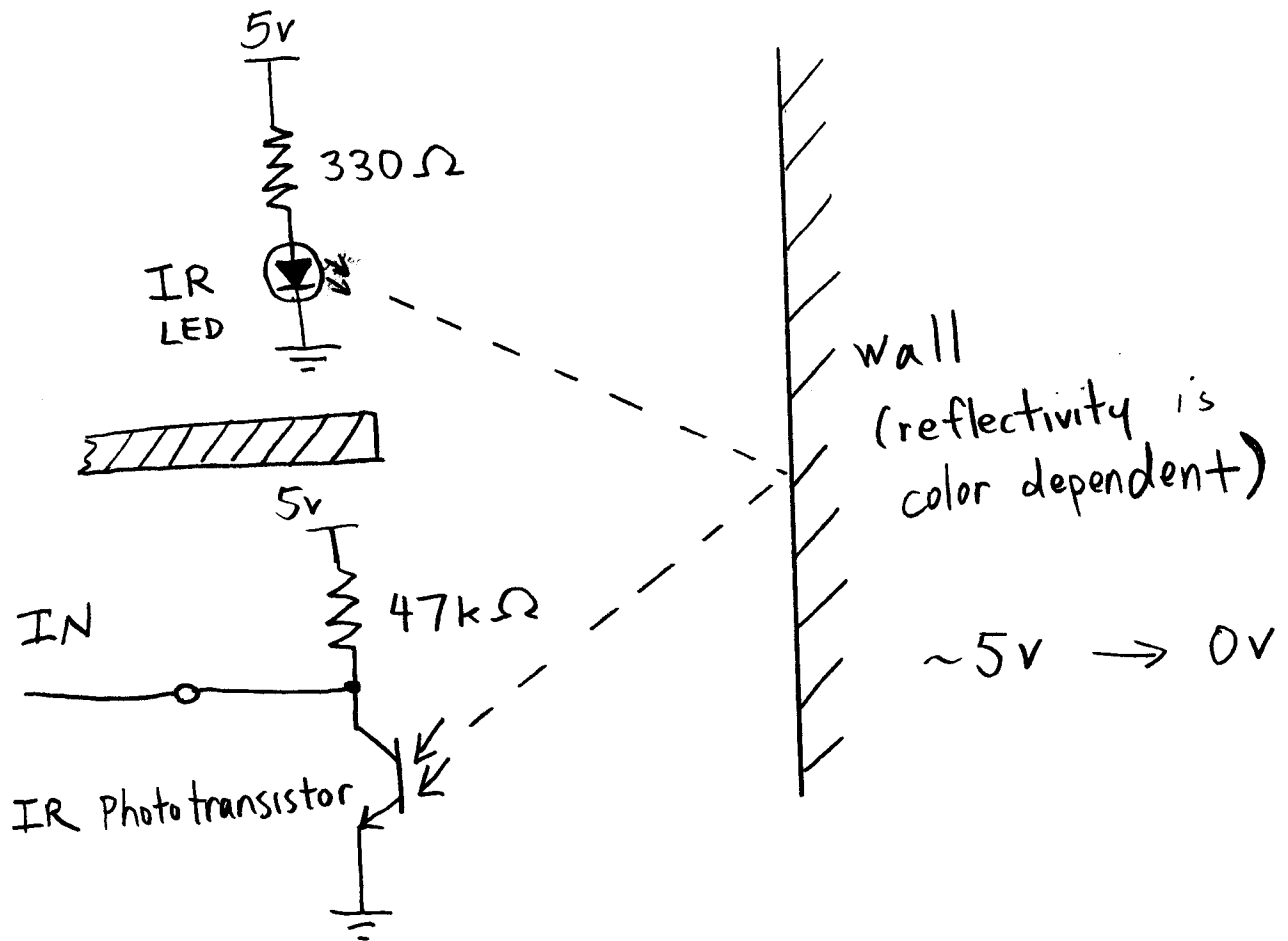
---



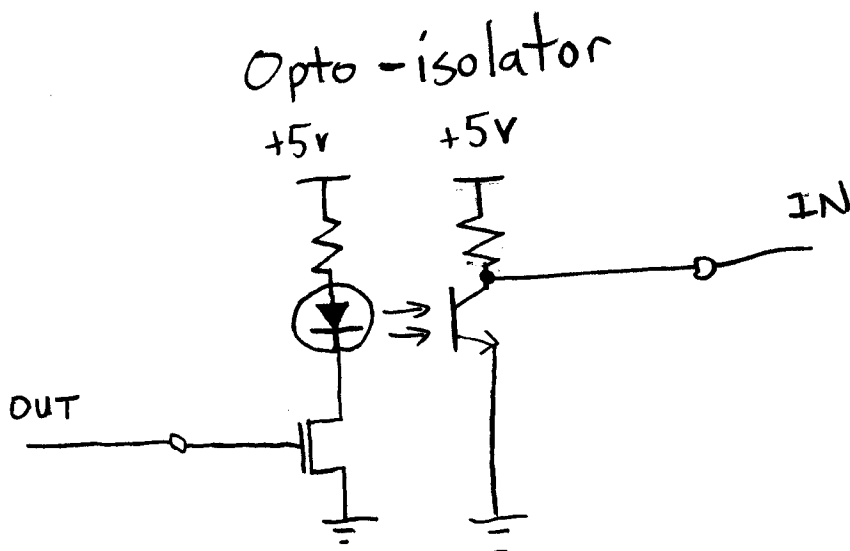
Cadmium Sulfide (CdS)

spectral response ~ human eye

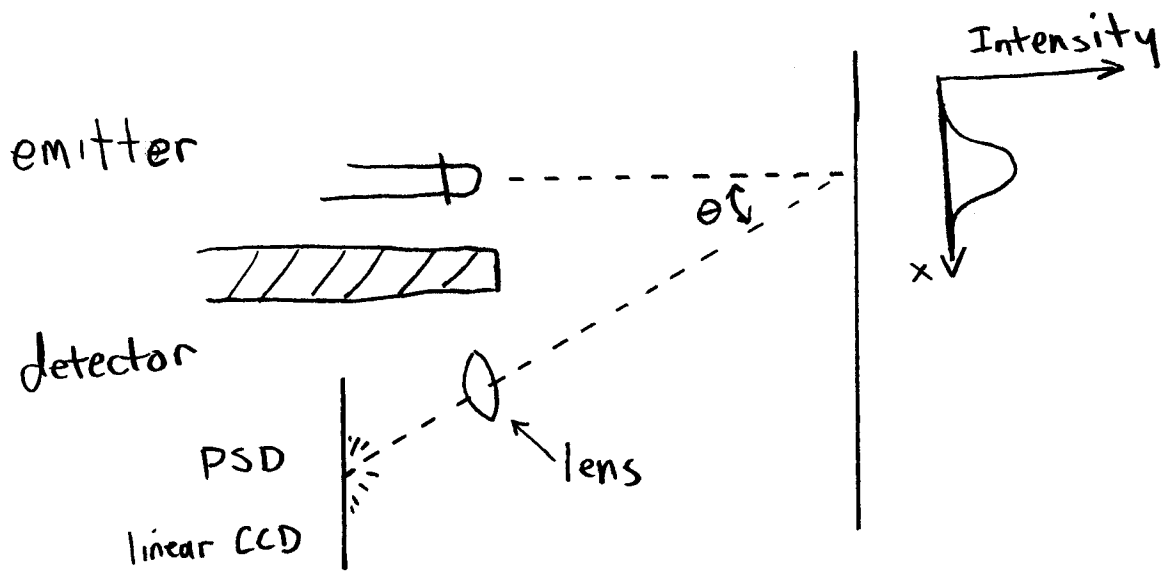
# Reflective Photo sensor



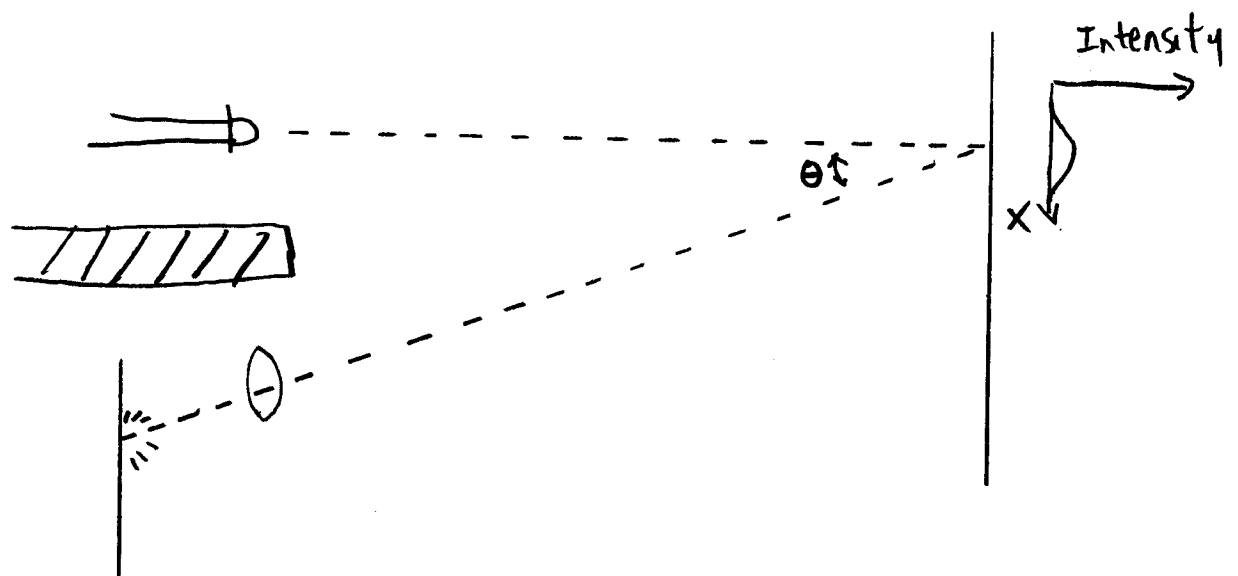
## \*\*\* Related Device



# Sharp IR Range Finder



## Position-sensitive detector



GP2D 120  $\rightarrow$  1.5" - 12"

GP2D 12  $\rightarrow$  4" - 30"

current  $\sim$  30 mA

1999年 9月17日 17時17分

オプトデバイス事業部 企画部

NO. 5431 P. 9

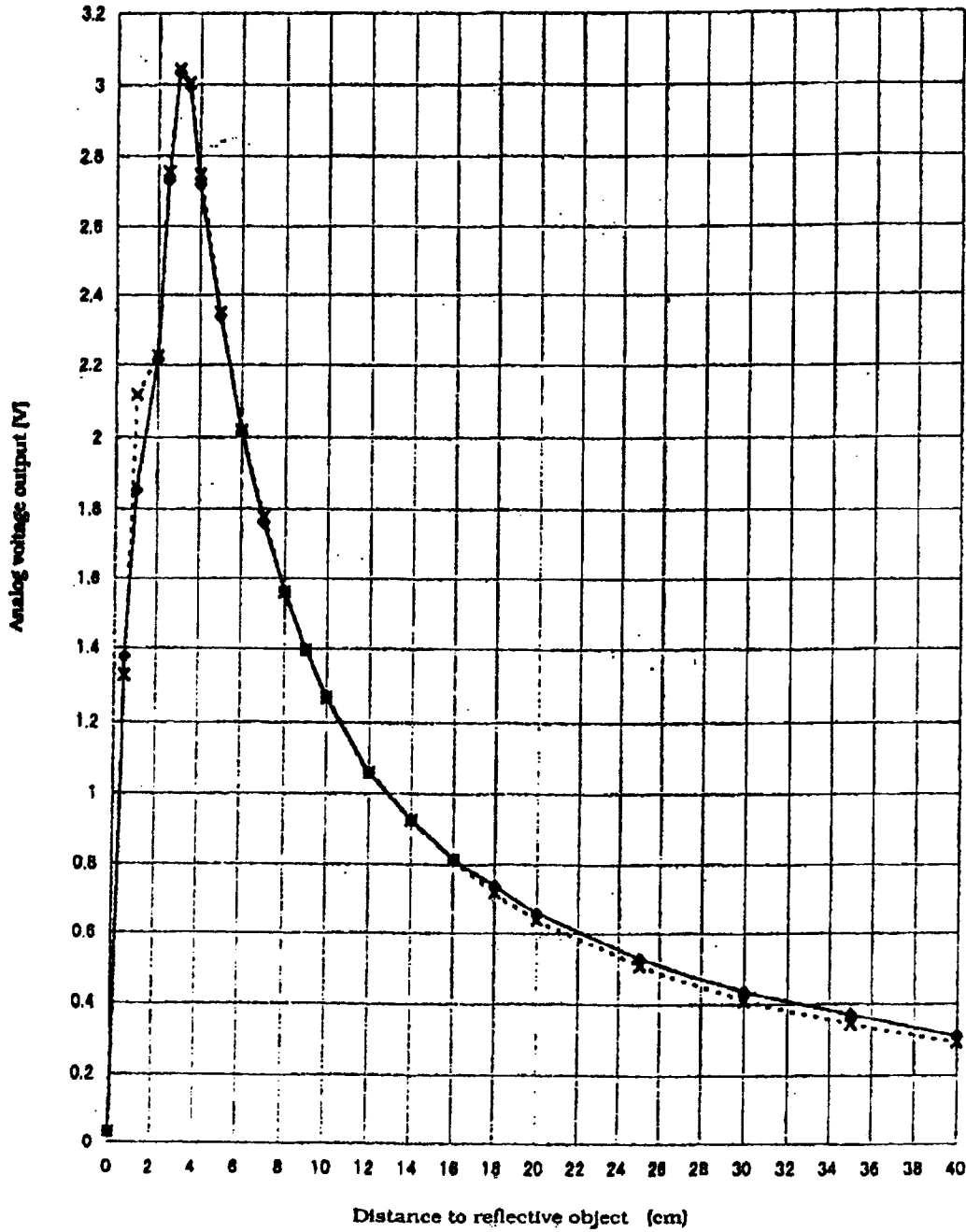
SHARP CORPORATION

ED-99170	August 30, 1999
MODEL No. GP2D120	PAGE 8/9

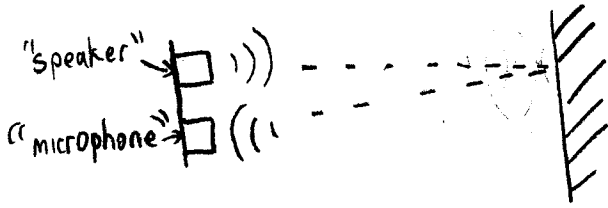
REFERENCE

6-1 GP2D120 Example of Output distance characteristics

—●— White paper (Reflectance ratio 90%)    - - \* - - Gray paper (Reflectance ratio 19%)



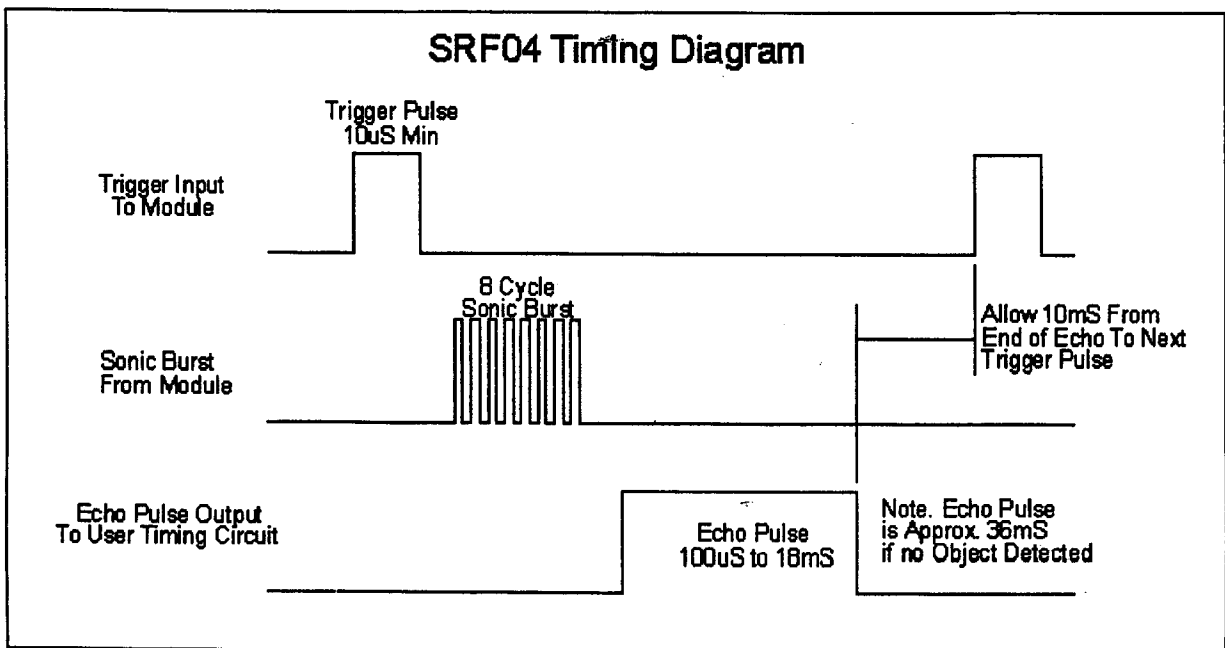
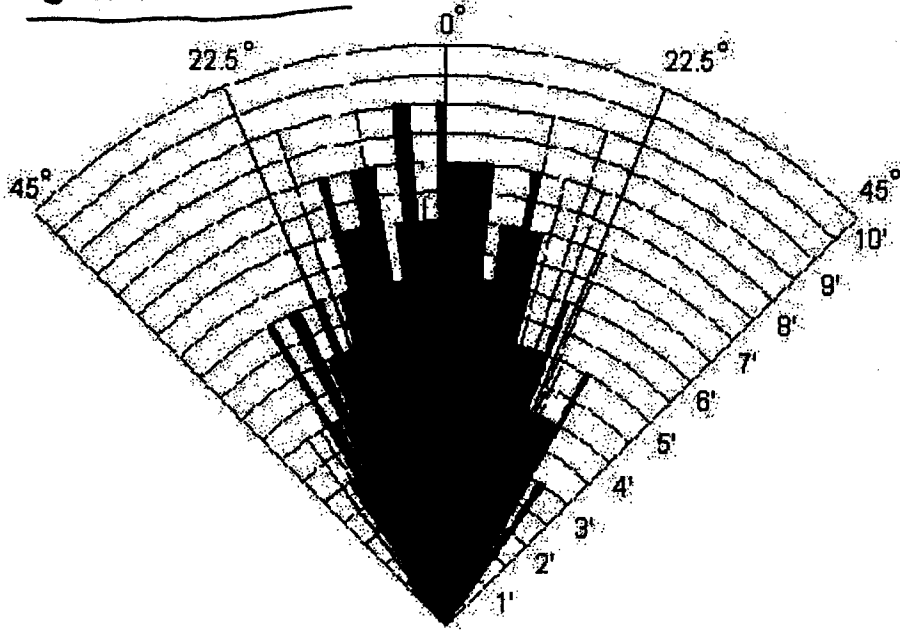
# Sonar (Devantec Range Finder)



40 kHz sonic burst  
"chirp"

SRF04 → range 3" - 10 ft.  
current ~30mA

## Beam Pattern

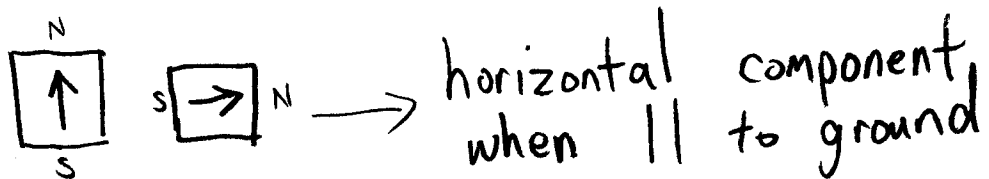


# Devantec Compass

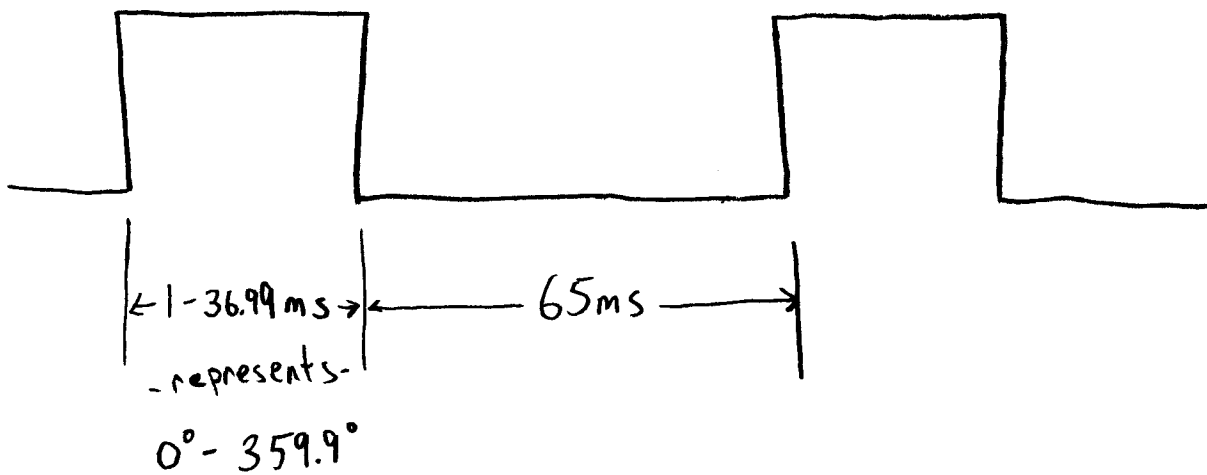
CMP503 ~ 20mA

magnetic field sensors → Philips KMZ51

sensitive enough to measure  
Earth magnetic field



⇒ PWM Output (Pulse Width Modulation)



$$T = \left\langle \text{66ms} - \sim 120\text{ms} \right\rangle$$