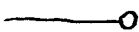
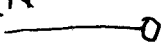
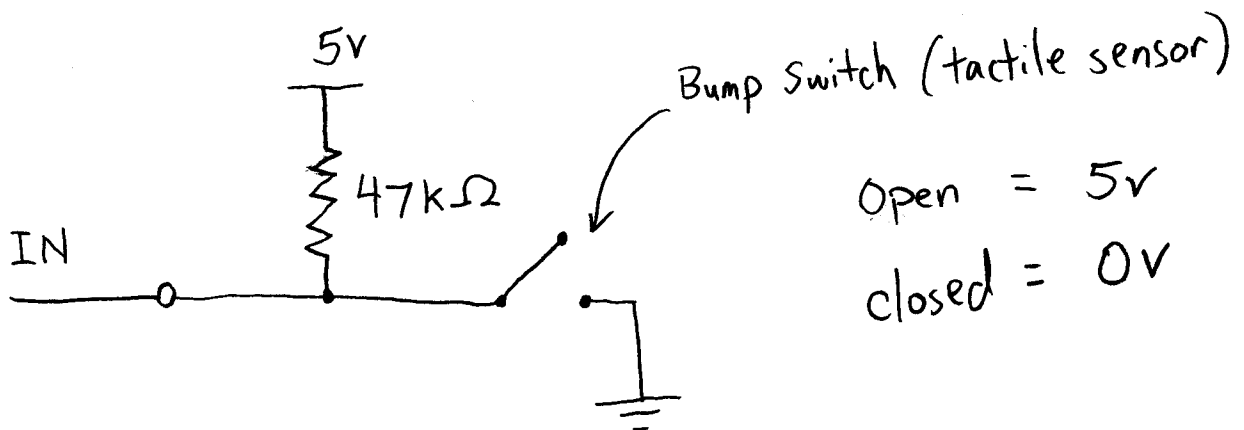


Digital / Analog Sensing

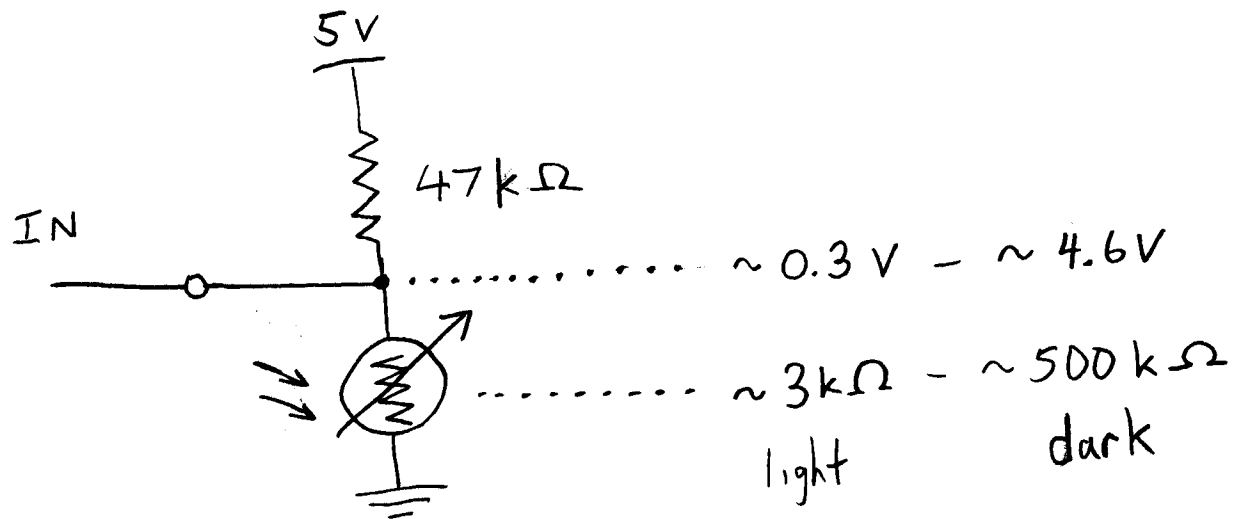
IN  $0V = \text{logic } 0$ $5V = \text{logic } 1$ or $\text{logic } 1$
 $5V = \text{logic } 1$ or $\text{logic } 0$

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

Contact / Bump Sensing



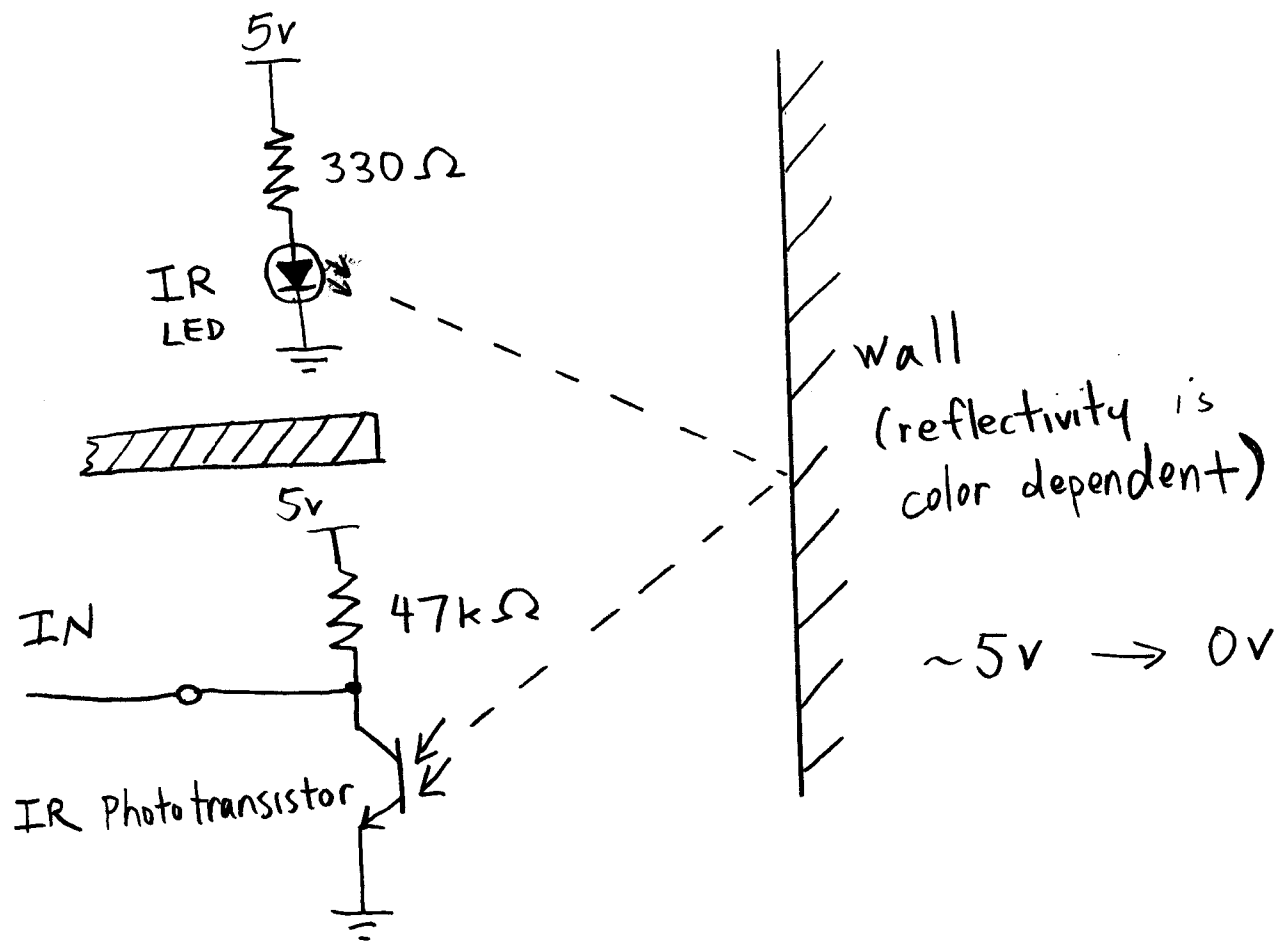
Light Sensor (CdS Photocell)



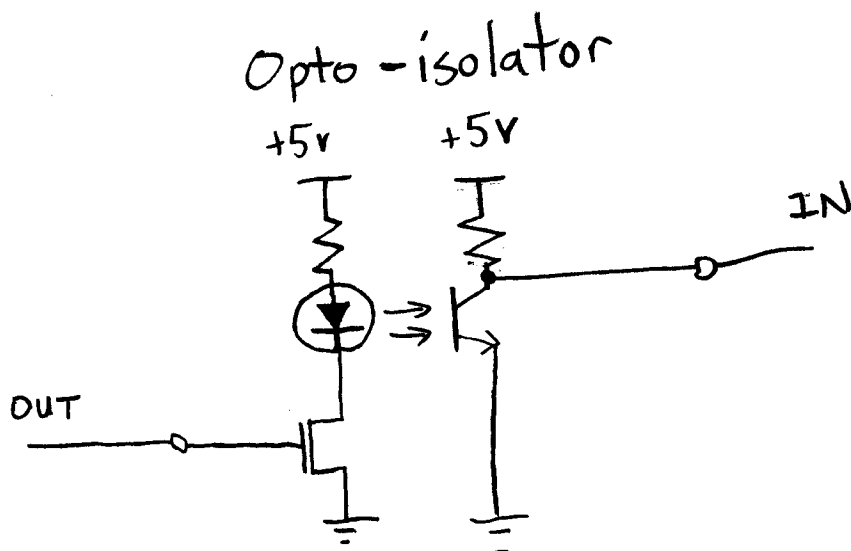
Cadmium Sulfide (CdS)

spectral response ~ human eye

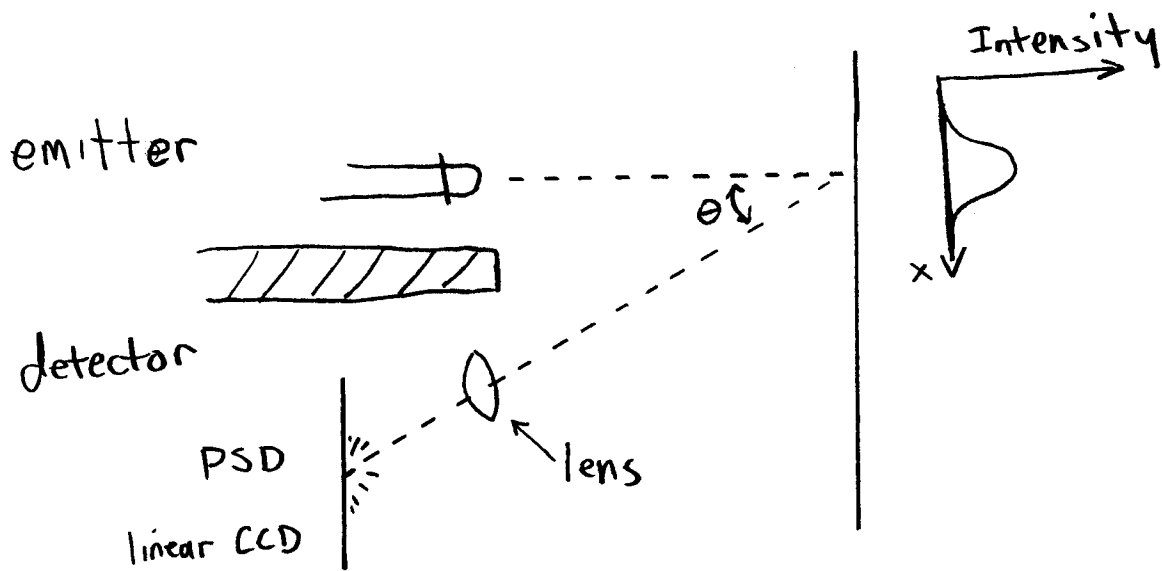
Reflective Photo sensor



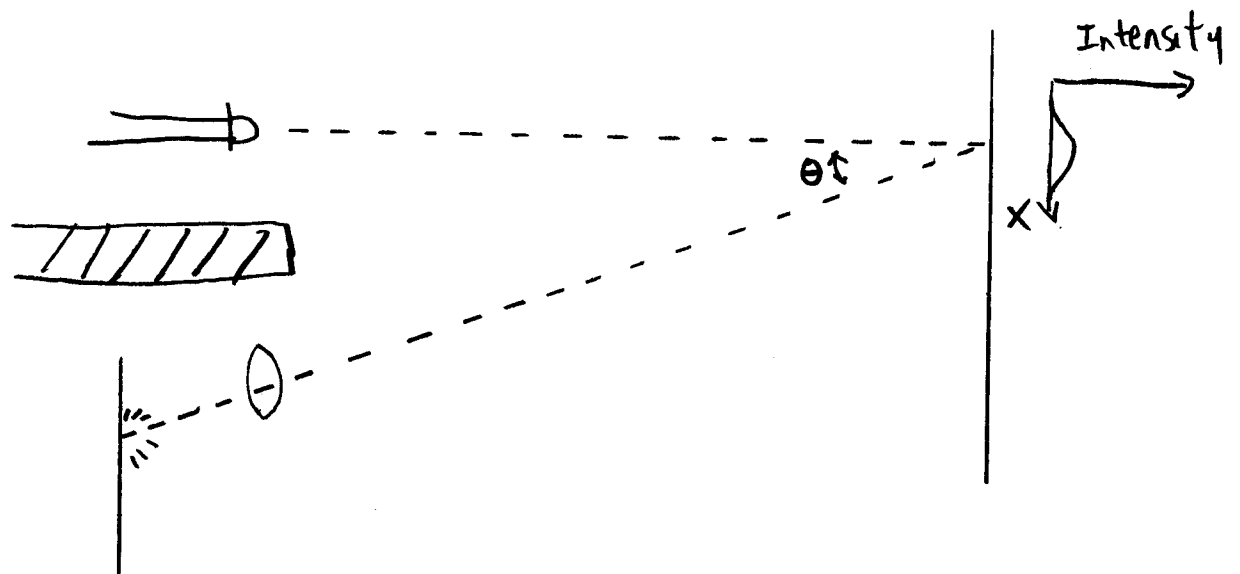
*** Related Device



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

オプティカル機器 企画部

NO. 5431 P. 9

SHARP CORPORATION

ED-99170

August 30, 1999

MODEL No.

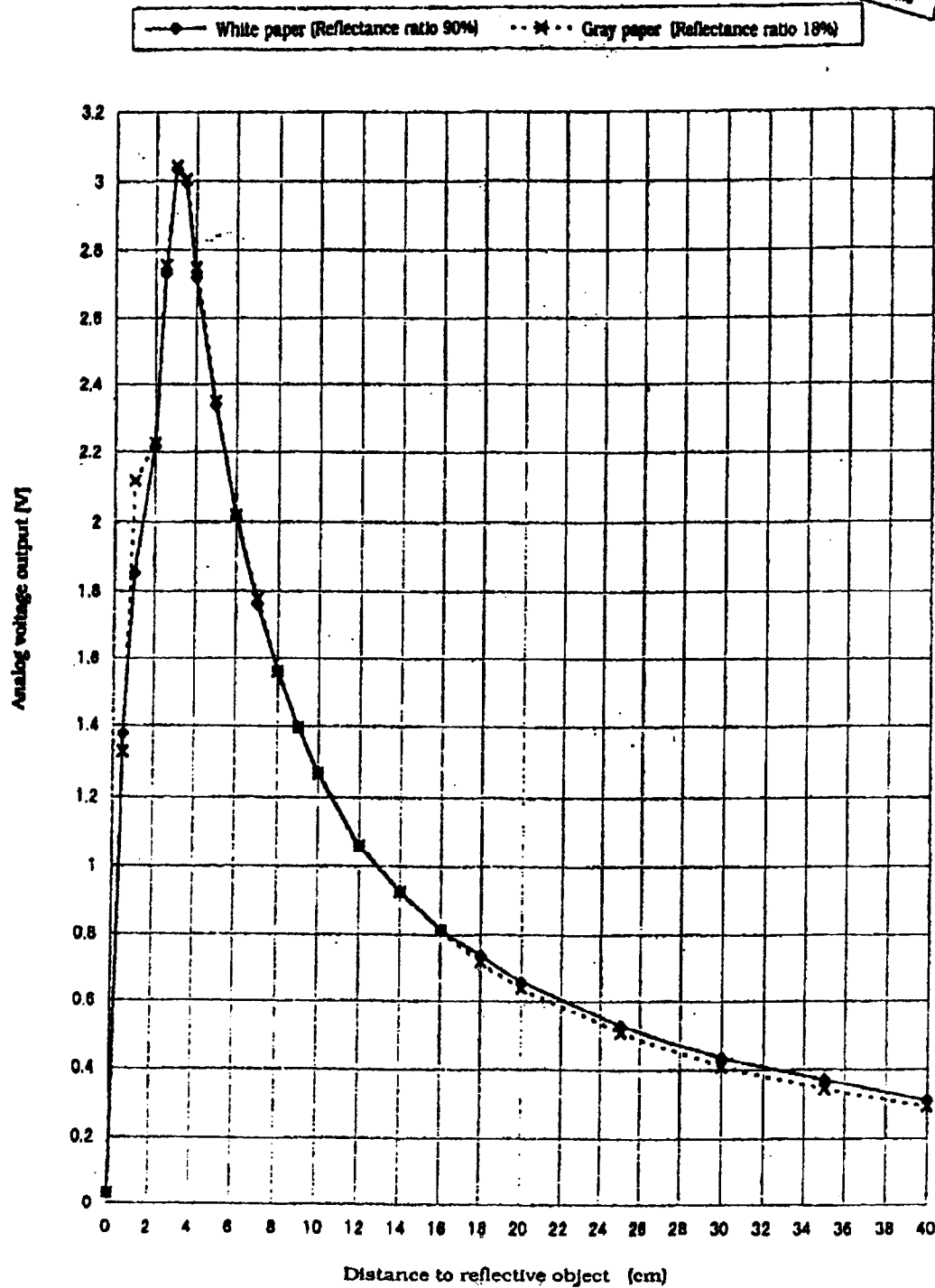
GP2D120

PAGE

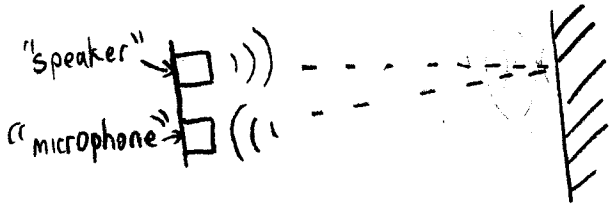
8/9

REFERENCE

6-1 GP2D120 Example of Output distance characteristics



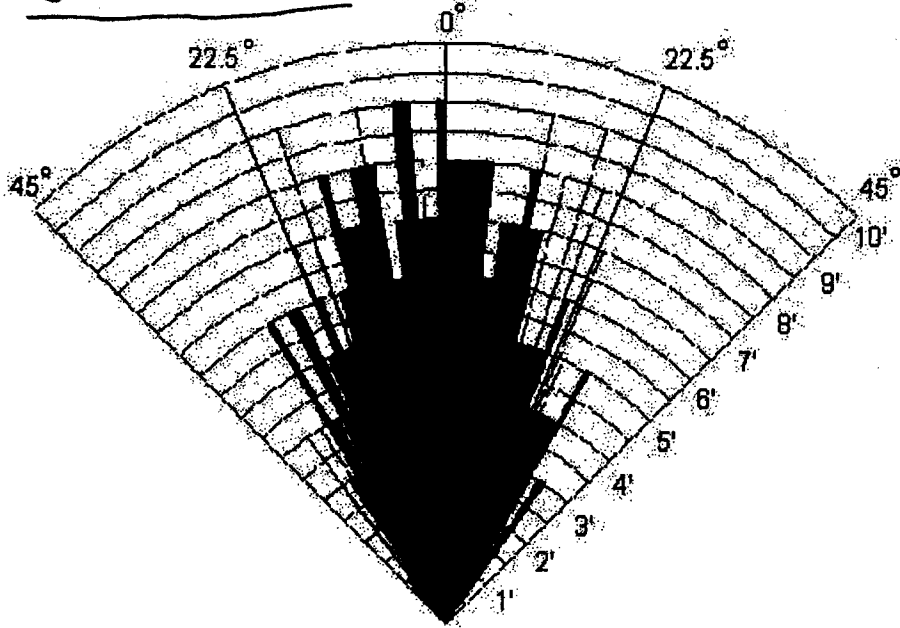
Sonar (Devantec Range Finder)



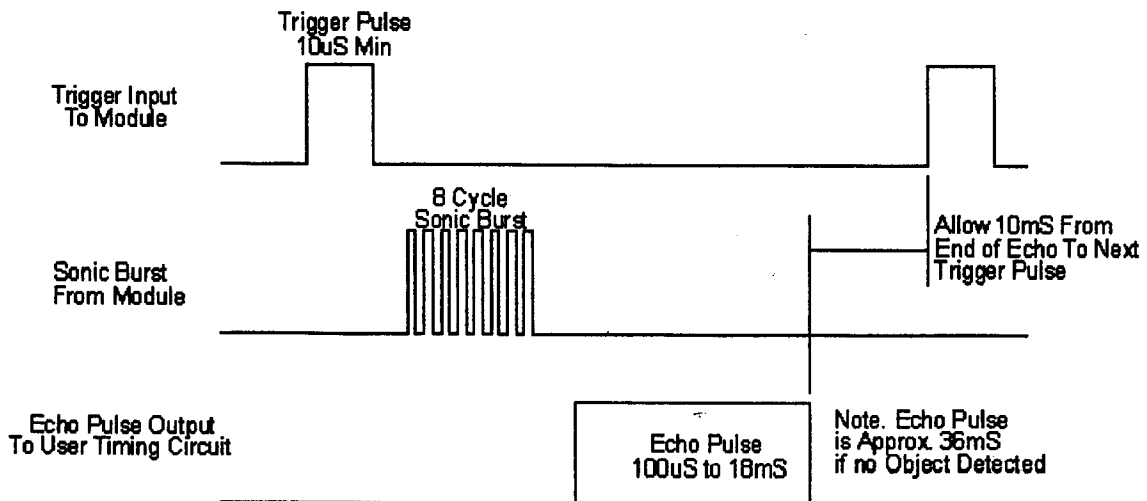
40 kHz sonic burst
"chirp"

SRFD4 → range 3" - 10 ft.
current ~ 30 mA

Beam Pattern



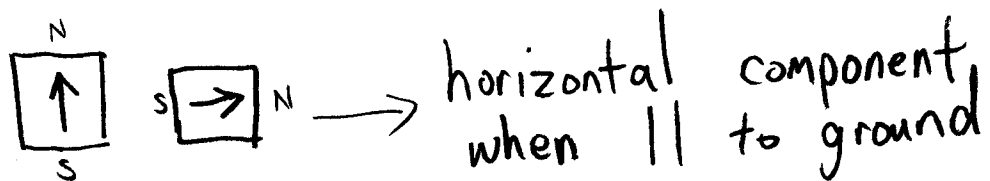
SRF04 Timing Diagram



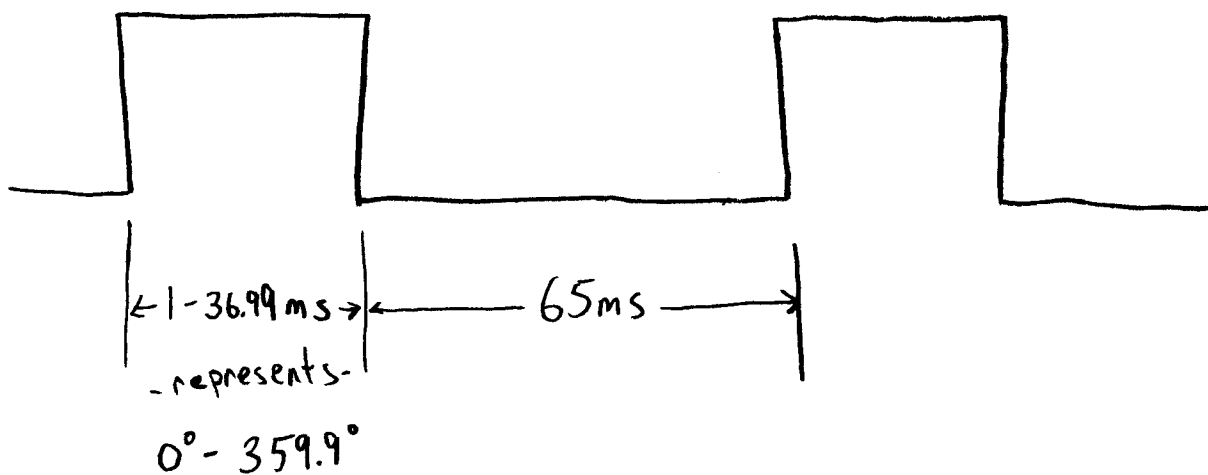
Devantec Compass

CMP503 $\sim 20\text{mA}$

magnetic field sensors $\rightarrow$ Philips KMZ51
sensitive enough to measure
Earth magnetic field

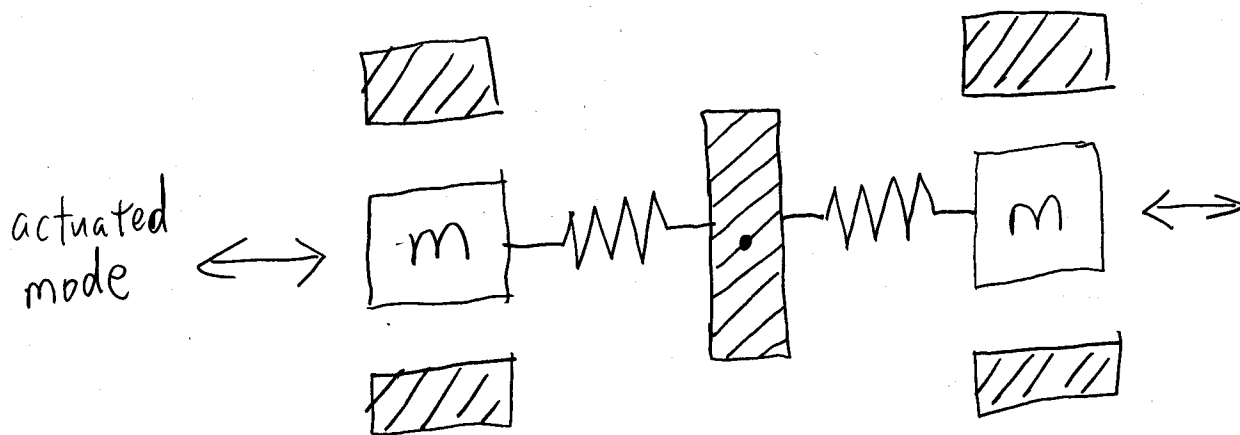
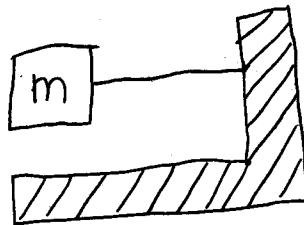


$\Rightarrow$ PWM Output (Pulse Width Modulation)



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

Inertial Measurement Unit (MEMS)



Melexis MLX90609 models

$\pm 75^\circ/\text{s}$	MLX90609EEA-N2
$\pm 150^\circ/\text{s}$	MLX90609EEA-E2
$\pm 300^\circ/\text{s}$	MLX90609EEA-R2

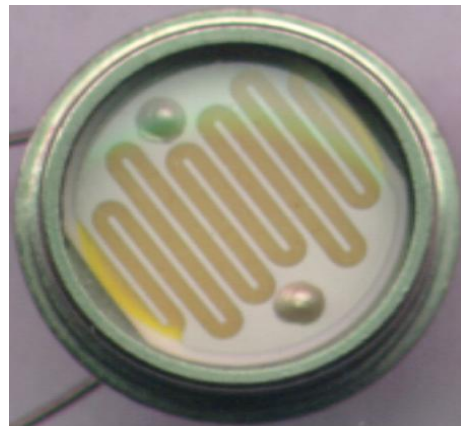
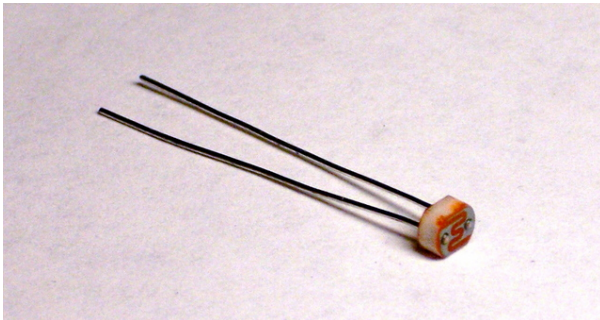
Zero $^\circ/\text{s} \Rightarrow$

4.5 V
↑
2.5 V
↓
0.5 V

Snap Switches (Contact Sensor)



Visible Light Sensors (CdS Photocells)



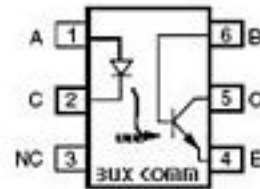
Reflective Photosensor

FEATURES

- Phototransistor Output
- No contact surface sensing
- Unfocused for sensing diffused surfaces
- Compact Package
- Daylight filter on sensor



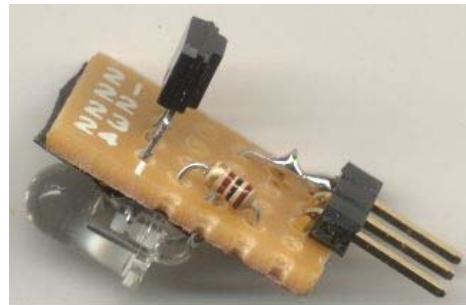
Opto-isolator



Modulated IR sensor (IS471F)



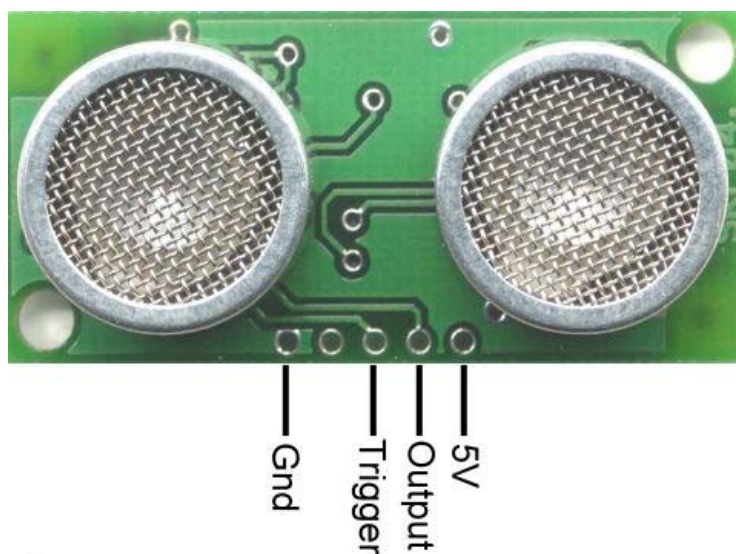
[C] embedit.de

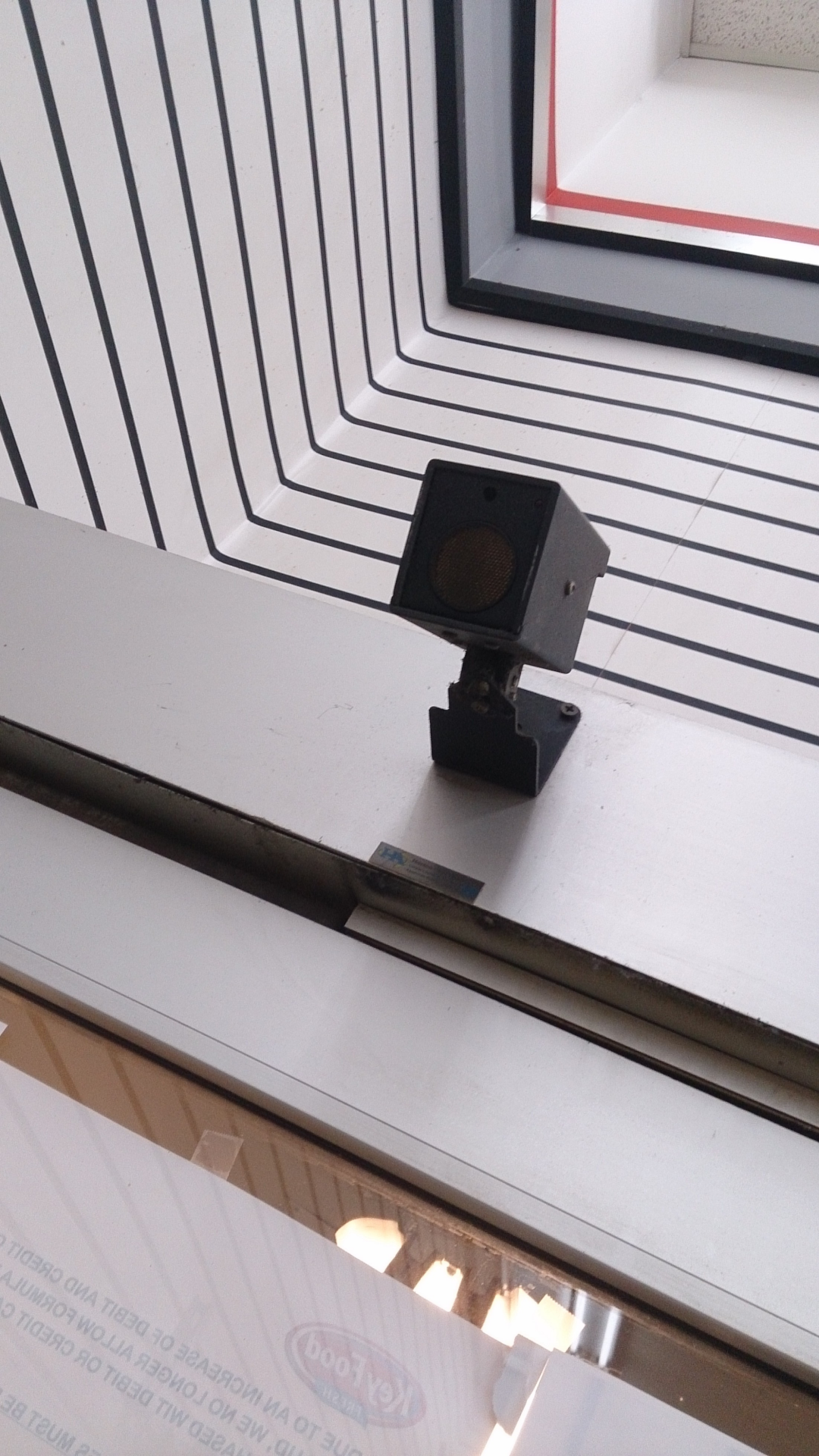


Sharp IR Range Finder (GP2D120)



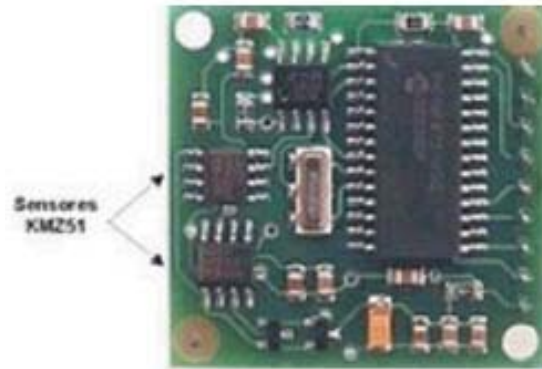
Sonar (SRF04)





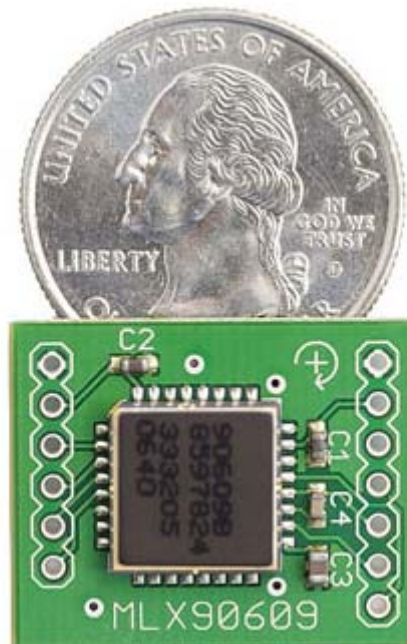
KeyFood
FRESH
DUE TO AN INCREASE OF DEBIT AND CREDIT
ID, WE NO LONGER ALLOW FORMULA
HASED WIT DEBIT OR CREDIT C
MUST BE

Devantec Compass (CMP03)



CMP03

Yaw-Rate Gyroscope (MLX90609)



sensing capacitors

proof-mass

springs

Acc V Spot Magn
10.0 kV 3.0 150x

Det WD
SE 17.1 WJF xac6-31101

200 μ m