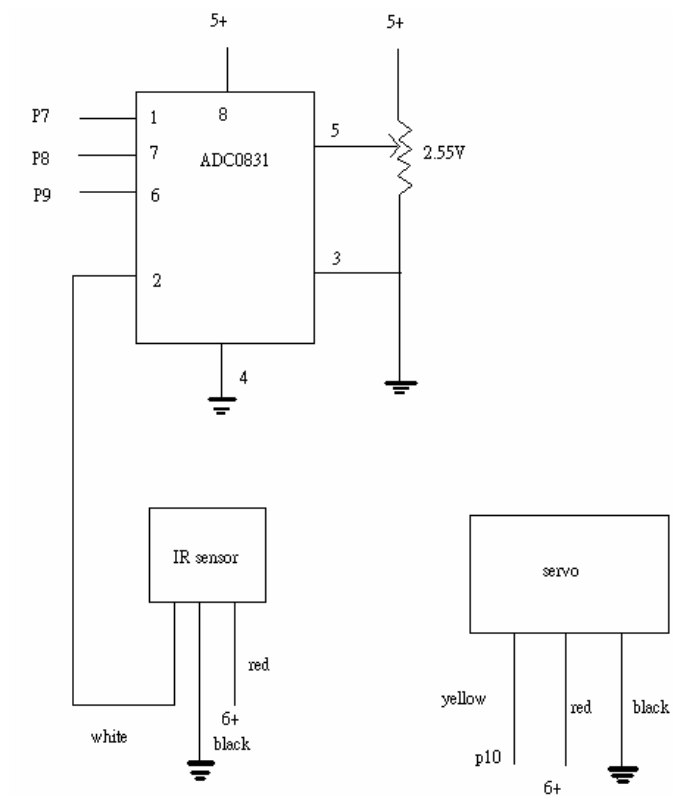


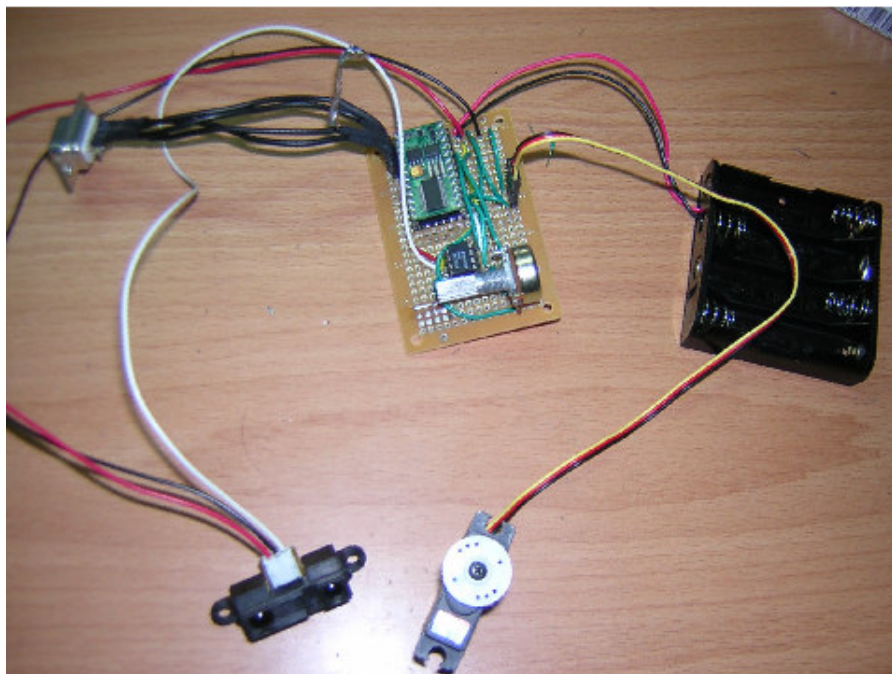
自動曬衣架

這個裝置裝有 BS2、伺服器、IR sensor 和 ADC0831

電路配置圖：



實物：



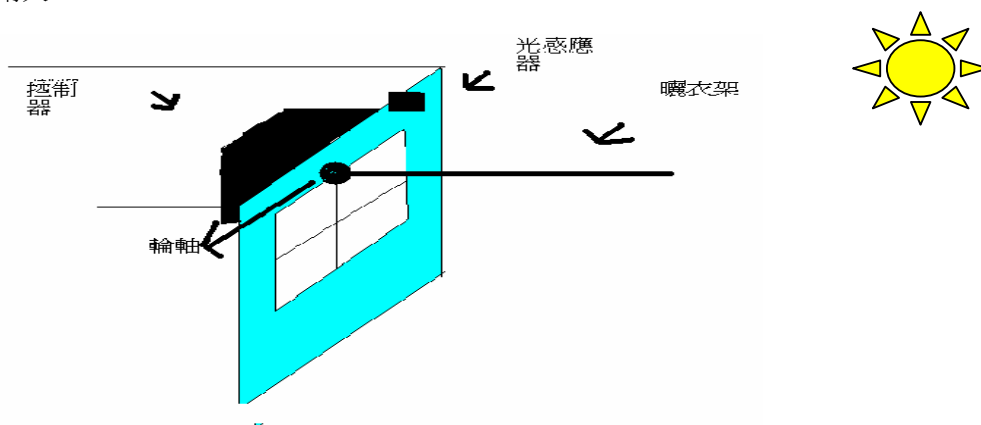
PlayRobot Store

運作說明：

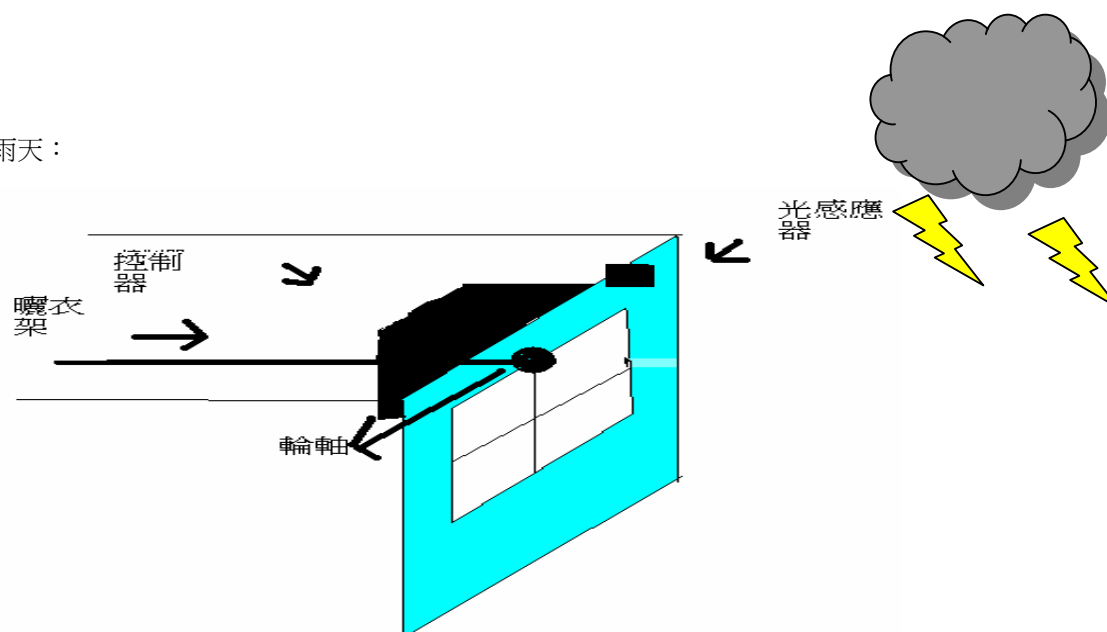
此裝置是利用紅外線偵測距離玻璃版的距離，當下雨時，會改變透光率，使讀數產生變化，藉以啟動伺服器以收放曬衣架。

意圖

晴天：



雨天：



PlayRobot Store

程式碼

```
'  
=====
```

```
File..... GP2D12 Demo.bs2  
Purpose... Demonstrate GP2D12  
Author.... Parallax, Inc.  
E-mail.... support@parallax.com  
{ $STAMP BS2 }  
{ $PBASIC 2.5 }  
'  
=====
```

```
-----[ Program Description ]-----  
  
' This program demonstrates reading the distance in centimeters from the  
' Sharp GP2D12 Analog Distance Sensor.  
  
-----[ I/O Definitions ]-----  
  
Adc0831      PIN      7          ' ADC0831 Chip Select (ADC0831.1)  
AdcClock     PIN      8          ' ADC0831 Clock (ADC0831.7)  
AdcData      PIN      9          ' ADC0831 Data (ADC0831.6)  
  
-----[ Constants ]-----  
  
span         CON      5          ' 5 cm Per Data Point  
  
-----[ Variables ]-----  
  
a            VAR      Word  
result       VAR      Byte          ' ADC8031 Result  
volts        VAR      Word          ' Volts (0.01 Increments)  
cm           VAR      Byte          ' centimeters  
index        VAR      Nib  
test1        VAR      Byte          ' Values For
```

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```
test2          VAR      Byte          ' Interpolation
slope          VAR      Word          ' mV/cm between test points
```

' -----[EEPROM Data]-----

```
Vout           DATA    251, 179, 139, 114, 97
                DATA    85, 76, 67, 62, 57
                DATA    53, 50, 48, 46, 43
                DATA    0
```

' -----[Initialization]-----

```
HIGH Adc0831          ' Disable ADC0831
```

' -----[Program Code]-----

```
DO                      ' relocation
  PULSOUT 10, 1000
  PAUSE 1500
  a = a + 1
LOOP UNTIL(a>=3)
```

'-----

loop1:

```
DO
  GOSUB Read_GP2D12          ' Read Sensor Value
  GOSUB Calculate_Distance   ' Convert Value To cm
  DEBUG HOME, "Distance = ", DEC cm, " cm "
  PAUSE 1000

  IF (cm<=30) THEN EXIT
LOOP
```

```
LOW 10          ' Rotate right 45 degrees'雨天轉回去
```

a = 0

'-----[Subroutines]-----

Read_GP2D12:

```
volts = 0                                ' Reset Sensor Value
FOR index = 0 TO 2                        ' Read 3 Times
  LOW Adc0831                             ' Enable ADC0831
  SHIFTIN AdcData, AdcClock, MSBPOST, [result\9] ' Read The Voltage
  HIGH Adc0831                             ' Disable ADC0831
  volts = volts + result                   ' Add The Values
  PAUSE 30
NEXT
volts = volts / 3                          ' Average The Readings
RETURN
```

Calculate_Distance:

```
FOR index = 0 TO 15                       ' Search DATA Table For Value
  READ (Vout + index), test2              ' Get Value From DATA Table
  IF (test2 <= volts) THEN EXIT           ' Found Value
NEXT
SELECT index
  CASE 0
    cm = 10                               ' Set To Minimum Distance
  CASE 1 TO 14                             ' Calculate Distance
    cm = 10 + (5 * index)
    IF (test2 < volts) THEN                 ' Estimate Using Interpolation
      READ (Vout + index - 1), test1
      slope = (test1 - test2) * 10 / span ' Calculate Slope
      cm = cm - ((volts - test2) * 10 / slope)
    ENDIF
  CASE 15
    cm = 80                               ' Set To Maximum Distance
ENDSELECT
IF cm > 30 THEN
HIGH 9
ELSE
LOW 9
ENDIF
```

翹機器人專賣店 Tel : 02-28806977 · Fax : 02-28834530 · Email : playrobot@playrobot.com

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RETURN