



銀髮族健康照護服務系統 應用專題課程

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教學目標

使修課同學了解最新發展趨勢”物聯網”，及在其基礎上建置銀髮族健康照護與遠距醫療照護之雛型系統。透過各式生理感測模組加上無線感測網路技術、結合行動通信與雲端醫療服務，讓同學漸進式了解並實作最熱門的物聯網感測技術、以及行動通信結合醫療資訊，同時也了解讓修課同學知道相關銀髮族健康照護的重要性。本課程預期加上外師(醫師)加入課程授課，將介紹健康照護方面的資訊，以利應用專題之製作。本課程為教育部課程計畫之核心課程，請同學把握修課。

This course introduces the concepts and system design for elderly person caring. Medical doctor will be invited to assist the course. Lectures will be given not only in Electronic Engineering, but also in medical caring. At last, a prototyping project will be asked to complete for each group.



課程單元4：

- 【1】溫度感測器所測得的溫度在LCD上顯示
- 【2】溼度感測器配合LED及蜂鳴器來做警示

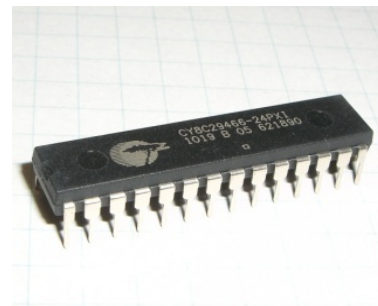
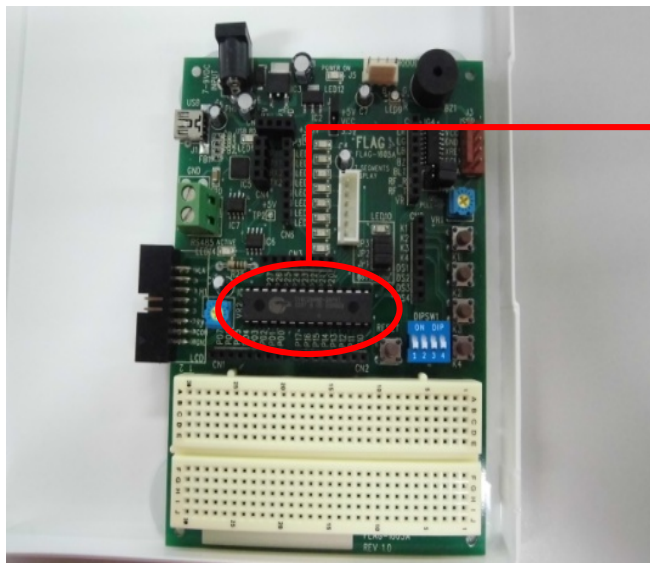
溫度及濕度感測器





學習的硬體設備

旗標公司以**Cypress**公司的
PsoC晶片為核心所設計的**FLAG-1605**實驗板



核心晶片

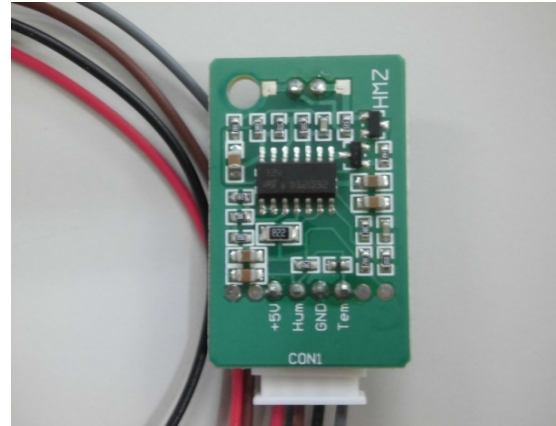
品牌：CYPRESS-賽普拉斯

型號：CY8C29466-24PXI

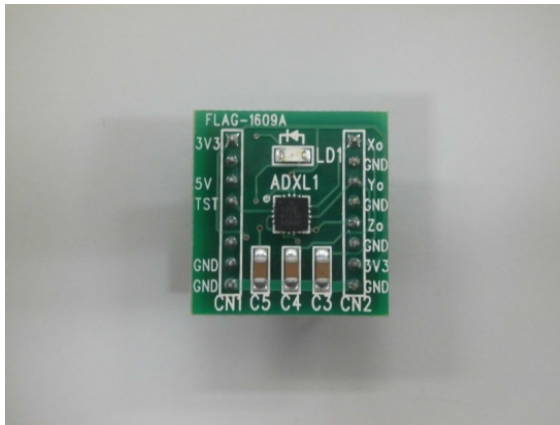


使用的感測器

溫度/溼度感測器



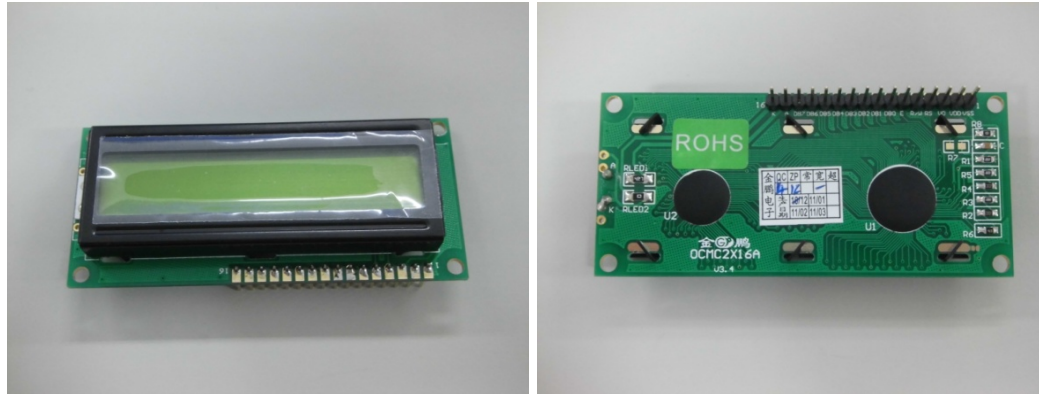
三軸加速器



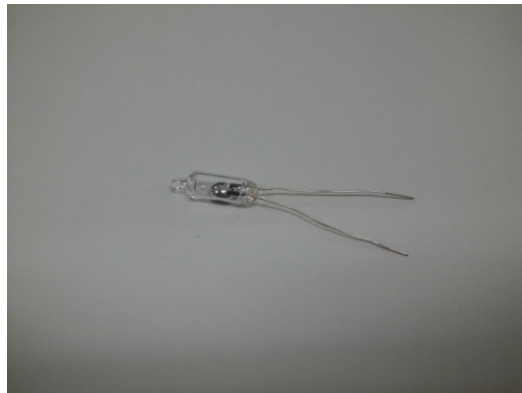


使用的零件

LCD



水銀開關



磁簧開關

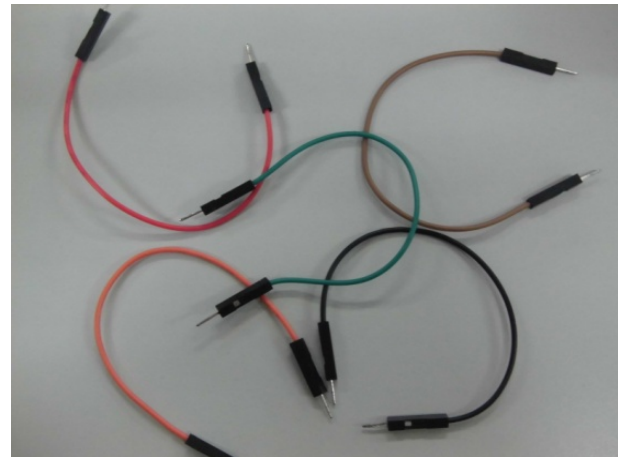




燒錄器



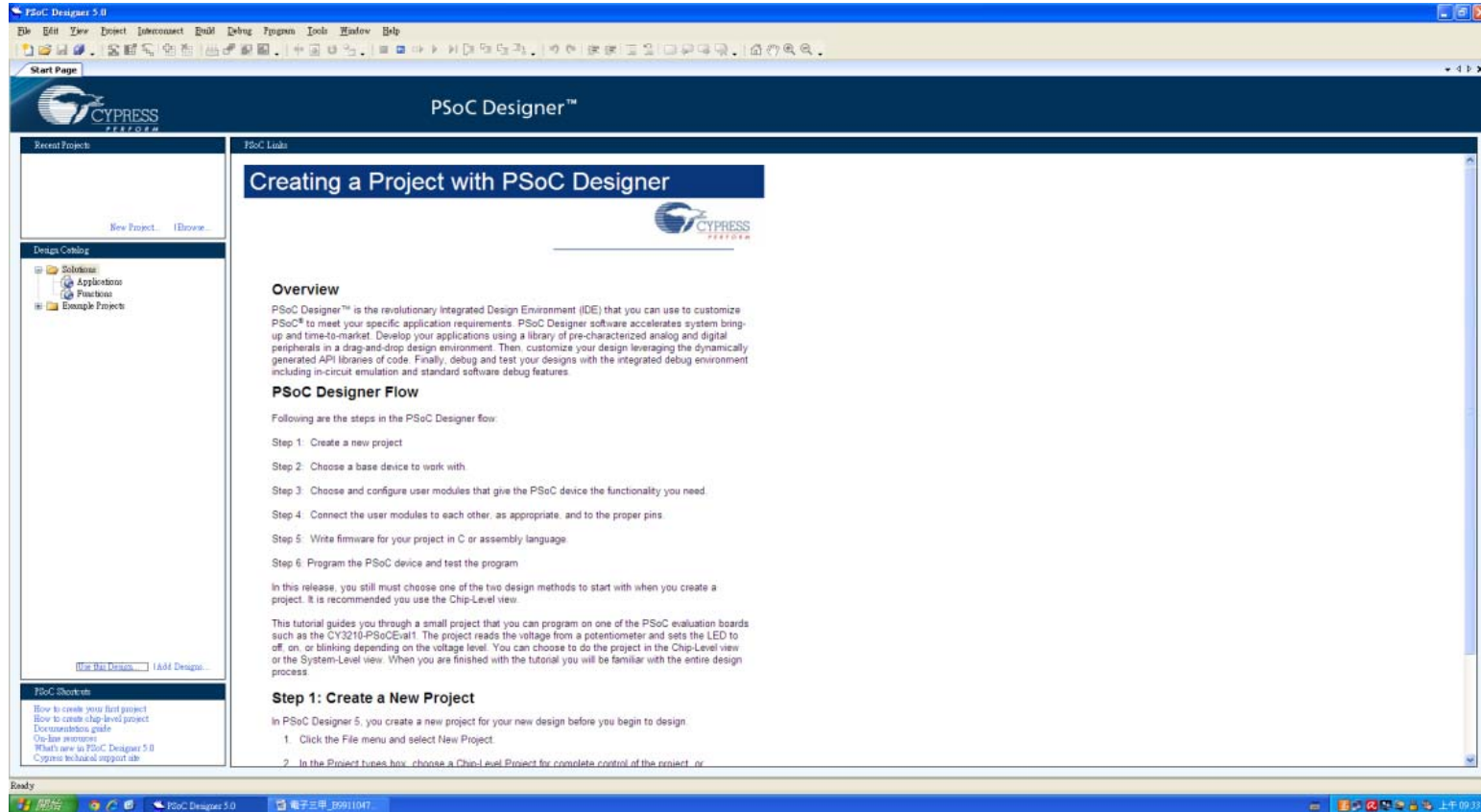
跳線





使用的開發環境：PSoC DESIGNER 5.0

PSoC Designer 5.0的啟動頁面





溫度感測器元件選擇Inputs→Temperature→Thermistor Temp Sensor

Add Input Driver

Name: thermistor

Description: Thermistor - (NTC or PTC)

Functional Description

This temperature sensor input provides an accurate temperature reading over the typical industrial and

Properties:

CONST_A	0.0006506306
CONST_B	0.0002936898
CONST_C	0
REF_RESISTANCE	39000

REF_RESISTANCE
Enter Value of reference resistor.

Do not show this warning

OK Cancel

我們所使用的溫度感測器是熱敏電阻，在不同溫度環境，其電阻值也不同。
其公式換算：

$$\frac{1}{T} = A + B \ln(R) + C(\ln(R))^3$$

A、B、C三個係數，廠商多半會提供。

我們所使用熱敏電阻的A、B、C三個係數

輸入參考電阻值




Add Output Driver

Name: sow_temp

Description: LCD Name, Value, Units
this Certified Cypress Driver has been modified

LCD Name, Value, Units

 [Functional Description](#)
[Driver Properties](#)
[Driver Specifications](#)
[Interface Schematic](#)

Functional Description

This LCD driver supports a 2 × 16, 2 × 20, or 4 × 20 character Hitachi HD44780 based LCD (or functional equivalent). The driver displays a signed 16-bit value with

Properties:

Initial Value	0
Row Location	Rows 0-1
Label	Current Temp
Units	C
Base	Decimal

Initial Value

Do not show this dialog

OK Cancel

LCD屬性設定



實驗結果

顯示溫度為：24.9度C





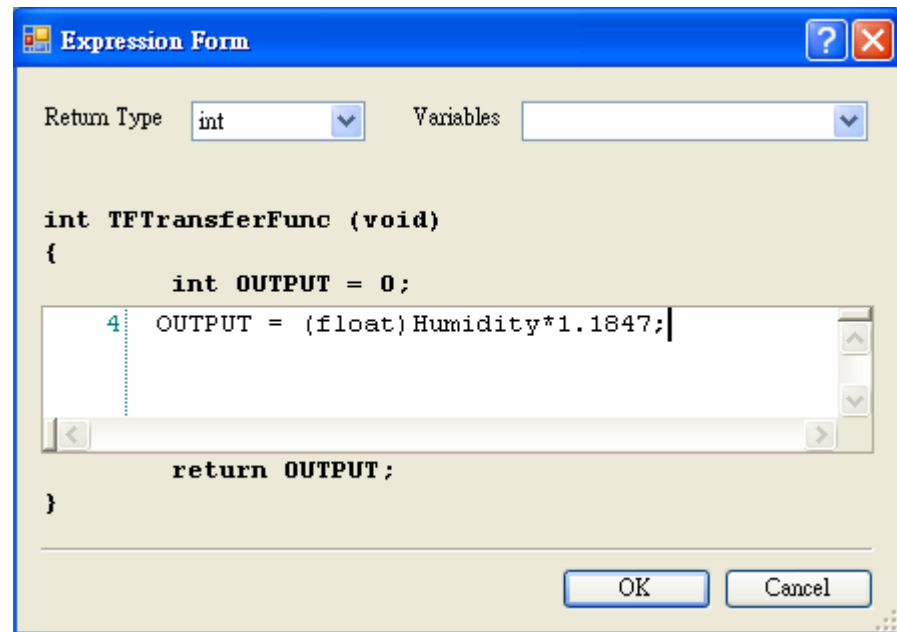
【2】溼度感測器配合led及蜂鳴器來做警示

選擇Inputs → Humidity → HIH3610



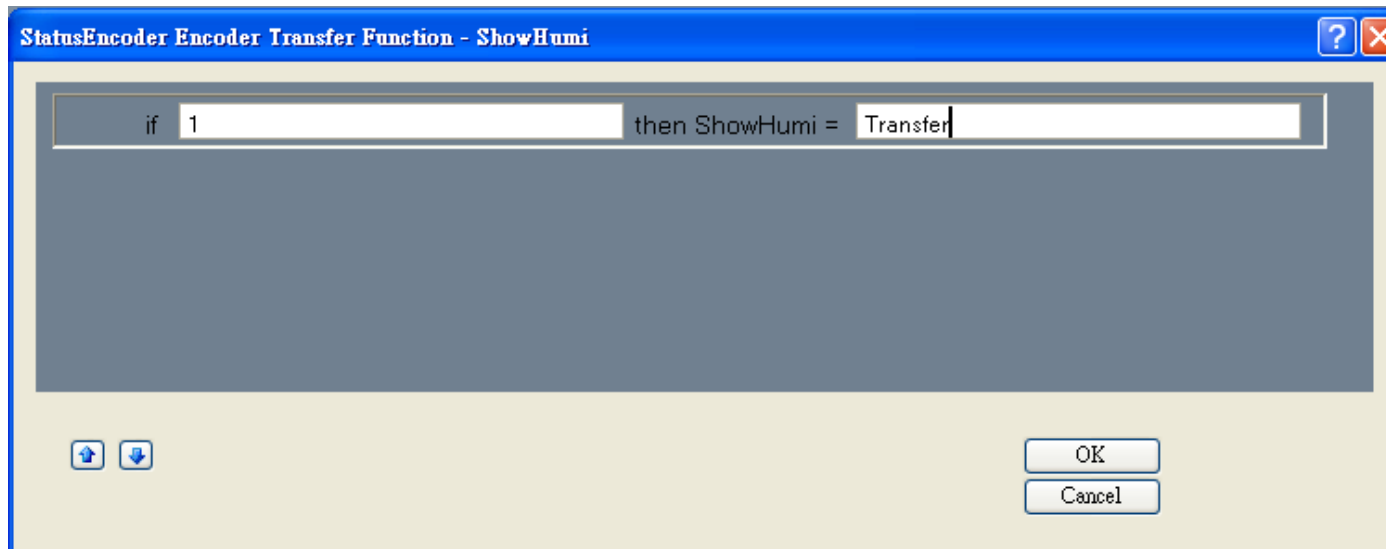
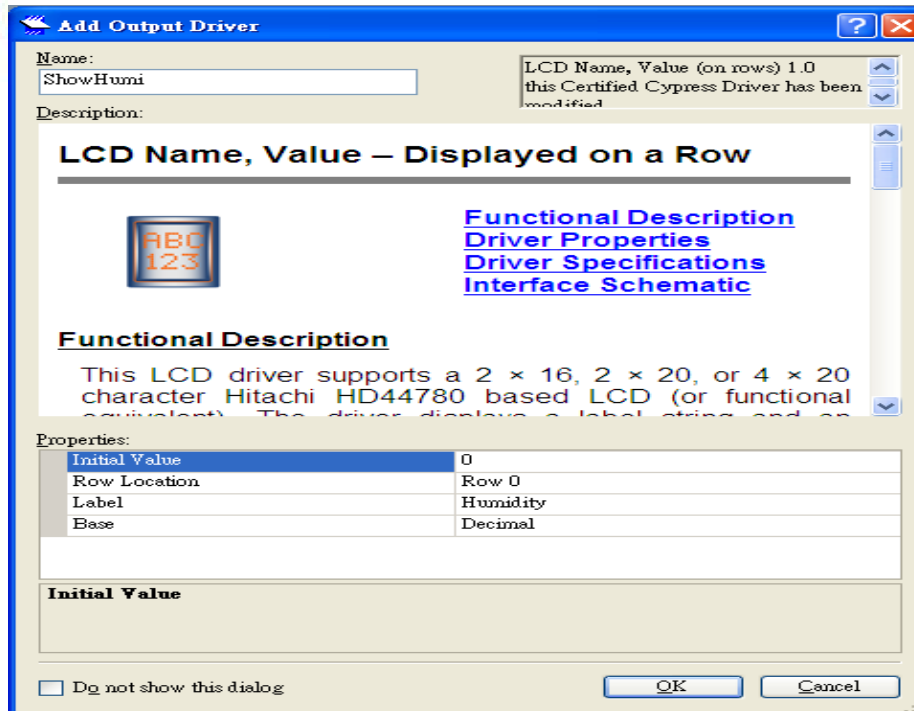
因軟體元件須配合實體元件，必須將實體元件所讀取的濕度換算出軟體元件的濕度。

選擇Valuators → Transfer Function
Valuators → LiteralCode並設定。



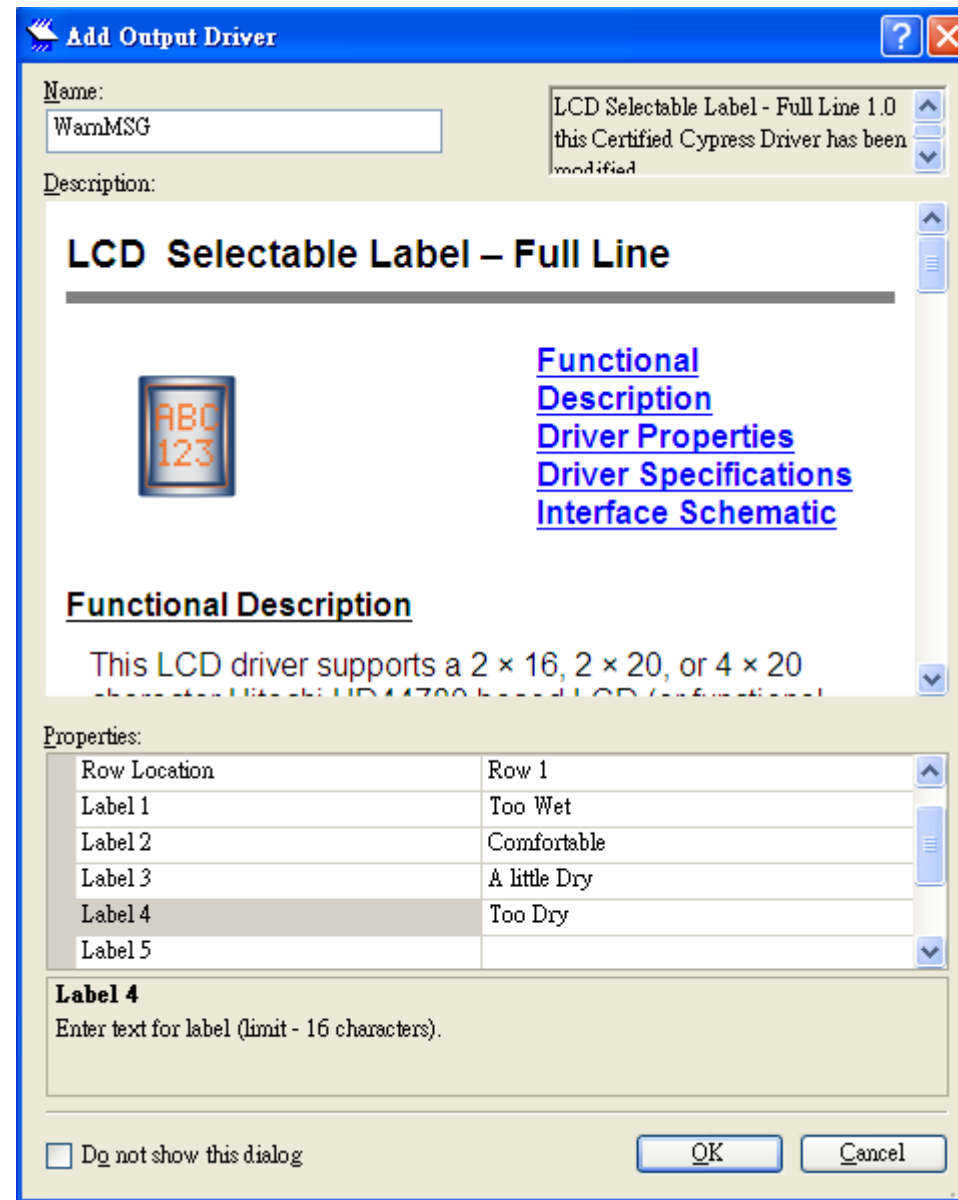


拉出一LCD來顯示濕度並設定其TransferFunction





拉出另一LCD並設定其TransferFunction用來顯示當前字幕訊息





PriorityEncoder Encoder Transfer Function - WarnMSG

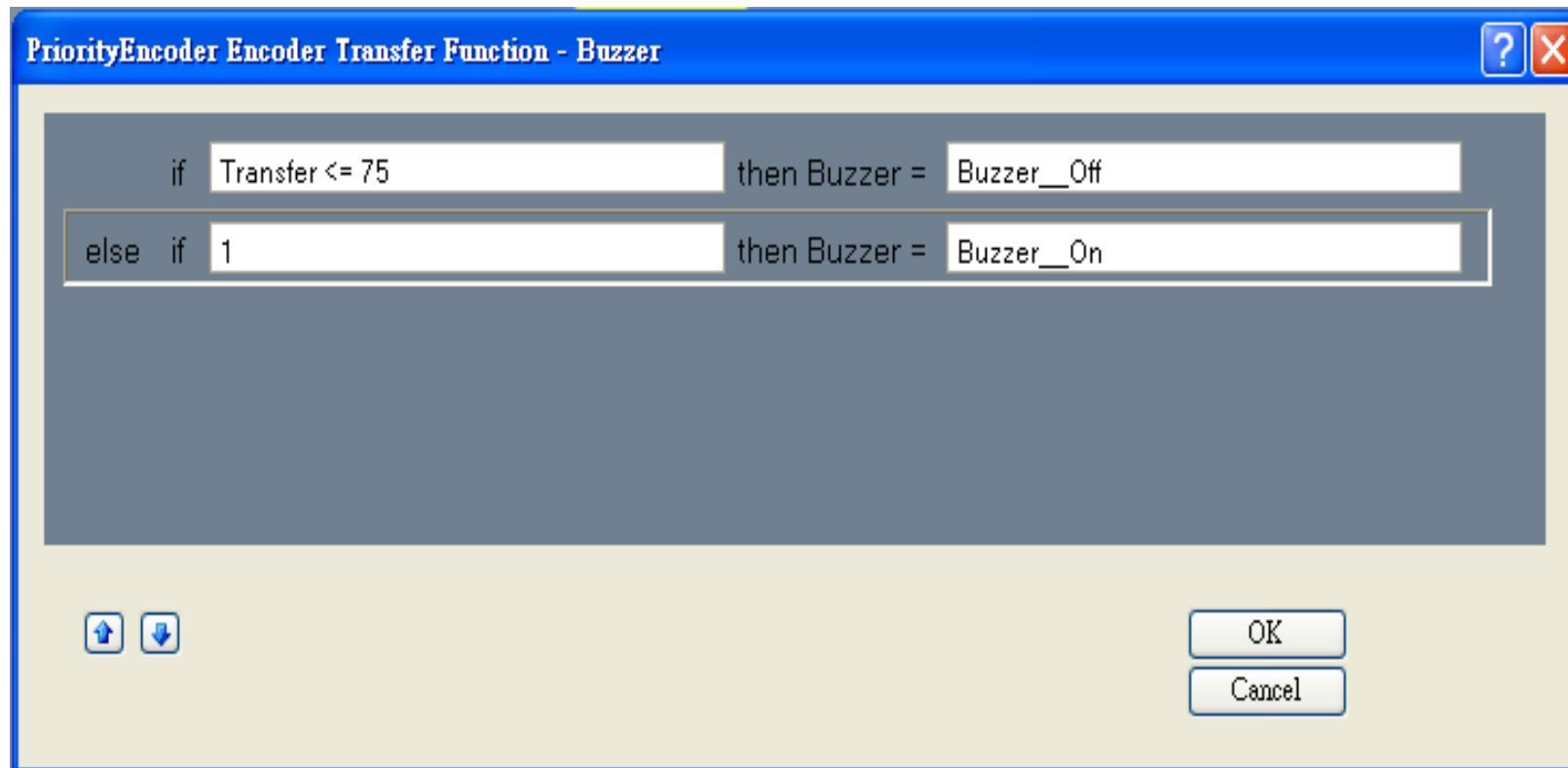
if	Transfer > 75	then WarnMSG =	WarnMSG_Label_1
else if	Transfer >= 45	then WarnMSG =	WarnMSG_Label_2
else if	Transfer >= 40	then WarnMSG =	WarnMSG_Label_3
else if	1	then WarnMSG =	WarnMSG_Label_4

↑ ↓

OK
Cancel



接著拉出一蜂鳴器並設定當濕度大於75時，就啟動





再來拉出一閃爍led並設定不同溼度會有不同的點亮方式

PriorityEncoder Encoder Transfer Function - LED

if	Transfer < 40	then LED =	LED_BLINKING
else if	Transfer < 45	then LED =	LED_ON
else if	1	then LED =	LED_OFF

↑ ↓

OK
Cancel



實驗結果

不同濕度會有不同字幕提示，且濕度大於75，蜂鳴器會響，小於45LED會亮

