

VC2500-TR2 空氣品質傳訊器(RS485輸出)使用說明書

VC2500-TR2 Air Quality Transmitter (RS485 output) Instruction Manual

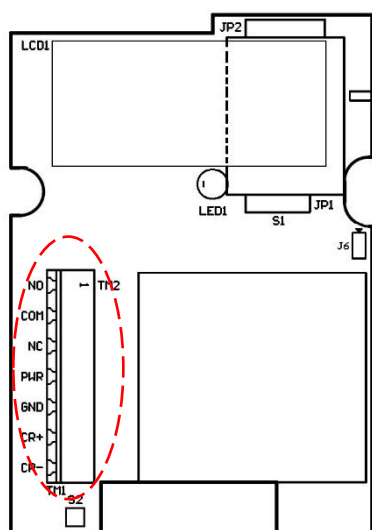
感謝您購買本公司的產品！為使產品能正常運作，請您詳閱使用手冊，並請依照說明操作。謝謝！
 Thanks for choosing our product! Please read carefully and follow this instruction before using!

產品介紹 Introductions

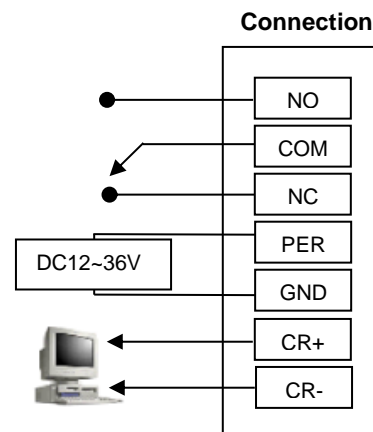
VC2500-TR2 (CO2/PM2.5/PM10/Temp./Humi.傳訊器)，專為檢測環境二氧化碳濃度而設計，應用於智慧型通風系統控制及環境監控上，作有效地能源消耗控制和改善室內空氣品質。此系列產品採用NDIR的紅外線波導技術及空氣採樣感測元件，提高其量測的準確性。可搭配智慧型大樓的通風系統及空調系統，根據室內人數多寡來做適當通風控制，以保持室內空氣的清新，在人少或無人時，可自動調節低通風量，亦可搭配監控系統同時做濃度監測。可應用於商場、辦公室、會議室、教室、餐廳、火車站、或各式公共場所等空間。

VC2500-TR2 (CO2/PM2.5/ PM10/Temp./Humi. transmitter) is designed for measuring the ambient carbon dioxide and particulate matter concentration or with optional measurement of temperature & humidity and provide signal output for monitoring or control. Utilizing NDIR sensing element ensures its accuracy of measurement. It is perfect for building climate control, greenhouse, mushroom farms and other processes where environmental control or monitoring is required. By controlling the ventilation or air-conditioning system based on actual demand, it helps to reduce energy consumption while maintaining a healthy indoor climate.

接線方式 Wiring



1.	N.O	Normally opened
2.	COM	Com
3.	N.C	Normally closed
4.	PWR	DC 12 ~ 36V
5.	GND	System GND
6.	CR+	RS-485(+)
7.	CR-	RS-485(-)

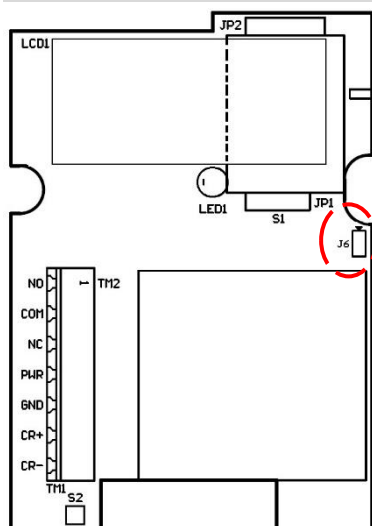


【圖一】 Figure 1

注意：接線前後，請勿接上電源，以免造成機板損壞，或發生危險

Notice: Please remove power from the unit before wiring, in order to avoid any damage or hazard.

PM模式設定 PM mode setting

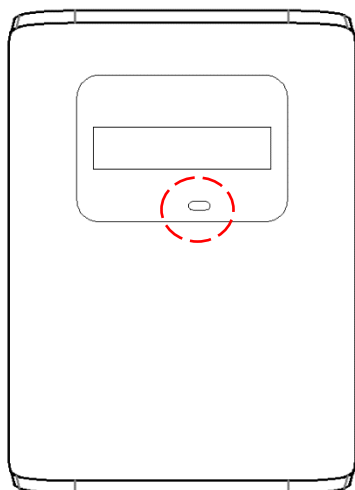


J6設定如下

- 當J6放置短路夾：螢幕顯示為PM2.5。
When jumper is put on J6, the screen display PM2.5.
- 當J6未放置短路夾：螢幕顯示為PM10。
When jumper is take off J6, the screen display PM10.

PM mode	J6
PM 2.5	
PM 10	

警示燈顯示 LED Display



警示燈號 LED	警示燈號說明 LED Status
綠燈亮 Green light up	當CO ₂ 及PM偵測濃度值 ≤ 下限設定值，警示燈綠燈亮。 The green light is on when carbon dioxide value and PM concentration value less than the LED lower limit setting.
黃燈亮 Yellow light up	當上限設定值 > CO ₂ 或PM偵測濃度 > 下限設定值時，警示燈黃燈亮。 The yellow light is on when carbon dioxide value or PM concentration value more than the LED upper limit setting, and less than the LED lower limit setting.
紅燈亮 Red light up	當CO ₂ 或PM偵測濃度值 ≥ 上限設定值，警示燈紅燈亮。 The red light is on when carbon dioxide value or PM concentration value more than the LED upper limit setting

※ 警示燈設定，請參考「警示燈設定」說明。

Please refer to the "LED Setting" description for LED settings.

通訊協定 Modbus RTU :

ID : 0x01 (Default) ; Baud Rate = 9600 (Default) ; Word Length = 8 ; Parity = none ; Stop Bits = 1

讀資料的格式 Data Reading Type

	軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料長度 (高位元) Data Length(H)	資料長度 (低位元) Data Length(L)	錯誤檢查 Checksum
CO ₂	By setting	0x03	0x00	0x00	0x00	0x01	XXXX ⁽¹⁾
PM _{2.5}	By setting	0x03	0x00	0x01	0x00	0x01	XXXX ⁽¹⁾
PM ₁₀	By setting	0x03	0x00	0x02	0x00	0x01	XXXX ⁽¹⁾
Temp	By setting	0x03	0x00	0x03	0x00	0x01	XXXX ⁽¹⁾
Humi	By setting	0x03	0x00	0x04	0x00	0x01	XXXX ⁽¹⁾
CO ₂ & PM _{2.5} & PM ₁₀ & T & H	By setting	0x03	0x00	0x00	0x00	0x05	XXXX ⁽¹⁾

回應資料的格式 Responding Data Type

	軟體位址 Device ID	功能 Function	資料 組數 Data byte	CO ₂ ⁽²⁾ PPM		PM _{2.5} ⁽³⁾ µg/ m ³		PM ₁₀ ⁽⁴⁾ µg/ m ³		Temp ⁽⁵⁾ °C		Humi ⁽⁶⁾ %RH	
				Data (H)	Data (L)	Data (H)	Data (L)	Data (H)	Data (L)	Data (H)	Data (L)	Data (H)	Data (L)
CO ₂	By setting	0x03	0x02	0x02	0xDC								
PM _{2.5}	By setting	0x03	0x02			0x00	0x3C						
PM ₁₀	By setting	0x03	0x02					0x00	0x3F				
Temp	By setting	0x03	0x02							0x09	0x34		
Humi	By setting	0x03	0x02									0x13	0x0B
CO ₂ & PM _{2.5} & PM ₁₀ & T & H	By setting	0x03	0x08	0x02	0xDC	0x00	0x3C	0x00	0x3F	0x09	0x34	0x13	0x0B

※備註 Remark :

1. XXXX為CRC16的檢查碼(Checksum)。XXXX is the checksum for CRC16。
2. 二氧化碳所得資料即是ppm，資料為16進制。所得資料為0x02DC轉為10進制，即得732ppm。
The unit of carbon dioxide data is ppm, the data obtained is hexadecimal. To convert 0x02DC to decimal, could get 732ppm.
3. PM2.5所得資料為16進制。所得資料為0x003C轉為10進制，即得60 µg/m³。
PM2.5 data obtained is hexadecimal. To convert 0x003C to decimal, could get 60 µg/m³
4. PM10所得資料為16進制。所得資料為0x003F轉為10進制，即得63 µg/m³。
PM10 data obtained is hexadecimal. To convert 0x003F to decimal, could get 63 µg/m³
5. 溫度所得資料為16進制，所得資料為0x0934轉為10進制，除100即是溫度資料，(2356/100) = 23.56 °C。
Temperature data obtained is hexadecimal. To convert 0x0934 to decimal and divided by 100, could get 23.56 °C.
6. 溼度所得資料為16進制，所得資料為0x130B轉為10進制，除100即是溼度資料，(4875/100) = 48.75 %RH。
Humidity data obtained is hexadecimal. To convert 0x130B to decimal and divided by 100, could get 48.75%RH.

校正方式 Calibration

CO2若732ppm要校正為662ppm，校正值為(662-732) = -70ppm轉成16進制0xFFBA即可。

To calibrate 732 to 662ppm, the correction is (662-732) = -70 and convert that value to 0xFFBA (hexadecimal).

	軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Checksum
CO2 ppm	By setting	0x06	0x00	0x05	0xFF	0xBA	XXXX

PM2.5若60µg/m³要校正為55µg/m³，校正值為(55-60) = -5ppm轉成16進制0xFFFB即可。

To calibrate 60 to 55µg/m³, the correction is (55-60) = -5 and convert that value to 0xFFFB (hexadecimal).

	軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Checksum
PM2.5 µg/m ³	By setting	0x06	0x00	0x0A	0xFF	0xFB	XXXX

PM10若63µg/m³要校正為58µg/m³，校正值為(58-60) = -5ppm轉成16進制0xFFFB即可。

To calibrate 63 to 58µg/m³, the correction is (58-60) = -5 and convert that value to 0xFFFB (hexadecimal).

	軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Checksum
PM10 µg/m ³	By setting	0x06	0x00	0x0D	0xFF	0xFB	XXXX

Temp若23.56度要校正為20.56度，校正值為(20.56-23.56)*100 = -300轉成16進制 0xFED4即可

To calibrate 23.56 to 20.56°C, the value is (20.56-23.56)*100=-300 and convert that value to 0xFED4 (hexadecimal).

	軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Checksum
Temperature	By setting	0x06	0x00	0x10	0xFE	0xD4	XXXX

Humi若48.75%RH要校正為51.75%RH，校正值為(51.75-48.75)*100=300轉成16進制0x012C即可。

To calibrate 48.75%RH to 51.75%RH, the value is (51.75-48.75)*100=300 and convert that value to 0x012C (hexadecimal).

	硬體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Checksum
Humidity	By setting	0x06	0x00	0x11	0x01	0x2C	XXXX

※備註 Remark :

二氧化碳可調範圍為±70ppm、PM2.5及PM10調範圍為±150µg/m³、溫度(°C)和溼度(%RH)可調範圍為±1000。
The adjustable range of Carbon dioxide is ±70ppm; PM2.5 and PM10 adjustable range is ±150µg/m³;
Temperature (°C)/ Humidity (%RH) adjustable range is ±1000

CO2指示燈設定 CO2 LED Setting

若CO2警示燈上限要設定為1200，則1200轉成16進制0x04B0即可。

Carbon dioxide LED upper limit is to be changed to 1200, convert 1200 into hexadecimal as "0x04B0".

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x06	0x00	0x08	0x04	0xB0	XXXX

若CO2警示燈下限要設定為600，則600轉成16進制0x0258即可。

Carbon dioxide LED lower limit is to be changed to 600, convert 600 into hexadecimal as "0x0258".

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x06	0x00	0x09	0x02	0x58	XXXX

※備註 Remark :

- CO2警示燈上限可調範圍為401~9999，預設值1200。The LED adjustable range of upper limit is 401~9999, default is 1200.
- CO2警示燈下限可調範圍為400~9998，預設值800。The LED adjustable range of lower limit is 400~9998, default is 800.

PM2.5指示燈設定 PM2.5 LED Setting

若PM2.5警示燈上限要設定為50，則50轉成16進制0x0032即可。

PM2.5 LED upper limit is to be changed to 50, convert 50 into hexadecimal as "0x0032".

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x06	0x00	0x0B	0x00	0x32	XXXX

若PM2.5警示燈下限要設定為10，則10轉成16進制0x000A即可。

PM2.5 LED lower limit is to be changed to 10, convert 10 into hexadecimal as "0x000A".

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x06	0x00	0x0C	0x00	0x0A	XXXX

※備註 Remark :

- PM2.5警示燈上限可調範圍為6~1000，預設值35。The LED adjustable range of upper limit is 6~1000, default is 35.
- PM2.5警示燈下限可調範圍為5~999，預設值15。The LED adjustable range of lower limit is 5~999, default is 15.

PM10指示燈設定 PM10 LED Setting

若PM10警示燈上限要設定為50，則50轉成16進制0x0032即可。

PM10 LED upper limit is to be changed to 50, convert 50 into hexadecimal as "0x0032".

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x06	0x00	0x0E	0x00	0x32	XXXX

若PM10警示燈下限要設定為10，則10轉成16進制0x000A即可。

PM10 LED lower limit is to be changed to 10, convert 10 into hexadecimal as "0x000A".

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x06	0x00	0x0F	0x00	0x0A	XXXX

※備註 Remark :

- PM10 警示燈上限可調範圍為6~1000，預設值35。The PM10 LED adjustable range of upper limit is 6~1000, default is 35.
- PM10 警示燈下限可調範圍為5~999，預設值15。The PM10 LED adjustable range of lower limit is 5~999, default is 15.

變更裝置ID Change DeviceID

若ID要修改為10，則下達10轉成16進制0x000A即可。

Device ID is to be changed to 10, convert 10 into hexadecimal as "0x000A".

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x06	0x00	0x12	0x00	0x0A	XXXX

變更鮑率 Change BaudRate

若Baud Rate=9600要修改為19200，則下達16轉成16進制0x0010即可。

To change baud rate from 9600 to 19200, convert 16 into hexadecimal as "0x0010".

Baud Rate	硬體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
9600	By setting	0x06	0x00	0x13	0x00	0x00	XXXX
19200	By setting	0x06	0x00	0x13	0x00	0x10	XXXX
38400	By setting	0x06	0x00	0x13	0x00	0x20	XXXX
57600	By setting	0x06	0x00	0x13	0x00	0x30	XXXX
115200	By setting	0x06	0x00	0x13	0x00	0x40	XXXX

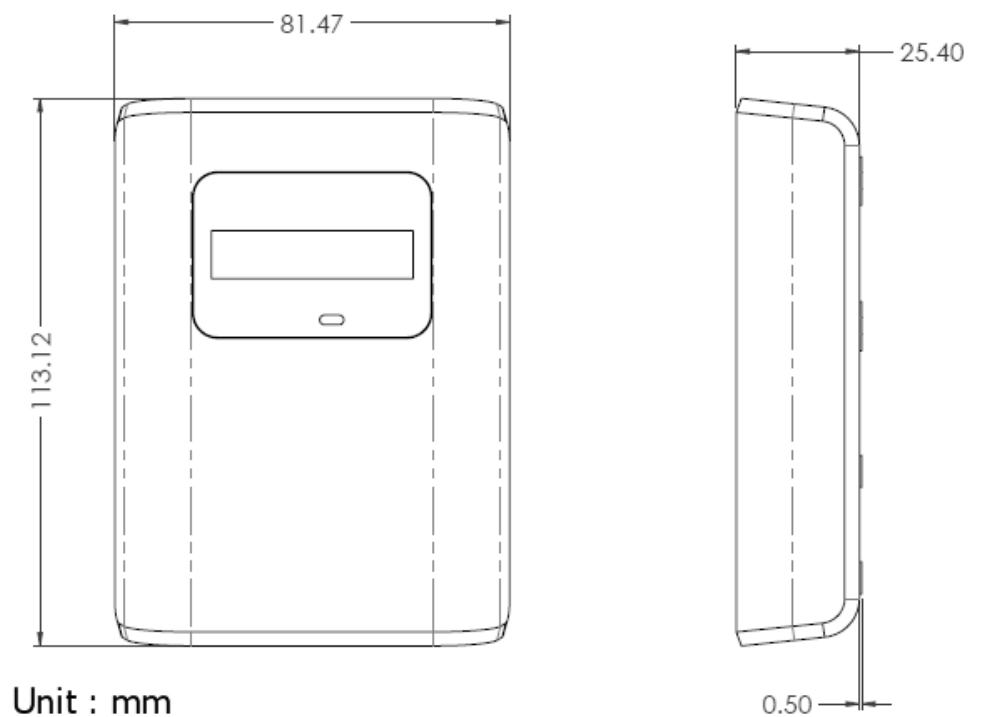
CO2大氣校正 Background calibration

若進行CO2大氣400ppm校正，則下達以下指令即可。

The CO2 background (atmosphere) is calibrated to 400 ppm, following below the command.

軟體位址 Device ID	功能 Function	軟體位址 (高位元) Address(H)	軟體位址 (低位元) Address(L)	資料內容 (高位元) Data (H)	資料內容 (低位元) Data (L)	錯誤檢查 Check Sum
By setting	0x15	0x00	0x00	0x00	0x06	XXXX

尺寸 Dimensions



安裝方式 Installation

1. 請確認傳訊器、配件、說明書是否齊全。

Please check if the transmitter, accessory pack and instruction manual are included in the package.

2. 請選定安裝傳訊器的位置。 Please decide right position for installation.

3. 以一字型螺絲起子按壓產品外殼上方的卡榫，以打開上蓋。(請參閱圖二 ~ 圖四)

Press tenon on top of the housing with a screw driver to remove the upper cover. (Please refer to the Figure 2 to Figure 4)

4. 將底座以螺絲固定在欲安裝的牆面或裝線盒上。 Fix the base with screws on the wall.

5. 請依接線圖連接訊號線 (請參考接線圖一) Please refer Figure 1 for wiring.

**** 注意：接線前，請勿接上電源，以免造成機板損壞，或發生危險。**

Notice: Please remove power from the unit before wiring, in order to avoid any damage or hazard.

6. 將上蓋扣住底座上方的卡榫後，蓋上即可。 Replace and fix the upper cover back to the unit.



【圖二】 Figure 2



【圖三】 Figure 3



【圖四】 Figure 4