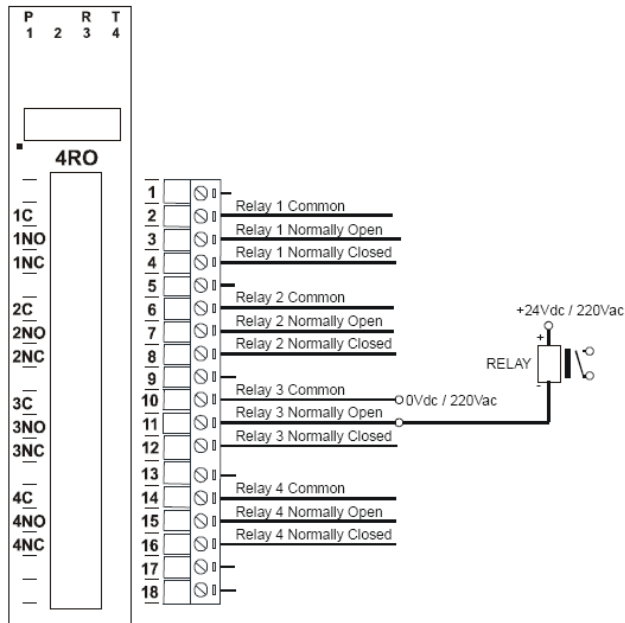


CHUNDE TECHNOLOGY

DCS系列操作手冊

DCS-04RO

接線圖:



3.4.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 I0 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	模式	Off:設為副站(Slave)，On:設為主站(Master)
10	通訊參數	Off:為預設值 9600/N/8/1，On:可經由 I0 Studio 變更

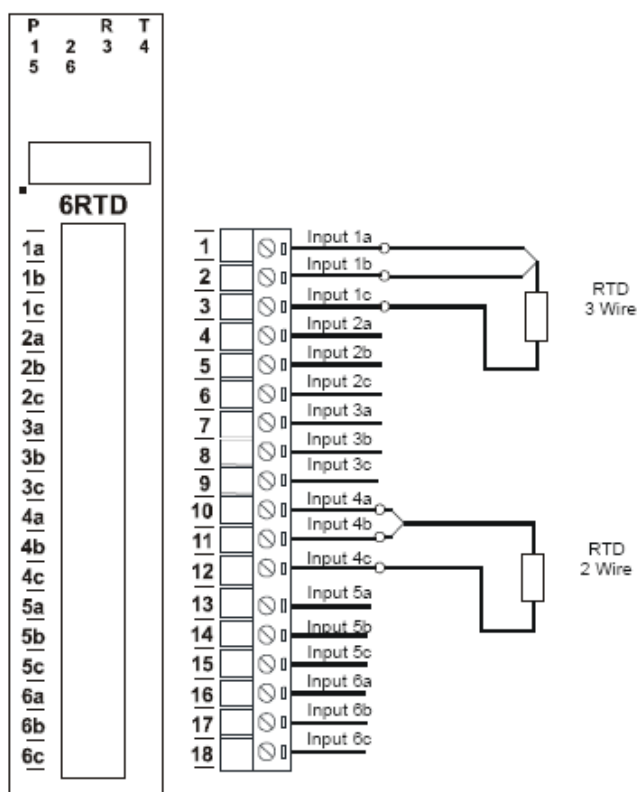
3.4.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
00001	繼電器輸出 1	0	1	可讀/寫	數位輸出控制
00002	繼電器輸出 2	0	1	可讀/寫	"
00003	繼電器輸出 3	0	1	可讀/寫	"
00004	繼電器輸出 4	0	1	可讀/寫	"
30001	韌體版本 模組型式	無	無	可讀	高位元組=韌體版本 低位元組=113
40002	數位輸出控制	無	無	可讀/寫	D04~D01=Bit4~Bit0
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	通訊異常,輸出狀態	0	255	可讀/寫	0=保持最後狀態,1~255 設定保持最後狀態時間
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0=無 none,1=偶 even,2=奇 odd
40123	停止位元	1	2	可讀/寫	1=1 停止位元, 2=2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

數位輸出															位址	
MSB																LSB
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	40002
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	

DCS-06RTD

接線圖:



4.2.2 指撥開關設定

開 關	功 能	說 明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	感溫線斷線	Off: 數值輸出 -32767 On: 數值輸出 32767
10	通訊參數	Off: 為預設值 9600/N/8/1, On: 可經由 IO Studio 變更

4.2.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝ 109
30002	RTD 輸入 1	-xxx.x	yyyy.y	可讀	參考輸入範圍表
30003	RTD 輸入 2	-xxx.x	yyyy.y	可讀	解析度 0.1℃
30004	RTD 輸入 3	-xxx.x	yyyy.y	可讀	"
30005	RTD 輸入 4	-xxx.x	yyyy.y	可讀	"
30006	RTD 輸入 5	-xxx.x	yyyy.y	可讀	"
30007	RTD 輸入 6	-xxx.x	yyyy.y	可讀	"
30008	輸入狀態	0	65535	可讀	Bit1 = 0(正常) Bit1 = 1(異常或開路)
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	RTD 型式	1	7	可讀/寫	參考輸入型式參數表
40102	Line Frequency	50	60	可讀/寫	線上頻率
40103	單位	1	2	可讀/寫	1=℃, 2=℉
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400, 57600, 115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1 = 偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0 = 除能, >1 = 致能. (x10ms)

MSB			溫度輸入						LSB						位址	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30008

↓

通道 6 狀態

↓

通道 5 狀態

↓

通道 4 狀態

↓

通道 3 狀態

↓

通道 2 狀態

↓

通道 1 狀態

4.2.4 LED 狀態(通道)

不亮：表示感溫線連接正常

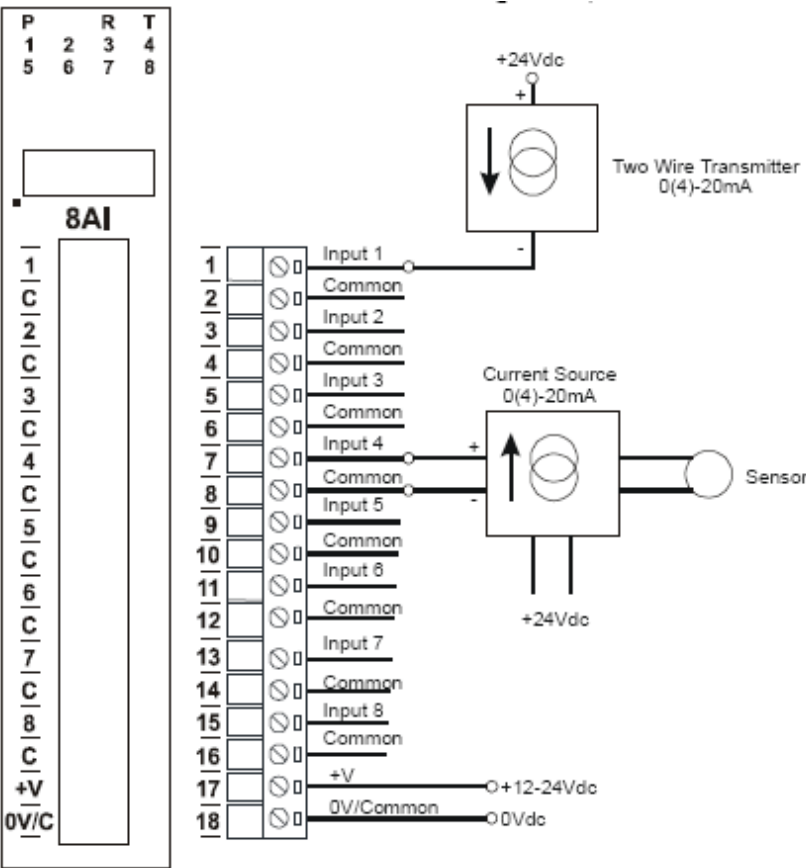
恆亮：表示感溫線開路

4.2.5 輸入型式

RTD 型式	代號	型式	範圍	誤差值
	1	PT100	-200 ~ 850°C	± 0.3°C, IEC 751:1983
	2	Ni120	-80 ~ 320°C	± 0.3°C
	3	PT1000	-200 ~ 850°C	± 0.3°C
	4	Ni1000-DIN	-200 ~ 850°C	± 0.3°C
	5	Ni1000-Landys&Gyr	-200 ~ 850°C	± 0.3°C
	6	電阻 Ohms	10 ~ 400 Ω	± 0.05%
	7	電阻 Ohms	100 ~ 4000 Ω	± 0.05%

DCS-08AI

接線圖:



5.2.2 指撥開關設定

開 關	功 能	說 明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	變更輸入低限值	Off:0~20mA , On:4~20mA
10	通訊參數	Off:為預設值 9600/N/8/1 , On:可經由 IO Studio 變更

5.2.3 Modbus 位址表

位址	暫存器名稱	限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組=韌體版本 低位元組 = 103
30002	電流輸入 1	0	4095	可讀	電流輸入 12 Bits
30003	電流輸入 2	0	4095	可讀	"
30004	電流輸入 3	0	4095	可讀	"
30005	電流輸入 4	0	4095	可讀	"
30006	電流輸入 5	0	4095	可讀	"
30007	電流輸入 6	0	4095	可讀	"
30008	電流輸入 7	0	4095	可讀	"
30009	電流輸入 8	0	4095	可讀	"
30010	輸入狀態	0	65535	可讀	Bit0 = 0(正常), Bit0 = 1(有錯誤) Bit1 = 0(開路,< 2), Bit1 = 1(超出範圍)
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1=偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

類比輸入															位 址	
MSB																LSB
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30010



5.2.4 LED 狀態(通道)

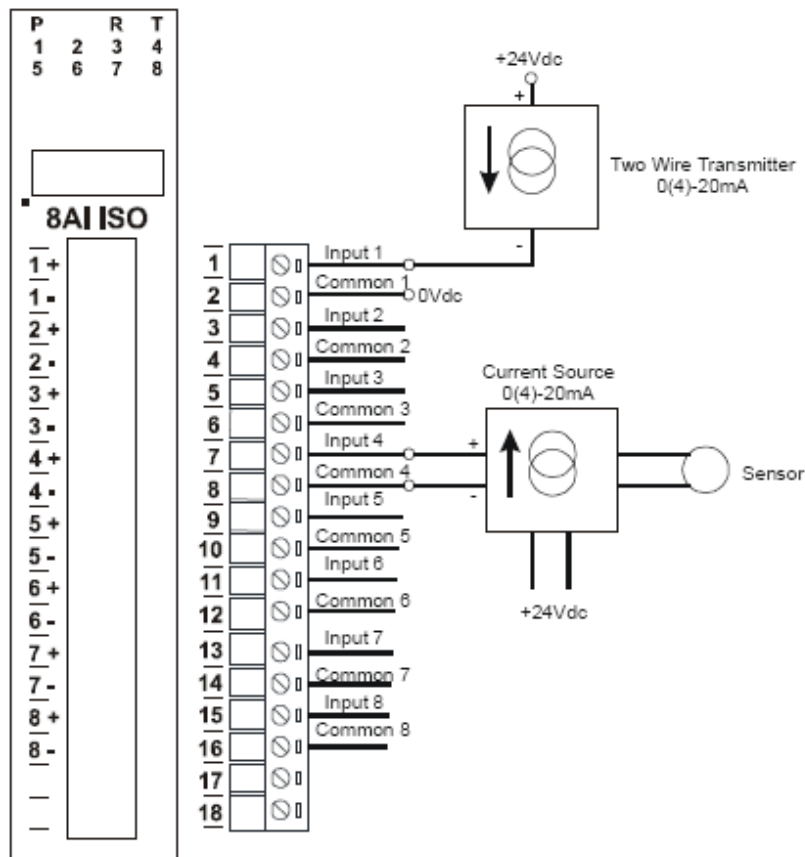
不亮：表示輸入正常

恆亮：表示輸入通道開路或電流=0mA

閃爍：表示輸入通道的電流超出範圍，<0(4)mA 或 >20mA

DCS-08AIIS

接線圖:



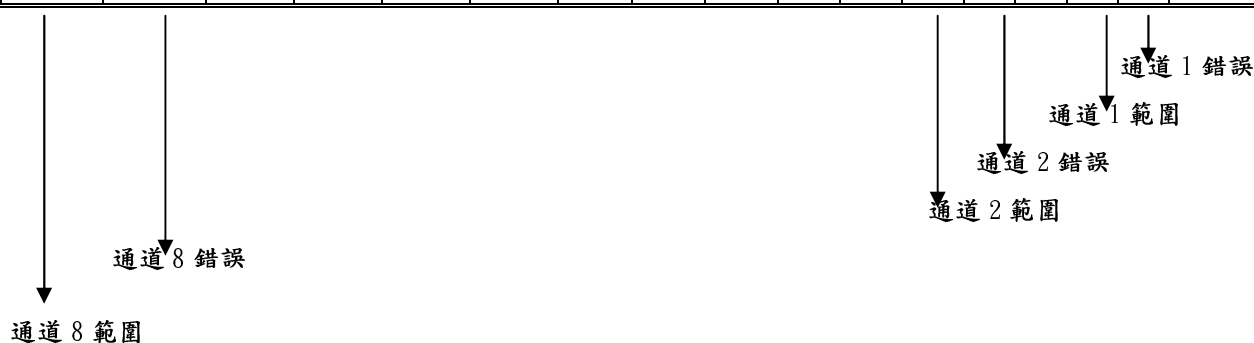
5.4.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	變更輸入低限值	Off: 0~20mA , On: 4~20mA
9	輸入電流超出範圍 <0(4)mA 或 >20mA	Off: 數值輸出 -32767 On: 數值輸出 32767
10	通訊參數	Off: 為預設值 9600/N/8/1, On: 可經由 IO Studio 變更

5.4.3 Modbus 位址表

位址	暫存器名稱	限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組=韌體版本 低位元組 = 107
30002	電流輸入 1	0	4095	可讀	電流輸入 12 Bits
30003	電流輸入 2	0	4095	可讀	"
30004	電流輸入 3	0	4095	可讀	"
30005	電流輸入 4	0	4095	可讀	"
30006	電流輸入 5	0	4095	可讀	"
30007	電流輸入 6	0	4095	可讀	"
30008	電流輸入 7	0	4095	可讀	"
30009	電流輸入 8	0	4095	可讀	"
30010	輸入狀態	0	65535	可讀	Bit0 = 0(正常), Bit0 = 1(有錯誤) Bit1 = 0(開路,< 2), Bit1 = 1(超出範圍)
30016	校正原本值	0	65535	可讀	校正參數
40017	校正控制	1	2	可讀/寫	校正 0~20mA 輸入
40018	校正通道	1	8	可讀/寫	選擇欲校正通道
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	輸入型式	1	3	可讀/寫	選擇電流對應的數值
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1=偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

MSB		類比輸入												LSB		位址
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30010



5.4.4 LED 狀態(通道)

不亮：表示輸入正常

恆亮：表示輸入通道開路或電流=0mA

閃爍：表示輸入通道的電流超出範圍，<0(4)mA 或 >20mA

5.4.5 校正步驟

Step1：連接電流訊號源

Step2：輸入欲校正的通道編號【40018】

Step3：調整電流訊號源=0mA

Step4：輸入 1 到校正控制參數【40017】

Step5：調整電流訊號源=20.000mA

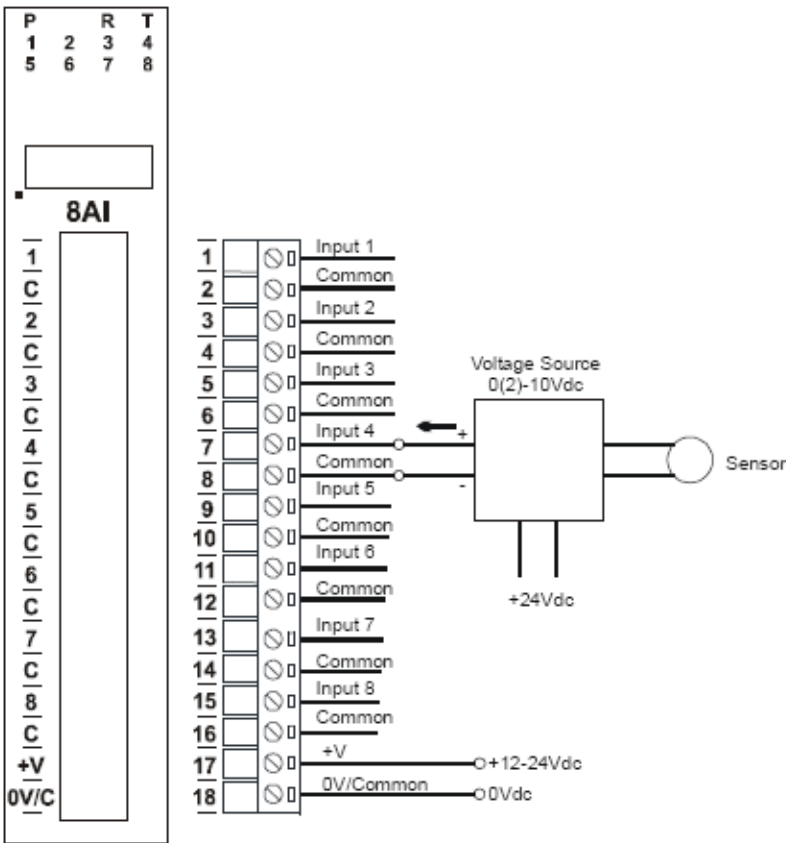
Step6：輸入 2 到校正控制參數【40017】

5.4.6 輸入型式

電流輸入型式 【40101】	代號	範圍	解析度
	1	0 – 4095	12 Bits
	2	0–20.000mA	1uA
	3	+/-20.000mA	1uA

DCS-08AIV

接線圖:



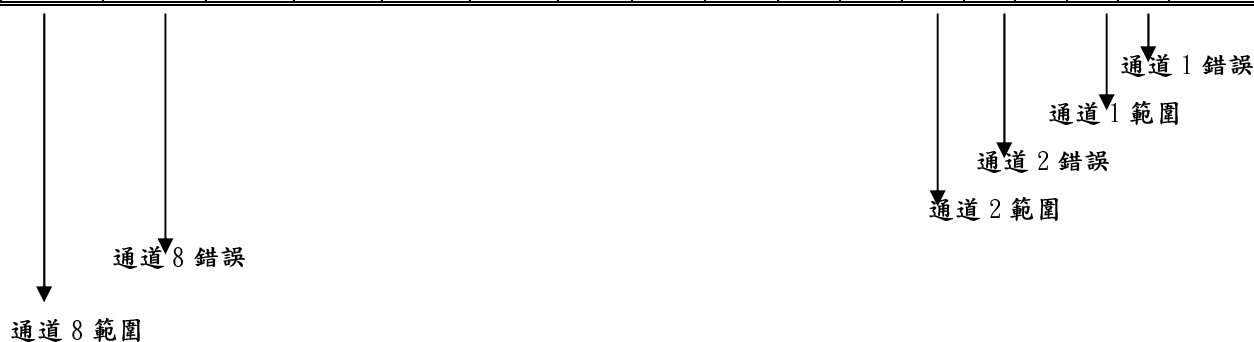
5.3.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	變更輸入低限值	Off:0~10V , On:2~10V
10	通訊參數	Off:為預設值 9600/N/8/1 , On:可經由 IO Studio 變更

5.3.3 Modbus 位址表

位址	暫存器名稱	限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝ 104
30002	電壓輸入 1	0	4095	可讀	電壓輸入 12 Bits
30003	電壓輸入 2	0	4095	可讀	"
30004	電壓輸入 3	0	4095	可讀	"
30005	電壓輸入 4	0	4095	可讀	"
30006	電壓輸入 5	0	4095	可讀	"
30007	電壓輸入 6	0	4095	可讀	"
30008	電壓輸入 7	0	4095	可讀	"
30009	電壓輸入 8	0	4095	可讀	"
30010	輸入狀態	0	65535	可讀	Bit0 = 0(正常), Bit0 = 1(有錯誤) Bit1 = 0(開路,< 2), Bit1 = 1(超出範圍)
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1 = 偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0 = 除能, >1 = 致能. (x10ms)

MSB		類比輸入												LSB		位址
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30010



5.3.4 LED 狀態(通道)

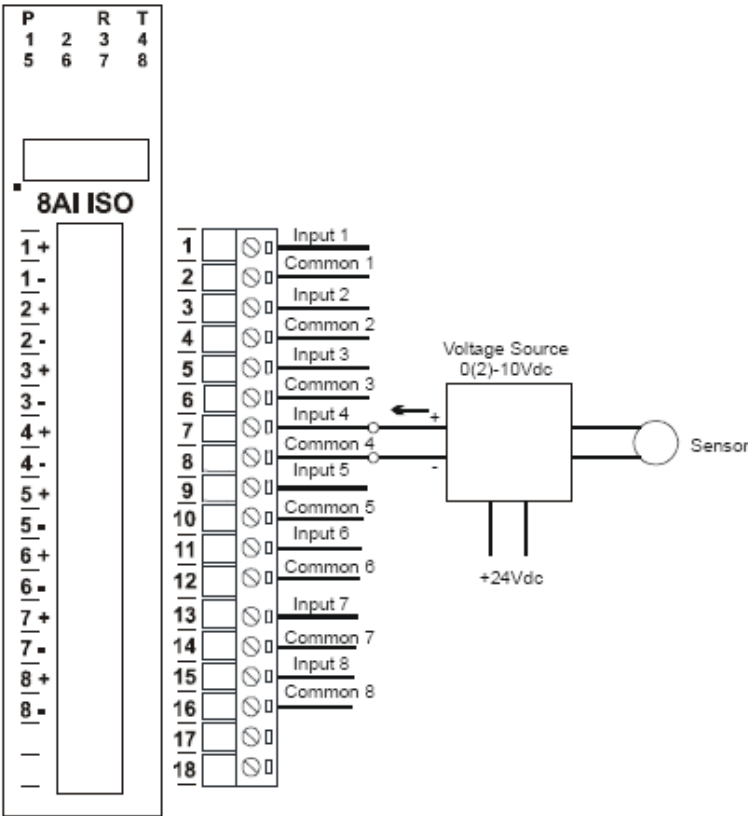
不亮：表示輸入正常

恆亮：表示輸入通道開路或電壓=0V

閃爍：表示輸入通道的電壓超出範圍，<0(2)V 或 >10V

DCS-08AIVS

接線圖:



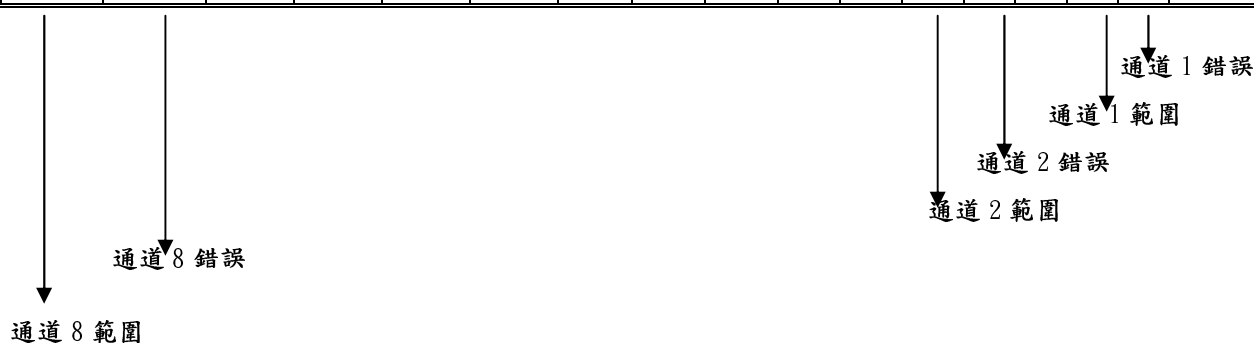
5.5.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	變更輸入低限值	Off:0~10V , On:2~10V
9	輸入電壓超出範圍 <0(2)V 或 >10V	Off:數值輸出 -32767 On:數值輸出 32767
10	通訊參數	Off:為預設值 9600/N/8/1 , On:可經由 IO Studio 變更

5.5.3 Modbus 位址表

位址	暫存器名稱	限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝ 108
30002	電壓輸入 1	0	4095	可讀	電壓輸入 12 Bits
30003	電壓輸入 2	0	4095	可讀	"
30004	電壓輸入 3	0	4095	可讀	"
30005	電壓輸入 4	0	4095	可讀	"
30006	電壓輸入 5	0	4095	可讀	"
30007	電壓輸入 6	0	4095	可讀	"
30008	電壓輸入 7	0	4095	可讀	"
30009	電壓輸入 8	0	4095	可讀	"
30010	輸入狀態	0	65535	可讀	Bit0 = 0(正常), Bit0 = 1(有錯誤) Bit1 = 0(開路,< 2), Bit1 = 1(超出範圍)
30016	校正原本值	0	65535	可讀	校正參數
40017	校正控制	1	2	可讀/寫	校正 0~10V 輸入
40018	校正通道	1	8	可讀/寫	選擇欲校正通道
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	輸入型式	1	3	可讀/寫	選擇電壓對應的數值
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1 = 偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0 = 除能, >1 = 致能. (x10ms)

MSB		類比輸入												LSB		位址
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30010



5.5.4 LED 狀態(通道)

不亮：表示輸入正常

恆亮：表示輸入通道開路或電壓=0V

閃爍：表示輸入通道的電壓超出範圍，<0(2)V 或 >10V

5.5.5 校正步驟

Step1：連接電流訊號源

Step2：輸入欲校正的通道編號【40018】

Step3：調整電流訊號源=0V

Step4：輸入 1 到校正控制參數【40017】

Step5：調整電流訊號源=10.000V

Step6：輸入 2 到校正控制參數【40017】

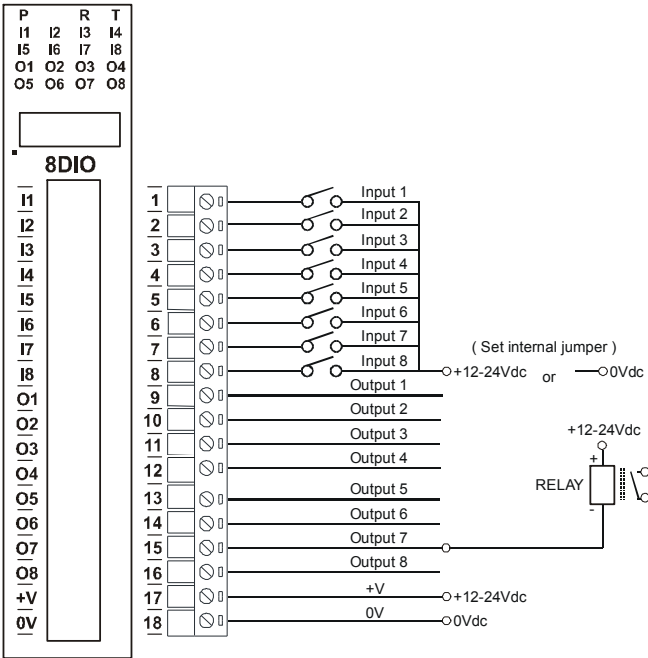
5.5.6 輸入型式

電流輸入型式	代號	範圍	解析度
	1	0 – 4095	12 Bits
	2	0 – 10.000 V	1mV
	3	+/- 10.000 V	1mV
	4	0 – 1.0000 V	0.1mV
	5	+/- 1.0000 V	0.1mV

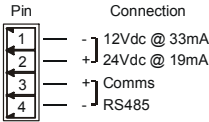
DCS-08DIO

The following diagram shows how the digital inputs and outputs are connected.

接線圖:



The following diagram shows the wiring for the power and RS485 communications.



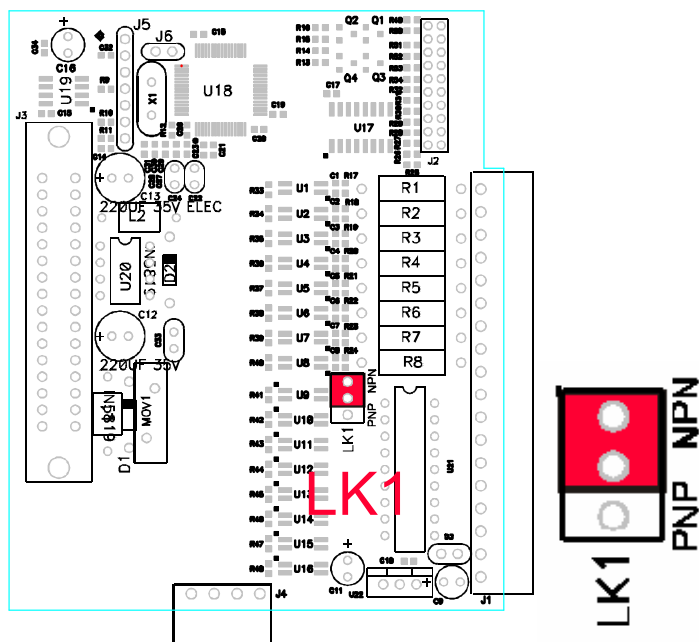
Note: If power/communication connections are reversed, module may become faulty.

3.4.5 Switch Settings

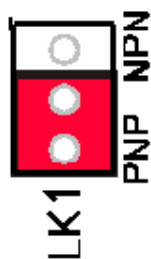
SWITCH	FUNCTION	DESCRIPTION
1	NODE ID +1	Node ID's from 0 to 127 are set up using switches 1 to 7
2	NODE ID +2	"
3	NODE ID +4	"
4	NODE ID +8	"
5	NODE ID +16	"
6	NODE ID +32	"
7	NODE ID +64	"
8	INVERT	When switched ON the status of the inputs is inverted in the Modbus status register (30002).
9	MODE	Off (Slave)
10	BAUD RATE	Selects 9600 (off) or Programmed Baud Rate (on)

3.4.6 Jumper Settings

The Digital inputs can be configured as NPN inputs. This means that the inputs can be operated by switching to 0V. Open the IO Module. Change the link **LK1** to the NPN position as shown below.



The Digital inputs can be configured as PNP inputs. This means that the inputs can be operated by switching to +12V to +24V. Open the IO Module. Change the link **LK1** to the PNP position as shown below.



3.4.7 DCS-8DIO Data Registers (MODULE TYPE = 102)

Modbus Address	Register Name	Low Limit	High Limit	Access	Comments
10001	Digital Input 1	0	1	R	Status of Digital Inputs.
10002	Digital Input 2	0	1	R	"
10003	Digital Input 3	0	1	R	"
10004	Digital Input 4	0	1	R	"
10005	Digital Input 5	0	1	R	"
10006	Digital Input 6	0	1	R	"

10007	Digital Input 7	0	1	R	"
10008	Digital Input 8	0	1	R	"
00017	Digital Output 1	0	1	R/W	Status of Digital Outputs.
00018	Digital Output 2	0	1	R/W	"
00019	Digital Output 3	0	1	R/W	"
00020	Digital Output 4	0	1	R/W	"
00021	Digital Output 5	0	1	R/W	"
00022	Digital Output 6	0	1	R/W	"
00023	Digital Output 7	0	1	R/W	"
00024	Digital Output 8	0	1	R/W	"
30001	S/W Version / Module Type	N/A	N/A	R	High Byte = Software Version Low Byte = 102
30002	Digital Inputs	N/A	N/A	R	Digital Inputs in lower 8 bits. 8 - 1.
40003	Digital Outputs	N/A	N/A	R/W	Digital Outputs in lower 8 bits. 8 - 1.
40004	Counter 1 MSB	0	65535	R/W	Counter MSB and LSB combine to give a 32 bit
40005	Counter 1 LSB	0	65535	R/W	Counter with range 0 to 4294967295.
40006	Counter 2 MSB	0	65535	R/W	"
40007	Counter 2 LSB	0	65535	R/W	"
40008	Counter 3 MSB	0	65535	R/W	"
40009	Counter 3 LSB	0	65535	R/W	"
40010	Counter 4 LSB	0	65535	R/W	"
40011	Counter 4 LSB	0	65535	R/W	"
40012	Counter 5 MSB	0	65535	R/W	"
40013	Counter 5 LSB	0	65535	R/W	"
40014	Counter 6 MSB	0	65535	R/W	"
40015	Counter 6 LSB	0	65535	R/W	"
40016	Counter 7 MSB	0	65535	R/W	"
40017	Counter 7 LSB	0	65535	R/W	"
40018	Counter 8 MSB	0	65535	R/W	"
40019	Counter 8 LSB	0	65535	R/W	"
30100	DIP Switch	0	65535	R	Status of DIP Switch on Front Panel
40101	Watchdog Timer	0	255	R/W	Timer in seconds. 0 = disabled. 1 - 255 = enabled.
40105	Counter Mode	0	2	R/W	0=Disable, 1=Up Counting, 2=Up/Down Count
40106	Input Filter	0	65535	R/W	0 = Disable, >0 = Enable. (x10ms)
40121	Baud Rate	2400	11520	R/W	2400, 4800, 9600, 19200, 38400,57600,115200
40122	Parity	0	2	R/W	0 = none, 1 = even, 2 = odd
40123	Stop Bits	1	2	R/W	1 = 1 stop bit, 2 = 2 stop bits
40124	Reply Delay	0	65535	R/W	0 = Disable, >0 = Enable. (x10ms)

3.4.7.1 Digital Input Register.

The digital inputs can be read in a single register as follows:

DCS-8DIO DIGITAL INPUTS															ADDRESS		
MSB	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
	32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30002
	0	0	0	0	0	0	0	0	8	7	6	5	4	3	2	1	

Digital Input Number

3.4.7.2 Digital Output Register

The digital outputs can be read /written in a single register as follows:

MSB		DCS-8DIO DIGITAL OUTPUTS														LSB		ADDRESS
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1			40003
0	0	0	0	0	0	0	0	8	7	6	5	4	3	2	1			

Digital Output Number

3.4.7.3 Counter Registers.

The counters are stored a two 16 bit registers. The first register is the High Register and the second register is the Low Register. To get the actual 32 bit count value the registers must be combined as follows:

Counter High Value = Register 40003.

Counter Low Value = Register 40004.

Counter Value = (Counter High Value X 65535) + Counter Low Value.

3.4.7.4 Output Watchdog Timer

The watchdog timer is used to switch off all of the outputs in the event of a communications failure. When set to zero (register 40101) the watchdog timer is disabled.

4.4 DCS-8DIO-E – 8 Channel Digital Inputs/Outputs with Counters

4.4.1 Description

The DCS-8DIO-E module is an 8-channel digital input and 8 channel digital output module. The inputs are isolated from the logic by bi-directional opto-couplers. The common is connected internally to either the -volts or +volts field power supply terminals using a jumper link which is situated inside the housing.



4-22 DCS-8DIO-E

The counters operate in three modes.

- ❖ In **mode 0** all the counters are disabled.
- ❖ In **mode 1** the first eight inputs (1-8) have internal counters associated with them. These counters are 32-bit counters allowing a count value from 0 to 4294967295. The count value can be cleared by writing a zero to the associated registers or preset to any other value using the same method.
- ❖ In **mode 2** the inputs are connected as up/down counters. Input 1 will increment counter 1 whilst input 2 decrements counter1. In the same way, inputs 3&4 operate counter 2, inputs 5&6 operate counter 3 and inputs 7&8 operate counter 4.

Note: The count values are not battery backed-up and will be lost if power is turned off.

The format of the registers allows the status of the inputs to be read as either single bits or all at once as a single register on the Modbus network.

The 8 digital outputs are open collector (NPN). The outputs may be used to drive lamps or external relays when more drive capability is required. The outputs are isolated from the logic and they share a common negative terminal.

When used as a slave module, the outputs are written to by the Modbus master device such as a PC or PLC. Each output can be individually switched on or off, or all outputs can be set up at the same time by writing a single number to the output register which represents the status of all outputs.

Each DCS-8DIO-E Module has a unique Ethernet IP address which must be programmed into the PC or PLC. The IP address in the DCS-8DIO-E Module is configured via the Web Server. Any standard Web browser such as Internet Explorer can be used to access the web pages where configuration is carried out. The modules are factory programmed with a default IP

address of 192.168.0.112. This address must be changed before the module is added to an existing network.

The web page address for viewing the digital input status parameters is <http://192.168.0.112/index.htm> and the address for viewing the counters is <http://192.168.0.112/counters.htm>.

The web page address for configuring the module is <http://192.168.0.112/ip.htm> and the web page for configuring the counters is <http://192.168.0.112/countcfg.htm>.

4.4.2 Technical Specification of DCS-8DIO-E

Power Supply	Logic Supply Voltage	12 -24 Vdc
	Logic Supply Current	75mA @ 12V / 39mA @ 24V
	Field Supply Voltage	12 -24 Vdc
	Field Supply Current	6mA @ 12V / 6mA @ 24V
Digital Inputs	Input Points	8
	Input Voltage Range	12 -24 Vdc
	Input Current per input	5mA@12Vdc / 11mA @24Vdc
	Isolation	1500Vrms between field and logic
Digital Outputs	Output Points	8
	Maximum Voltage	36 Vdc
	Maximum Current	100 mA per output
	Vceon	1.1V Max.
	Isolation	1500Vrms between field and logic
Counters	Inputs	1 to 8
	Resolution	32 Bits
	Frequency	1KHz (max)
	Pulse Width	500us (min)
Ethernet	10/100Mbps/s	Twisted pair.
Temperature	Operating Temperature.	-40°C to + 80°C
	Storage Temperature	-40°C to + 85°C
Connectors	Logic Power and Comms.	4 Pin Connector on underside of unit
	Inputs	18 Way screw connector on front
	Ethernet	RJ45 on top side of unit.

4-10 DCS-8DIO-E Specifications

Note: Inputs 1 to 8 are used as both digital inputs and counter inputs.

4.4.3 Status Indicators

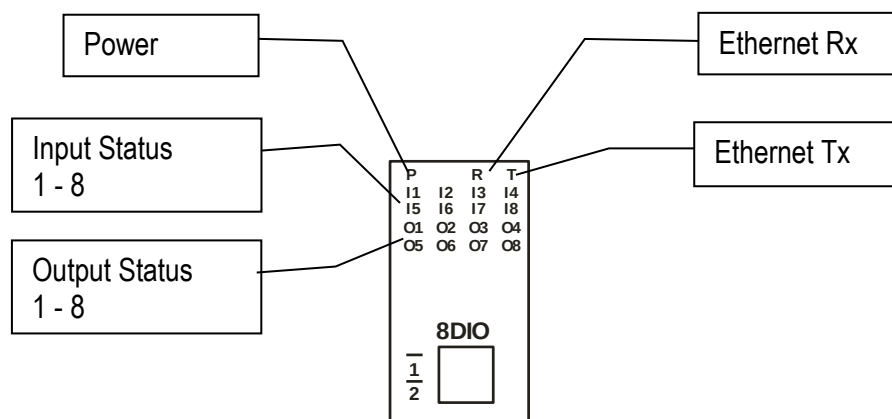
Power: Flashes to indicate the CPU is running.

RS485 Rx: Flashes to indicate the unit has received a valid Modbus message.

RS485 Tx: Flashes to indicate the unit has sent a Modbus message.

Input Status: "OFF" when the input is off
"ON" when the input is on.

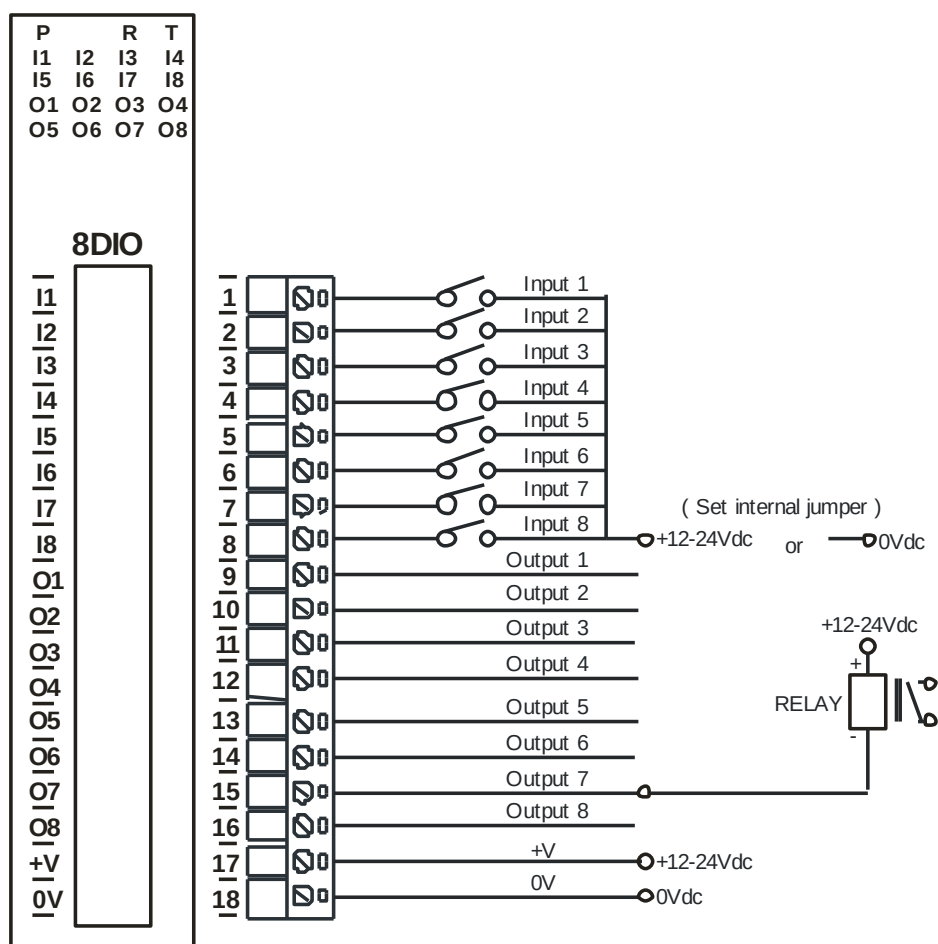
Output Status: "OFF" when the output is off
"ON" when the output is on.



4-23 DCS-8DIO-E Status Indicators

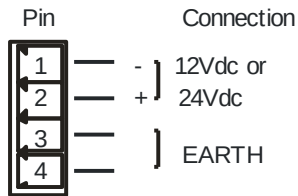
4.4.4 Wiring

The following diagram shows how the digital inputs and outputs are connected.



4-24 DCS-8DIO-E Input / Output Wiring

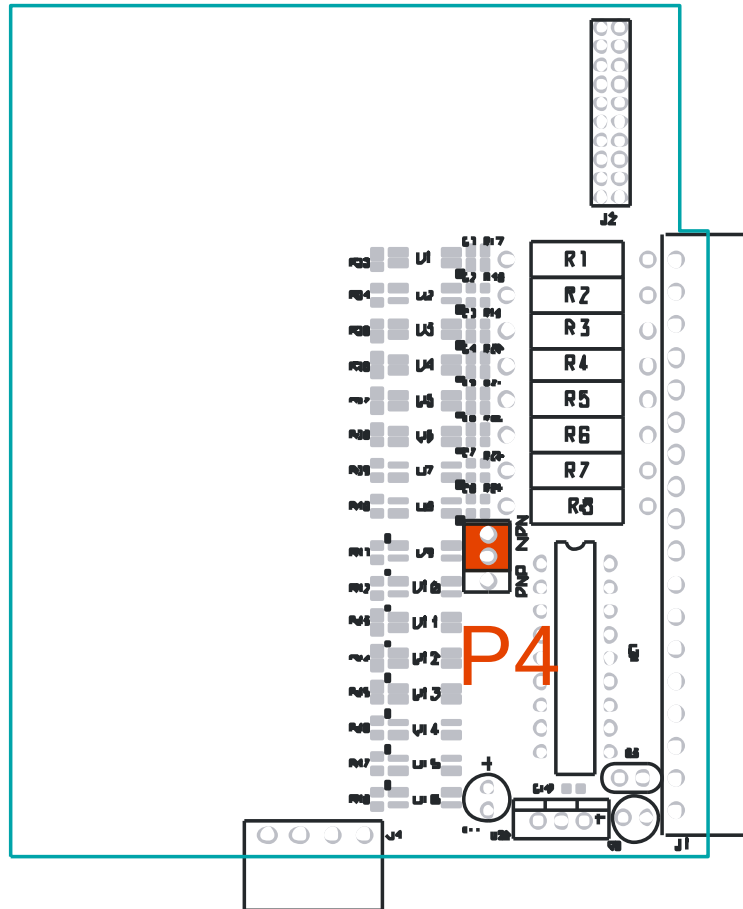
The following diagram shows the wiring for the power.



4-25 DCS-8DIO-E Power Wiring

4.4.5 Setting the jumpers for NPN inputs.

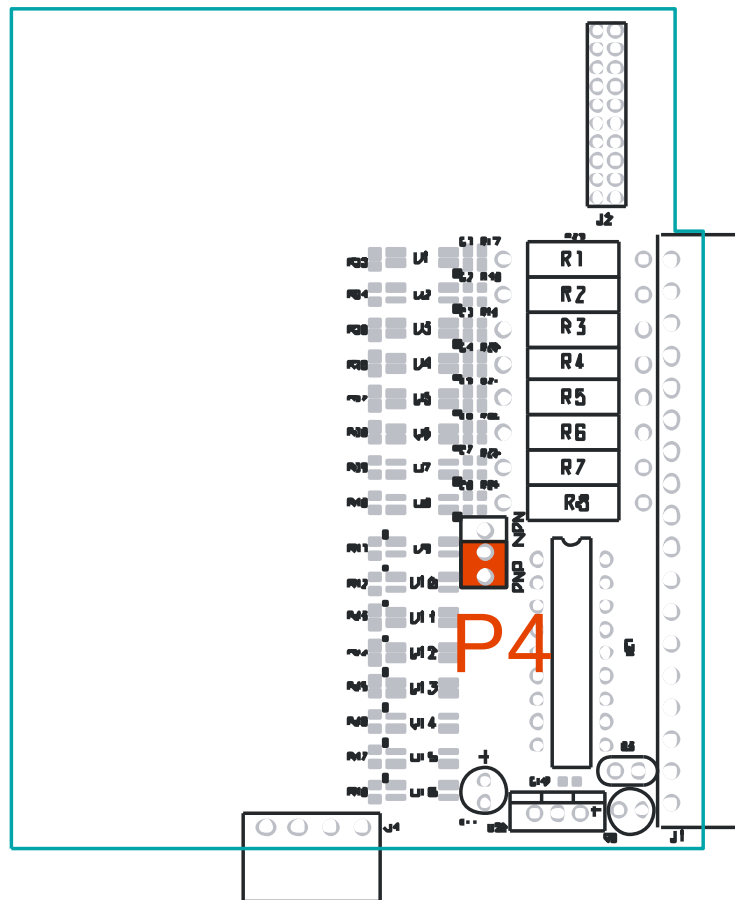
The Digital inputs can be configured as NPN inputs. This means that the inputs can be operated by switching to 0V. Change the link **P4** to the NPN position.



4-26 DCS-8DIO-E Jumper for NPN Inputs

4.4.6 Setting the jumpers for PNP inputs.

The Digital inputs can be configured as PNP inputs. This means that the inputs can be operated by switching to +12V to +24V. Change the link **P4** to the PNP position.



4-27 DCS-8DIO-E Jumper for PNP Inputs

4.4.7 Configuration

The Web page address "192.168.0.112/ip.htm" is entered into the address line of the browser window to access the configuration page. This page allows the user to change the IP address of the Modbus TCP Module and to enter a Module Description Name and Input Names for identification/maintenance purposes.

8DIO - DIGITAL INPUT/OUTPUT MODULE

Ethernet Configuration Parameters

Ethernet Configuration Parameters				
Module IP	192	168	0	112
Default Gateway IP	192	168	0	1
Subnet Mask	0	0	0	0
Socket Time Out	90			X 1 second

Warning: The IP address will not be updated until the power on the module has been switched off and on again. After clicking on the Submit button check that the correct IP address has been entered. If you forget the IP address, refer to the user manual to reset the module back to the default IP value.

Module IP

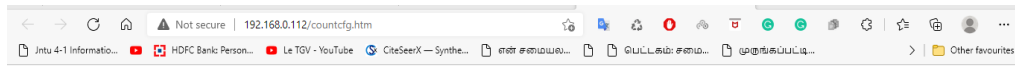
0 0 0 0

4-28 DCS-8DIO-E Web Page Configuration

- IP Address:** The new IP address can be entered into the web page as shown above. After this has been done, you must click the Submit button to send the values to the Module. The screen will now be updated and if successful will continue to display the new IP address. The new IP address will only be effective after the Module power has been switched off and on again. This feature allows you to check that the correct IP address has been entered before being activated. If the IP address has been entered incorrectly and the power has not been switched off, it is possible to re-enter the correct IP address. If the power has been switched off and back on again, the Module will not communicate until you enter the new IP address into the address line of the browser window.
- Default Gateway IP Address:** A **default gateway** is a node (a router) on a computer network that serves as an access point to another network. In enterprises, however, the gateway is the computer that routes the traffic from a PC to the outside network that is serving the Web pages. It is only necessary to configure the default gateway IP address if the PC that is accessing the Module is on a different network.
- Subnet Mask:** In computer networks, a **subnetwork** or **subnet** is a range of logical addresses within the address space that is assigned to an organization. The subnet mask is used to inform the Module that it must send its replies to the gateway if the IP address of the PC is on a different network. When the subnet mask is set to “0.0.0.0” then it is effectively disabled and the default gateway is not used. A typical subnet mask would be “255.255.255.0”.
- Socket Timeout:** If a socket connection is broken, say due to a network fault, it must timeout to free it up so that it can be used again. This timer is triggered by activity on the module, so if there is no communications activity for longer than the timeout period, the socket will close.
- Module Compatibility:** When the value is zero “0”, the Modbus registers are configured in the format for a Modbus TCP module. When the value is set to one “1”, the Modbus registers are reconfigured to match the format of the Modbus TCP modules. This is useful if a new Modbus TCP module is being used to replace an old Modbus TCP module in an existing system.

- **Module Name:** This field allows you to enter a module description name into the Modbus TCP Module. This is an identifier for diagnostic/maintenance purposes and is chosen to best describe the Modbus TCP Module in the system by name or number.
- **Input/Output Names:** These fields allow you to enter an input description name into the Modbus TCP Module. This is an identifier for diagnostic/maintenance purposes and is chosen to best describe the particular input/output by name or number.

The Web page address "**192.168.0.112/countcfg.htm**" is entered into the address line of the browser window to access the counter configuration page. This page allows you to enter a Counter Description Name for identification/maintenance purposes.



8DIO - DIGITAL INPUT/OUTPUT MODULE

COUNTER CONFIGURATION

Counter Mode 0=disable, 1=up count, 2=up/down count

Input Filter X10 milliseconds

[RETURN TO IP PAGE](#)

4-29 DCS-8DIO-E Web Page Counter Configuration

- **Counter Mode:** Enter 0, 1 or 2 to submit the required mode.
- **Input Filter:** The input filter is used to prevent false inputs and counting due to electrical noise or contact bounce.

4.4.8 Viewing web pages

To view the default Web page in the Modbus TCP Module, start the Web browser and type "192.168.0.112" into the address line of the browser window. The main page will now be displayed in the browser window.

8DIO - DIGITAL INPUT/OUTPUT MODULE

HOME PAGE

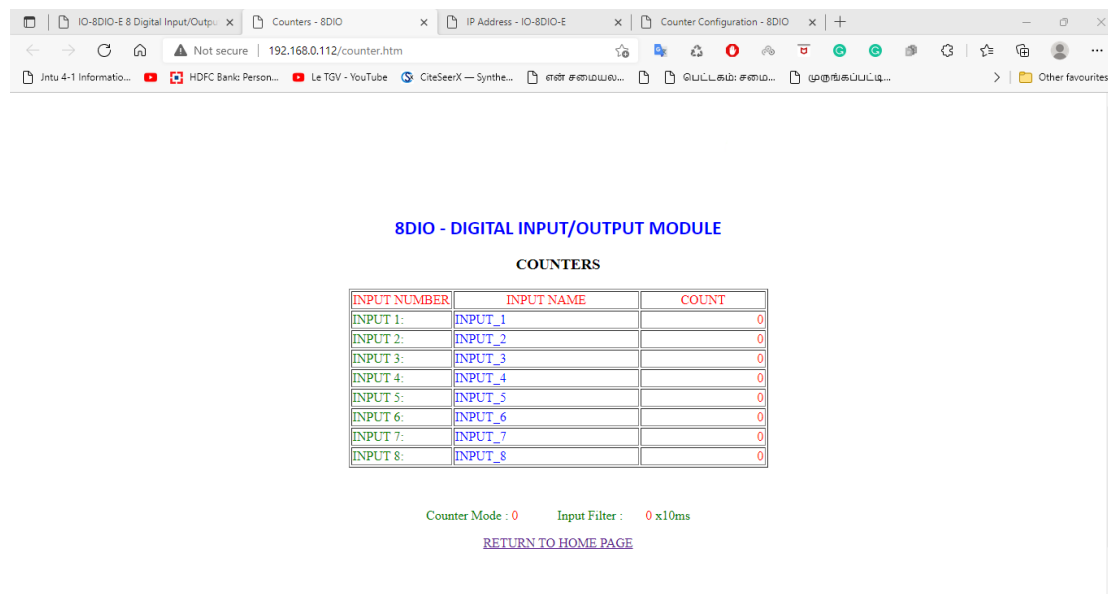
Module Name: DCS-08DIO-E

INPUT NUMBER	INPUT NAME	STATE
INPUT 1:	INPUT_1	OFF
INPUT 2:	INPUT_2	OFF
INPUT 3:	INPUT_3	OFF
INPUT 4:	INPUT_4	OFF
INPUT 5:	INPUT_5	OFF
INPUT 6:	INPUT_6	OFF
INPUT 7:	INPUT_7	OFF
INPUT 8:	INPUT_8	OFF
OUTPUT 1:	OUTPUT_1	OFF
OUTPUT 2:	OUTPUT_2	OFF
OUTPUT 3:	OUTPUT_3	OFF
OUTPUT 4:	OUTPUT_4	OFF

4-30 DCS-8DIO-E Web Page View -I/O Status

- **Input Number:** This refers to the actual input number on the terminals of the module.
- **Input Name:** This is the name that was entered in the configuration page to best describe the inputs.
- **State:** This is the current state of the inputs. To get an updated reading it is necessary to refresh the browser window to upload the web page again.
- **Counter filter:** When this value is zero (0) then the inputs are sampled at 0.5ms and there is not filtering. This is used for high-speed counting. When the value is greater than 0 then the inputs are debounced to prevent faults counting from relay contacts.
- **Output Watchdog:** This is the time that the outputs will keep their active state after communications has stopped. If the value is zero (0) then the outputs will not time out and the last state will remain as long as power is applied to the module.

To view the Counter Web page in the Modbus TCP Module, start the Web browser and type "**192.168.0.112/counter.htm**" into the address line of the browser window.



4-31 DCS-8DIO-E Web Page View -Counter Status

- **Counter:** This refers to the actual input number on the terminals of the module.
- **Input Name:** This is the name that was entered in the configuration page to best describe the inputs.
- **Count:** This is the current count on the inputs. To get an updated reading it is necessary to refresh the browser window to upload the web page again.
- **Counter Configuration:** This is the mode as described at the beginning of this section.

4.4.9 DCS-8DIO-E Modbus Mapping (Module Type = 132)

Modbus Address	Register Name	Low Limit	High Limit	Access	Comments
10001	Digital Input 1	0	1	R	Status of Digital Inputs.
10002	Digital Input 2	0	1	R	"
10003	Digital Input 3	0	1	R	"
10004	Digital Input 4	0	1	R	"
10005	Digital Input 5	0	1	R	"
10006	Digital Input 6	0	1	R	"

Modbus Address	Register Name	Low Limit	High Limit	Access	Comments
10007	Digital Input 7	0	1	R	"
10008	Digital Input 8	0	1	R	"
00017	Digital Output 1	0	1	R/W	Status of Digital Outputs.
00018	Digital Output 2	0	1	R/W	"
00019	Digital Output 3	0	1	R/W	"
00020	Digital Output 4	0	1	R/W	"
00021	Digital Output 5	0	1	R/W	"
00022	Digital Output 6	0	1	R/W	"
00023	Digital Output 7	0	1	R/W	"
00024	Digital Output 8	0	1	R/W	"
30001	S/W Version / Module Type	N/A	N/A	R	High Byte = Software Version Low Byte = 132
30002	Digital Inputs	N/A	N/A	R	Digital Inputs in lower 8 bits. 8 - 1.
40003	Digital Outputs	N/A	N/A	R/W	Digital Outputs in lower 8 bits. 8 - 1.
40004	Counter 1 MSB	0	65535	R/W	Counter MSB and LSB combine to give a 32 bit
40005	Counter 1 LSB	0	65535	R/W	Counter with range 0 to 4294967295.
40006	Counter 2 MSB	0	65535	R/W	"
40007	Counter 2 LSB	0	65535	R/W	"
40008	Counter 3 MSB	0	65535	R/W	"
40009	Counter 3 LSB	0	65535	R/W	"
40010	Counter 4 MSB	0	65535	R/W	"
40011	Counter 4 LSB	0	65535	R/W	"
40012	Counter 5 MSB	0	65535	R/W	"
40013	Counter 5 LSB	0	65535	R/W	"
40014	Counter 6 MSB	0	65535	R/W	"
40015	Counter 6 LSB	0	65535	R/W	"
40016	Counter 7 MSB	0	65535	R/W	"
40017	Counter 7 LSB	0	65535	R/W	"
40018	Counter 8 MSB	0	65535	R/W	"
40019	Counter 8 LSB	0	65535	R/W	"
40101	Watchdog Timer	0	255	R/W	Timer in seconds. 0 = disabled. 1 - 255 = enabled.
40105	Counter Mode	0	2	R/W	0=Disable, 1=Up Counting, 2=Up/Down Count
40106	Input Filter	0	65535	R/W	0 = Disable, >0 = Enable. (x10ms)

4-11 DCS-8DIO-E Modbus Mapping

4.4.9.1 Digital Input Register.

The digital inputs can be read in a single register as follows:

MSB		DCS-8DIO-E DIGITAL INPUTS												LSB		ADDRESS
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30002
0	0	0	0	0	0	0	0	8	7	6	5	4	3	2	1	

Digital Input Number

4-12 DCS-8DIO-E Digital Input Register

4.4.9.2 Digital Output Register.

The digital outputs can be read/written in a single register as follows:

MSB		DCS-8DIO-E DIGITAL OUTPUTS												LSB		ADDRESS
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	40003
0	0	0	0	0	0	0	0	8	7	6	5	4	3	2	1	

Digital Output Number

4-13 DCS-8DIO-E Digital Output Register

4.4.9.3 Counter Registers.

The counters are stored as two 16-bit registers. The first register is the High Register (MSB) and the second register is the Low Register (LSB). To get the actual 32-bit count value the registers must be combined as follows:

Counter High Value (MSB) = Register 40003.

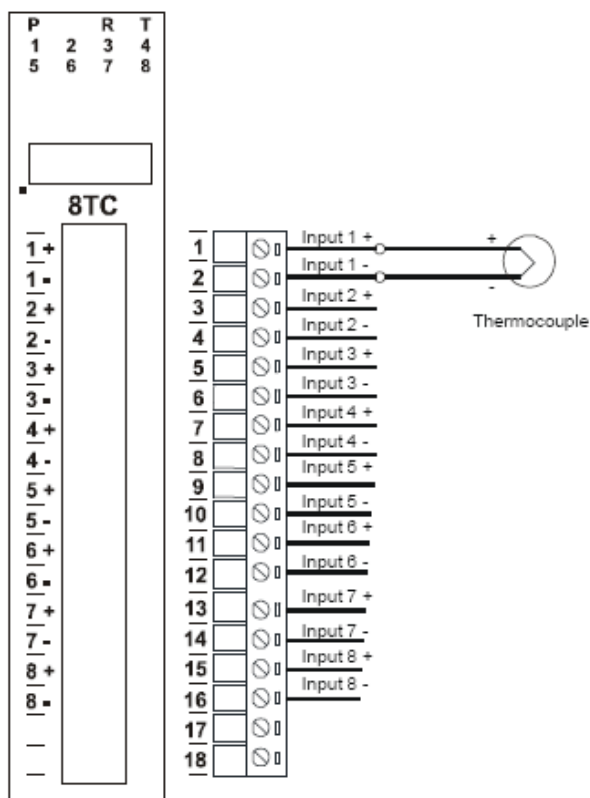
Counter Low Value (LSB) = Register 40004.

Counter Value = (Counter High Value X 65535) + Counter Low Value.

4.4.9.4 Output Watchdog Timer.

The watchdog timer is used to switch off all of the outputs in the event of a communications failure. When set to zero (register 40101) the watchdog timer is disabled.

接線圖:



4.3.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	感溫線斷線	Off:數值輸出 -32767 On:數值輸出 32767
10	通訊參數	Off:為預設值 9600/N/8/1，On:可經由 IO Studio 變更

4.3.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝105
30002	TC 輸入 1	-xxx.x	yyyy.y	可讀	參考輸入範圍表, 解析度 0.1℃
30003	TC 輸入 2	-xxx.x	yyyy.y	可讀	"
30004	TC 輸入 3	-xxx.x	yyyy.y	可讀	"
30005	TC 輸入 4	-xxx.x	yyyy.y	可讀	"
30006	TC 輸入 5	-xxx.x	yyyy.y	可讀	"
30007	TC 輸入 6	-xxx.x	yyyy.y	可讀	"
30008	TC 輸入 7	-xxx.x	yyyy.y	可讀	"
30009	TC 輸入 8	-xxx.x	yyyy.y	可讀	"
30010	冷接點溫度	-xxx.x	yyyy.y	可讀	冷接點溫度(室溫), 解析度 0.1℃
30011	輸入狀態	0	65535	可讀	Bit1 = 0(正常) Bit1 = 1(異常或開路)
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	TC 型式	1	13	可讀/寫	參考輸入型式參數表
40102	Line Frequency	50	60	可讀/寫	線上頻率
40103	冷接點補償	1	199	可讀/寫	100 = 0 點補償 (0.0)
40104	單位	1	2	可讀/寫	1=℃, 2=℉
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1=偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

4.3.4 LED 狀態(通道)

不亮：表示感溫線連接正常

恆亮：表示感溫線開路

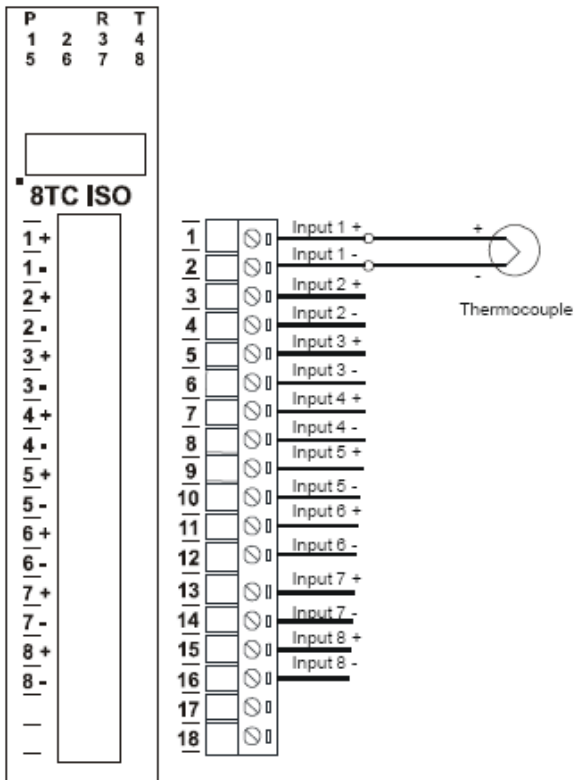
4.3.5 輸入型式

TC 型式	代號	型式	範圍	誤差值
	1	J	-150 ~ 760 °C	± 0.2 °C
	2	K	-200 ~ 1370 °C	± 0.3 °C
	3	E	0 ~ 600 °C	± 0.1 °C
	4	T	-200 ~ 400 °C	± 0.3 °C
	5	N	0 ~ 1300 °C	± 0.3 °C
	6	B	400 ~ 1820 °C	± 0.5 °C
	7	S	-50 ~ 1767 °C	± 0.6 °C
	8	R	-50 ~ 1767 °C	± 0.7 °C
	9	mV	0 ~ 50mV	± 0.1%
	10	C	0 ~ 2315.5 °C	± 0.7 °C
	11	D	0 ~ 2315.5 °C	± 0.7 °C
	12	G	0 ~ 2315.5 °C	± 0.9 °C
	13	mV	+/- 100mV	± 0.1%
冷接點	冷接點錯誤		±0.5 °C Typ. 送電熱機 30 分鐘後	

CHUNDE TECHNOLOGY

DCS-08TCS

接線圖:



4.4.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	感溫線斷線	Off: 數值輸出 -32767 On: 數值輸出 32767
10	通訊參數	Off: 為預設值 9600/N/8/1, On: 可經由 IO Studio 變更

4.4.3 Modbus 位址表

位址	暫存器名稱	限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組=韌體版本 低位元組 = 106
30002	TC 輸入 1	-xxx.x	yyyy.y	可讀	參考輸入範圍表, 解析度 0.1 °C
30003	TC 輸入 2	-xxx.x	yyyy.y	可讀	"
30004	TC 輸入 3	-xxx.x	yyyy.y	可讀	"
30005	TC 輸入 4	-xxx.x	yyyy.y	可讀	"
30006	TC 輸入 5	-xxx.x	yyyy.y	可讀	"
30007	TC 輸入 6	-xxx.x	yyyy.y	可讀	"
30008	TC 輸入 7	-xxx.x	yyyy.y	可讀	"
30009	TC 輸入 8	-xxx.x	yyyy.y	可讀	"
30010	冷接點溫度	-xxx.x	yyyy.y	可讀	冷接點溫度(室溫), 解析度 0.1 °C
30011	輸入狀態	0	65535	可讀	Bit1 = 0(正常) Bit1 = 1(異常或開路)
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	TC 型式	1	13	可讀/寫	參考輸入型式參數表
40102	Line Frequency	50	60	可讀/寫	線上頻率
40103	冷接點補償	1	199	可讀/寫	100 = 0 點補償 (0.0)
40104	單位	1	2	可讀/寫	1=°C, 2=°F
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1=偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

4.4.4 LED 狀態(通道)

不亮：表示感溫線連接正常

恆亮：表示感溫線開路

4.4.5 輸入型式

TC 型式	代號	型式	範圍	誤差值
	1	J	-150 ~ 760 °C	± 0.2 °C
	2	K	-200 ~ 1370 °C	± 0.3 °C
	3	E	0 ~ 600 °C	± 0.1 °C
	4	T	-200 ~ 400 °C	± 0.3 °C
	5	N	0 ~ 1300 °C	± 0.3 °C
	6	B	400 ~ 1820 °C	± 0.5 °C
	7	S	-50 ~ 1767 °C	± 0.6 °C
	8	R	-50 ~ 1767 °C	± 0.7 °C
	9	mV	0 ~ 50mV	± 0.1%
	10	C	0 ~ 2315.5 °C	± 0.7 °C
	11	D	0 ~ 2315.5 °C	± 0.7 °C
	12	G	0 ~ 2315.5 °C	± 0.9 °C
	13	mV	+/- 100mV	± 0.1%
冷接點	冷接點錯誤		±0.5 °C Typ. 送電熱機 30 分鐘後	

DCS-8AIIS-E – 8 Channel Isolated Analog Current Inputs

Description

The DCS-8AIIS-E module is an 8-channel isolated current input module. The module uses differential inputs to reduce effects of electrical noise and mains pickup. The current inputs are isolated from the logic and from each other.



DCS-8AIIS-E

The current input can be represented in a number of formats according to the type which is setup by writing a value to the Type register. The value is obtained from the table below.

The standard setting for the DCS-8AIIS-E module is 0 - 20mA input current which represents an output value of 0 - 4095 (12 bits) in the corresponding Modbus register. 4 mA would give a reading of $819 \pm 1\text{LSB}$.

The module can also be configured for a 0 – 20.000mA input range or +/- 20.000mA input. The module also supports 14 bit and 16-bit ranges.

Each DCS-8AIIS-E Module has a unique Ethernet IP address which must be programmed into the PC or PLC. The IP address in the DCS-8AIIS-E Module is configured via the Web Server. Any standard Web browser such as Internet Explorer can be used to access the web pages where configuration is carried out. The modules are factory programmed with a default IP address of 192.168.0.112. This address must be changed before the module is added to an existing network.

The web page address for viewing the input parameters is <http://192.168.0.112/index.htm> and the address for viewing the configuration data is <http://192.168.0.112/tconfig.htm>.

The web page address for configuring the module is <http://192.168.0.112/ip.htm> .

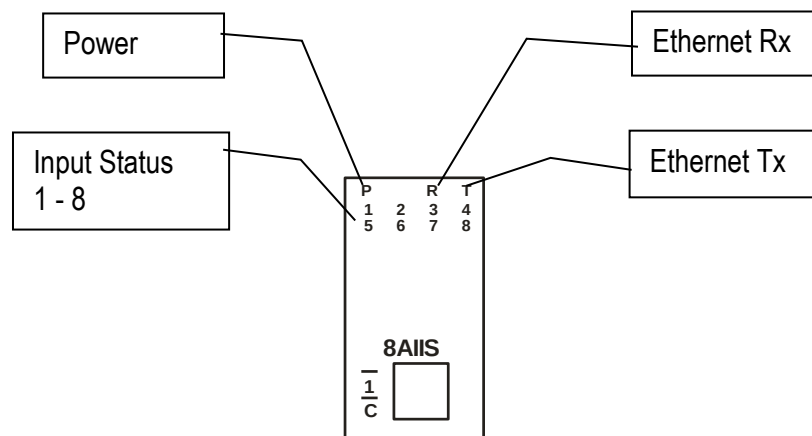
Technical Specification of DCS-8AIIIS-E

Power Supply	Logic Supply Voltage		12 -24 Vdc
	Logic Supply Current		105mA @ 12V / 54mA @ 24V
Current Inputs	Input Points		8
	Input Current		0(4) - 20 mA
	Input Type	Range	Resolution
	1	0 – 4095	12 bits
	2	0–20.000mA	1uA
	3	+/-20.000mA	1uA
	4	0 - 16383	14 bits
	5	0 - 65535	16 bits
	Drift		100ppm/°C
	Isolation		1500Vrms between field and logic 350Vpeak between each input
Ethernet	10/100Mbps/s		Twisted pair.
Temperature	Operating Temperature.		-40°C to + 80°C
	Storage Temperature		-40°C to + 85°C
Connectors	Logic Power and Comms.		4 Pin Connector on underside of unit
	Inputs		18 Way screw connector on front
	Ethernet		RJ45 on top side of unit.

DCS-8AIIIS-E Specifications

Status Indicators

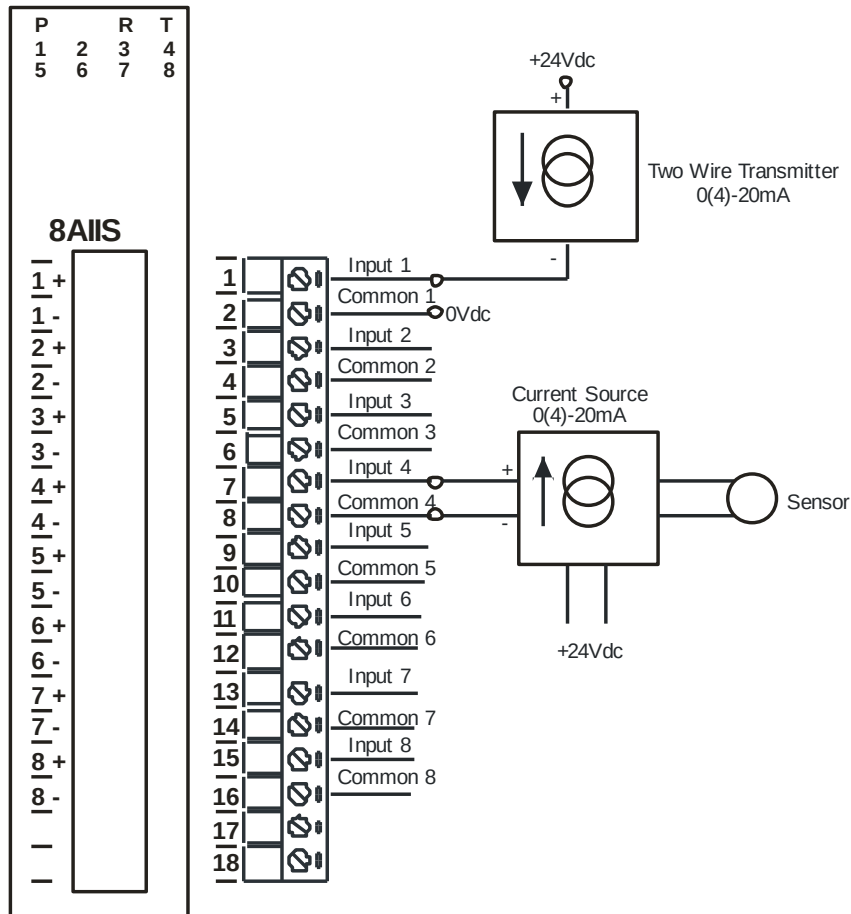
- Power:** Flashes to indicate the CPU is running.
- Ethernet Rx:** Flashes to indicate the unit has received a valid Modbus message.
- Ethernet Tx:** Flashes to indicate the unit has sent a Modbus message.
- Input Status:** “ON” when the input is zero.
“OFF” when the input is greater than zero and less than 20mA.
“Flashing” when the input is over range, greater or equal to 20mA.



DCS-8AIIIS-E Status Indicators

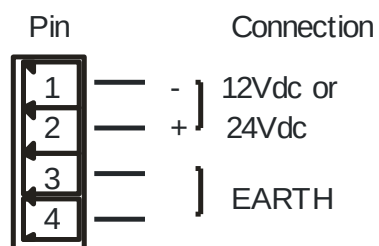
Wiring

The following diagram shows how the analog inputs are connected to a 0(4)-20mA source. All of the common terminals are isolated from each other.



DCS-8AIIS-E Input Wiring

The following diagram shows the wiring for the power.



DCS-8AIIS-E Power Wiring

Configuration

The Web page address "**192.168.0.112/ip.htm**" is entered into the address line of the browser window to access the configuration page. This page allows the user to change the IP address, default gateway and subnet mask of the Modbus TCP Module, select the Input type, and to enter a Module Description Name and Input Names for identification/maintenance purposes.

DCS-8AIIS-E

8AIIS - ISOLATED CURRENT INPUT MODULE

Ethernet Configuration Parameters

Ethernet Configuration Parameters				
Module IP	192	168	0	112
Default Gateway IP	192	168	0	1
Subnet Mask	0	0	0	0
Socket Time Out	90	X 1 second		
Input Type	4	TYPE: 0-16383 (14 bit)		

Submit

Warning: The IP address will not be updated until the power on the module has been switched off and on again. After clicking on the Submit button check that the correct IP address has been entered. If you forget the IP address, refer to the user manual to reset the module back to the default IP value.

Module Name IO-8AIIS-E Submit

Input 1 Name INPUT 1 Submit

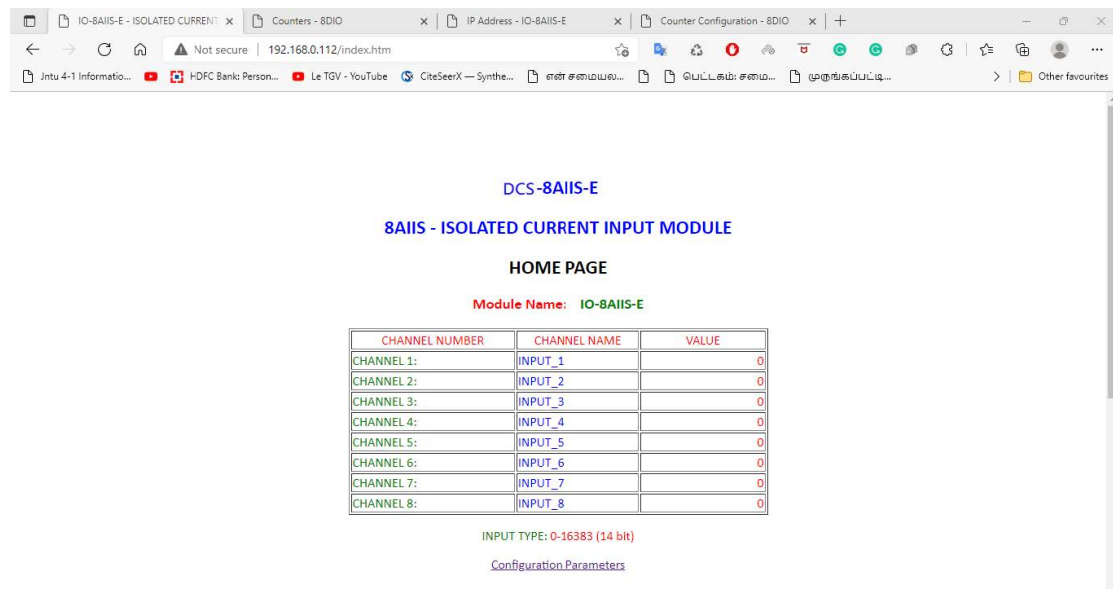
DCS-8AIIS-E Web Page Configuration

- **IP Address:** The new IP address can be entered into the web page as shown above. After this has been done, you must click the Submit button to send the values to the Module. The screen will now be updated and if successful will continue to display the new IP address. The new IP address will only be effective after the Module power has been switched off and on again. This feature allows you to check that the correct IP address has been entered before being activated. If the IP address has been entered incorrectly and the power has not been switched off, it is possible to re-enter the correct IP address. If the power has been switched off and back on again, the Module will not communicate until you enter the new IP address into the address line of the browser window.
- **Default Gateway IP Address:** A **default gateway** is a node (a router) on a computer network that serves as an access point to another network. In enterprises, however, the gateway is the computer that routes the traffic from a PC to the outside network that is serving the Web pages. It is only necessary to configure the default gateway IP address if the PC that is accessing the Module is on a different network.
- **Subnet Mask:** In computer networks, a **subnetwork** or **subnet** is a range of logical addresses within the address space that is assigned to an organization. The subnet mask is used to inform the Module that it must send its replies to the gateway if the IP address of the PC is on a different network. When the subnet mask is set to "0.0.0.0" then it is effectively disabled and the default gateway is not used. A typical subnet mask would be "255.255.255.0".
- **Socket Timeout:** If a socket connection is broken, say due to a network fault, it must timeout to free it up so that it can be used again. This timer is triggered by activity on the module, so if there is no communications activity for longer than the timeout period, the socket will close.

- **Input Type:** The type for the module can be configured by entering the corresponding number from the list in the specifications.
- **Module Compatibility:** When the value is zero "0", the Modbus registers are configured in the format for a Modbus TCP module. When the value is set to one "1", the Modbus registers are reconfigured to match the format of the Modbus TCP modules. This is useful if a new Modbus TCP module is being used to replace an old Modbus TCP module in an existing system.
- **Module Name:** This field allows you to enter a module description name into the Modbus TCP Module. This is an identifier for diagnostic/maintenance purposes and is chosen to best describe the Modbus TCP Module in the system by name or number.
- **Input Names:** These fields allow you to enter an input description name into the Modbus TCP Module. This is an identifier for diagnostic/maintenance purposes and is chosen to best describe the particular input by name or number.

Viewing web pages

To view the default Web page in the Modbus TCP Module, start the Web browser and type "192.168.0.112" into the address line of the browser window. The main page will now be displayed in the browser window.



DCS-8AIIS-E Web Page View- Input Status

- **Channel Number:** This refers to the actual input number on the terminals of the module.
- **Channel Name:** This is the name that was entered in the configuration page to best describe the inputs.
- **Value:** This is the current value of the inputs. To get an updated reading it is necessary to refresh the browser window to upload the web page again.

To view the Configuration Web page in the Modbus TCP Module, start the Web browser and type "192.168.0.112/tconfig.htm" into the address line of the browser window.



DCS-8AIIS-E

8AIIS - ISOLATED CURRENT INPUT MODULE

CONFIGURATION PAGE

INPUT TYPE	0-16383 (14 bit)
------------	------------------

[RETURN TO HOME PAGE](#)

DCS-8AIIS-E Web Page View- Input Type

- Input Type:** This is the format that the module has been configured to operate with.

DCS-8AIIS-E Modbus Mapping (Module Type = 137)

Modbus Address	Register Name	Low Limit	High Limit	Access	Description
30001	S/W Version / Module Type	N/A	N/A	R	High Byte = Software Version Low Byte = 137
30002	Analog Input 1	0	65535	R	Analog Input lower 16 Bits
30003	Analog Input 2	0	65535	R	"
30004	Analog Input 3	0	65535	R	"
30005	Analog Input 4	0	65535	R	"
30006	Analog Input 5	0	65535	R	"
30007	Analog Input 6	0	65535	R	"
30008	Analog Input 7	0	65535	R	"
30009	Analog Input 8	0	65535	R	"
30010	Input Status	0	65535	R	bit2 = 0(open circuit or < 2), bit2 = 1(over range) bit1 = 0(OK), bit1 = 1(error)
30011	Input Alarm Status	0	255	R	bit1 = 0(OK), bit1 = 1(input < 2mA)
40101	Input Type	1	5	R/W	See specification table.

DCS-8AIIS-E Modbus Mapping

Analog Input Registers.

The analog inputs are read as a yy bit value in the registers as follows: (yy = 12, 14 or 16 bit)

MSB					DCS-8AIIS-E ANALOG INPUTS								LSB				ADDRESS
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	300XX	

X X X X X X X X X X X X X X X X X X

Analog Input: 12 Bit Value (0 - 4095)

DCS-8AIIS-E Analog Input Register

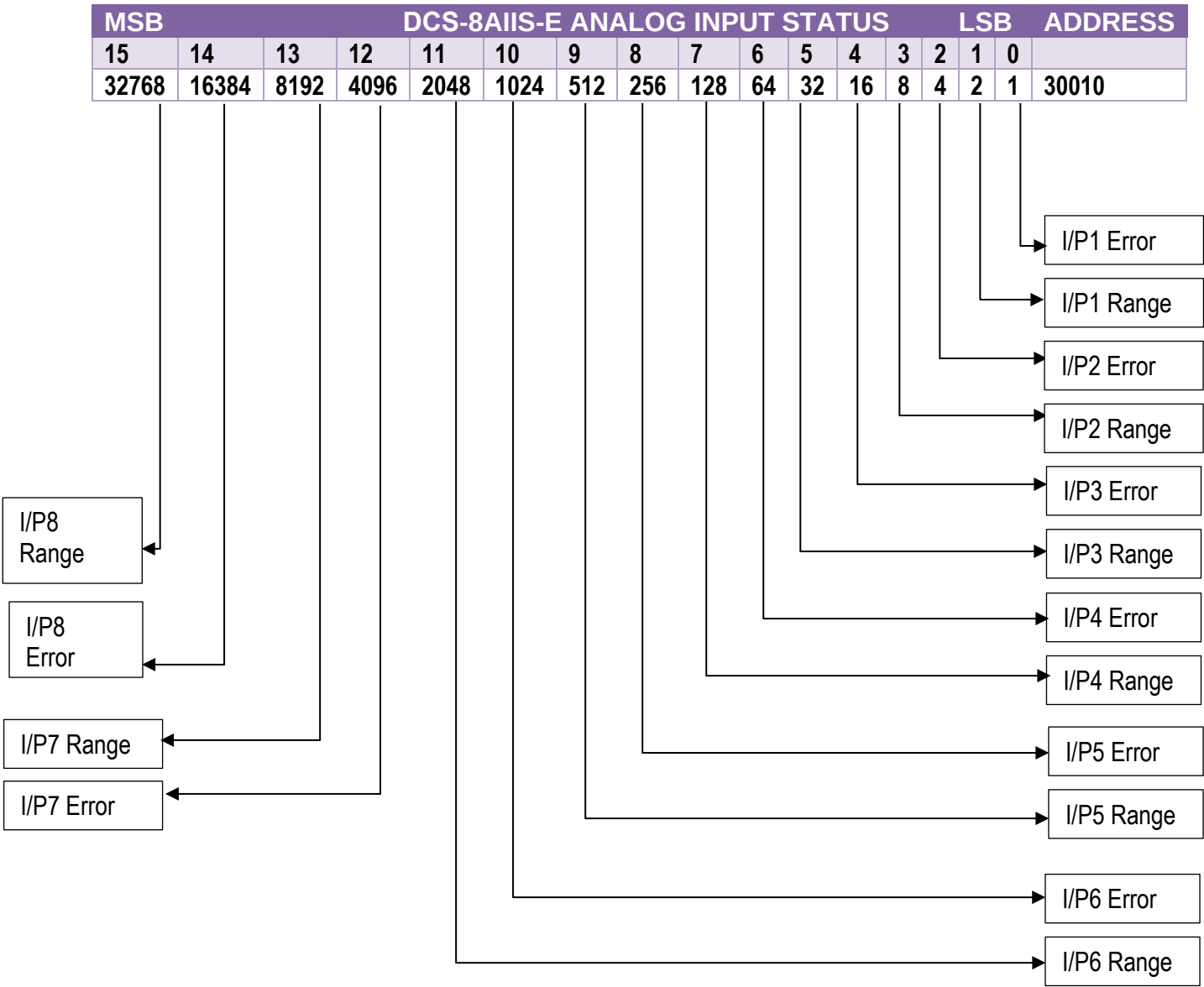
Analog Input Status.

There are two status bits associated with each analog input. These bits are used to indicate if the input is zero or open circuit, in the working range 0-20mA, or over range. If the

input is open circuit or over range, then the error bit will be set. When the error bit is set, the range bit is zero if the input is open circuit and set if the input is over range, i.e.:

Bit 1- Error	Bit 2-Range	Condition	Status LED
0	don't care	Input working OK.	(LED OFF)
1	0	Input Open circuit or zero.	(LED ON)
1	1	Input Over range.	(LED
FLASH)			

The analog input status can be read in a single register as follows:

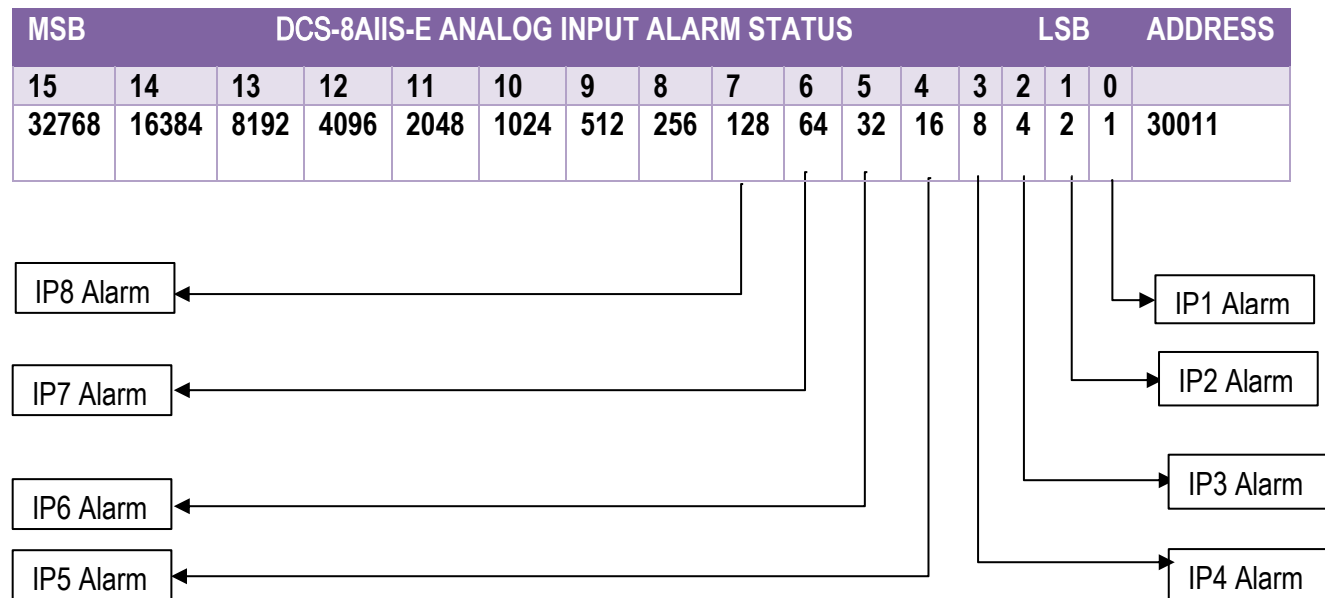


DCS-8AIIS-E Analog Input Status

Analog Input Alarm Status.

There is one alarm status bit associated with each analog input. The alarm bits are used to indicate if the 4-20mA current loop is broken and the bit will be set if the loop current is less than 2mA.

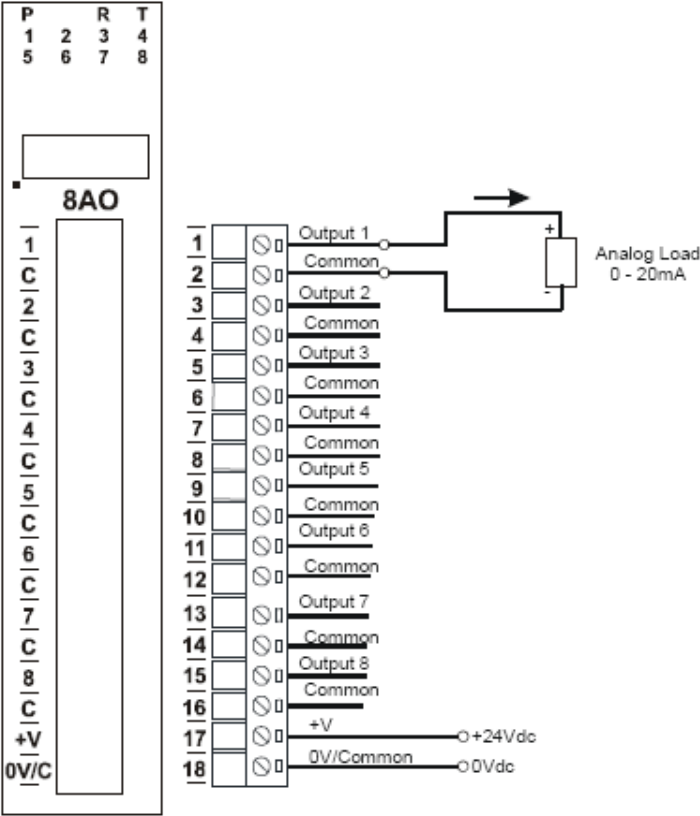
The analog input alarm status can be read in a single register as follows:



DCS-8AIIS-E Analog Input Alarm Status

DCS-08AOI

接線圖:



6.2.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 I0 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	變更輸出低限值	Off:0~20mA , On:4~20mA
9	模式	Off:設為副站(Slave) , On:設為主站(Master)
10	通訊參數	Off:為預設值 9600/N/8/1 , On:可經由 IO Studio 變更

6.2.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝ 110
40002	電流輸出 1	0	4095	可讀/寫	電流輸出 0 - 4095 = 0(4) - 20mA.
40003	電流輸出 2	0	4095	可讀/寫	"
40004	電流輸出 t 3	0	4095	可讀/寫	"
40005	電流輸出 4	0	4095	可讀/寫	"
40006	電流輸出 5	0	4095	可讀/寫	"
40007	電流輸出 6	0	4095	可讀/寫	"
40008	電流輸出 7	0	4095	可讀/寫	"
40009	電流輸出 8	0	4095	可讀/寫	"
40010	輸出狀態	0	65535	可讀	Bit0 = 0(正常), Bit0 = 1(有錯誤) Bit1 = 0(0), Bit1 = 1(4095)
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	通訊異常,輸出狀態	0	255	可讀/寫	0=保持最後狀態, 1~255 設定保持最後狀態時間
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1 = 偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

6.2.4 LED 狀態(通道)

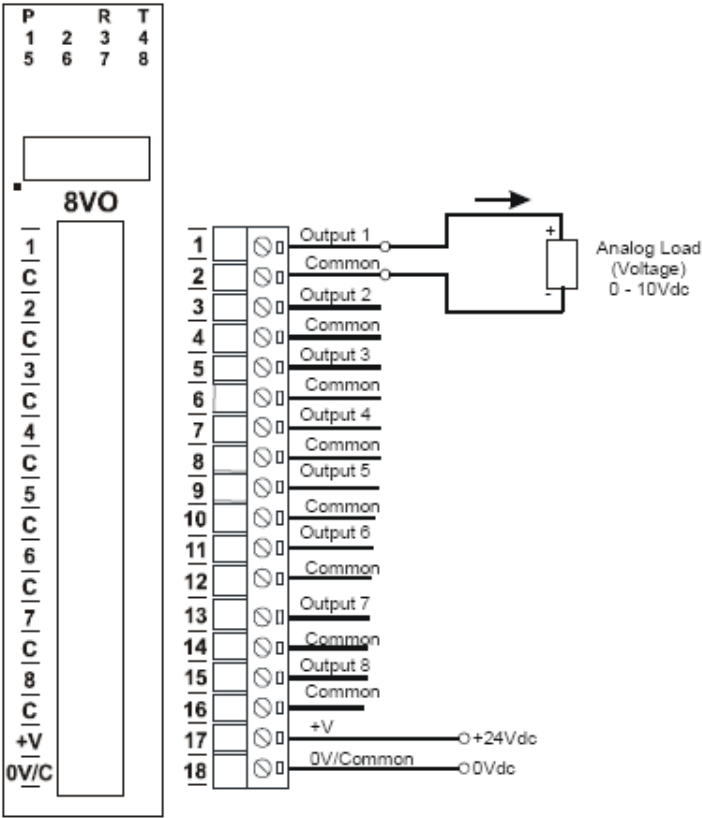
不亮：表示輸出正常，電流=0~20mA

恆亮：表示輸出通道電流=0mA

閃爍：表示輸出通道的電流=20mA

DCS-8AOV

接線圖:



6.3.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	變更輸出低限值	Off:0~10V , On:2~10V
9	模式	Off:設為副站(Slave) , On:設為主站(Master)
10	通訊參數	Off:為預設值 9600/N/8/1 , On:可經由 IO Studio 變更

6.3.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝111
40002	電壓輸出 1	0	4095	可讀/寫	電壓輸出 0 - 4095 = 0(2)~10V.
40003	電壓輸出 2	0	4095	可讀/寫	"
40004	電壓輸出 3	0	4095	可讀/寫	"
40005	電壓輸出 4	0	4095	可讀/寫	"
40006	電壓輸出 5	0	4095	可讀/寫	"
40007	電壓輸出 6	0	4095	可讀/寫	"
40008	電壓輸出 7	0	4095	可讀/寫	"
40009	電壓輸出 8	0	4095	可讀/寫	"
40010	輸出狀態	0	65535	可讀	Bit0 = 0(正常), Bit0 = 1(有錯誤) Bit1 = 0(0), Bit1 = 1(4095)
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	通訊異常, 輸出狀態	0	255	可讀/寫	0=保持最後狀態, 1~255 設定保持最後狀態時間
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400, 57600, 115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1 = 偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

6.3.4 LED 狀態(通道)

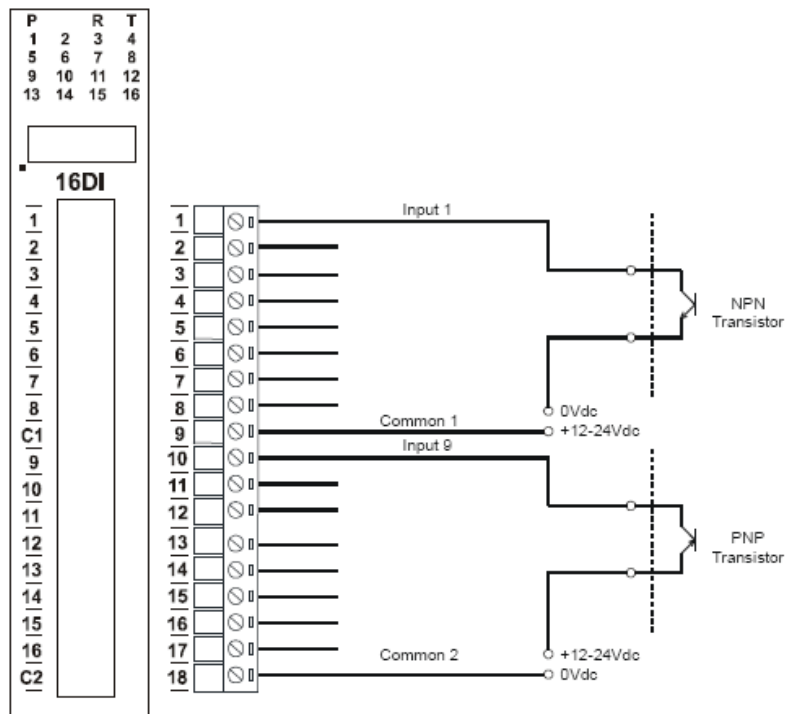
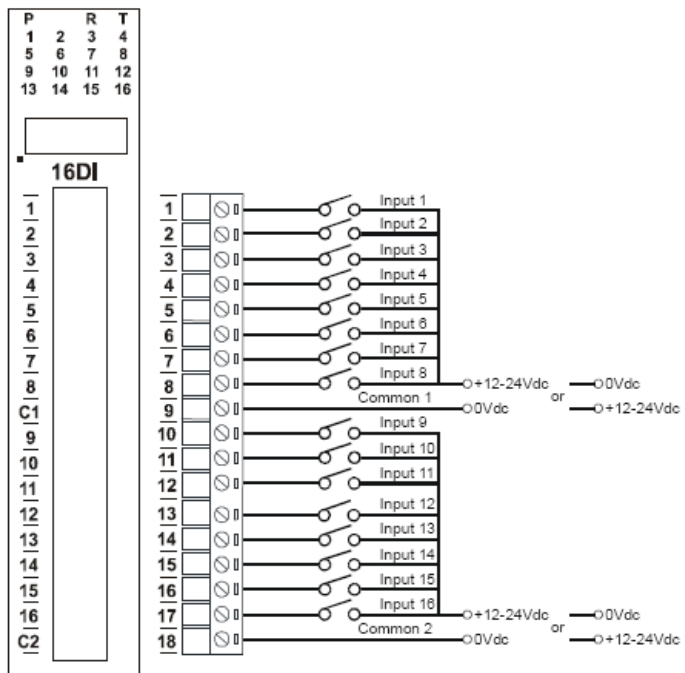
不亮：表示輸出正常，電流=0~10V

恆亮：表示輸出通道電流=0V

閃爍：表示輸出通道的電流=10V

DCS-016DI

接線圖:



3.2.2 指撥開關設定

開	功能	說明
1	位址 +1	設定 I0 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位 址	“
6	位 址	“
7	位 址	“
8	轉換	0n 表示可以讀取 Modbus 暫存器(30002)
9	-	不使用
10	通訊參數	Off: 為預設值 9600/N/8/1, 0n: 可經由 I0 Studio 變

3.2.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
10001	數位輸入 1	0	1	可讀	數位輸入狀態
10002	數位輸入 2	0	1	可讀	"
10003	數位輸入 3	0	1	可讀	"
10004	數位輸入 4	0	1	可讀	"
10005	數位輸入 5	0	1	可讀	"
10006	數位輸入 6	0	1	可讀	"
10007	數位輸入 7	0	1	可讀	"
10008	數位輸入 8	0	1	可讀	"
10009	數位輸入 9	0	1	可讀	"
10010	數位輸入 10	0	1	可讀	"
10011	數位輸入 11	0	1	可讀	"
10012	數位輸入 12	0	1	可讀	"
10013	數位輸入 13	0	1	可讀	"
10014	數位輸入 14	0	1	可讀	"
10015	數位輸入 15	0	1	可讀	"
10016	數位輸入 16	0	1	可讀	"
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝100
30002	數位輸入狀態	無	無	可讀	DI16～DI1＝Bit15～Bit0
40003	計數器 1 MSB	0	65535	可讀/寫	計數器需 2 個 Word
40004	計數器 1 LSB	0	65535	可讀/寫	計數器值域 0～4294967295.
40005	計數器 2 MSB	0	65535	可讀/寫	"
40006	計數器 2 LSB	0	65535	可讀/寫	"

40007	計數器 3 MSB	0	65535	可讀/寫	"
40008	計數器 3 LSB	0	65535	可讀/寫	"
40009	計數器 4 MSB	0	65535	可讀/寫	"
40010	計數器 4 LSB	0	65535	可讀/寫	"
40011	計數器 5 MSB	0	65535	可讀/寫	"
40012	計數器 5 LSB	0	65535	可讀/寫	"
40013	計數器 6 MSB	0	65535	可讀/寫	"
40014	計數器 6 LSB	0	65535	可讀/寫	"
40015	計數器 7 MSB	0	65535	可讀/寫	"
40016	計數器 7 LSB	0	65535	可讀/寫	"
40017	計數器 8 MSB	0	65535	可讀/寫	"
40018	計數器 8 LSB	0	65535	可讀/寫	"
40019	計數器 9 MSB	0	65535	可讀/寫	"
40020	計數器 9 LSB	0	65535	可讀/寫	"
40021	計數器 10MSB	0	65535	可讀/寫	"
40022	計數器 10LSB	0	65535	可讀/寫	"
40023	計數器 11MSB	0	65535	可讀/寫	"
40024	計數器 11LSB	0	65535	可讀/寫	計數器需 2 個 Word
40025	計數器 12MSB	0	65535	可讀/寫	計數器範圍 0 ~4294967295.
40026	計數器 12LSB	0	65535	可讀/寫	"
40027	計數器 13MSB	0	65535	可讀/寫	"
40028	計數器 13LSB	0	65535	可讀/寫	"
40029	計數器 14MSB	0	65535	可讀/寫	"
40030	計數器 14LSB	0	65535	可讀/寫	"
40031	計數器 15MSB	0	65535	可讀/寫	"
40032	計數器 15LSB	0	65535	可讀/寫	"
40033	計數器 16MSB	0	65535	可讀/寫	"
40034	計數器 16LSB	0	65535	可讀/寫	"
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	計數模式	0	2	可讀/寫	0=無作用, 1=上數, 2=上/下數
40102	輸入濾波	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400, 57600, 115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1=偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

MSB		數位輸入								LSB								位址
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30002		

3.2.4 計數器功能

該模組可設定成計數器功能使用，改變參數【40101 計數模式】或【40101 輸入濾波】如下。

【40101 計數模式】=0：模式 0，計數器無作用。

【40101 計數模式】=1：模式 1，上數計數器。DI 點每動作 1 次，暫存器數值累加 1。每一組計數器需要 2 個 word(32Bit)，數值範圍 0 ~4294967295。

【40101 計數模式】=2：模式 2，上/下數計數器。當 DI1 每動作 1 次，暫存器 A 數值累加 1；若 DI2 每動作 1 次，則暫存器 A 數值遞減 1。DI2(上數)/DI3(下數)一組、DI4(上數)/DI5(下數)…以此類推。

計數暫存器數值：

計數器 1 MSB = 暫存器 40003 位址

計數器 1 LSB = 暫存器 40004 位址

計數器 1 數值 = (計數器 1 MSB × 65535) + 計數器 1 LSB

斷電記憶：若要開啟該功能，輸入濾波(Input Filter)需>10ms，所以需設定參數【40101 輸入濾波】≥2。

輸入脈波頻率最大值：25 Hz。

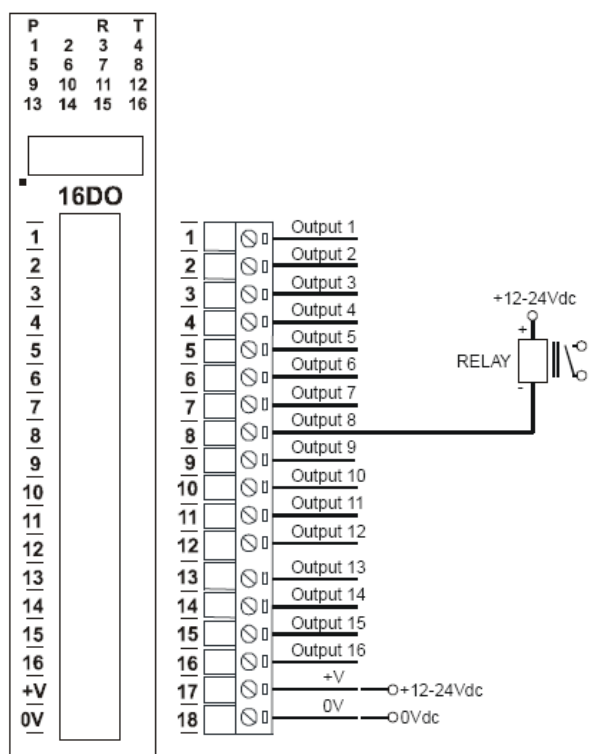
脈波寬度：需大於 25ms。

無斷電記憶：若要開啟該功能，需設定參數【40101 輸入濾波】=0。

輸入脈波頻率最大值：1KHz。

脈波寬度：需大於 500us。

接線圖:



3.3.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 I0 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	模式	Off: 設為副站(Slave)，On: 設為主站(Master)
10	通訊參數	Off: 為預設值 9600/N/8/1，On: 可經由 I0 Studio 變更

3.3.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
00001	數位輸出 1	0	1	可讀/寫	數位輸出控制
00002	數位輸出 2	0	1	可讀/寫	"
00003	數位輸出 3	0	1	可讀/寫	"
00004	數位輸出 4	0	1	可讀/寫	"
00005	數位輸出 5	0	1	可讀/寫	"
00006	數位輸出 6	0	1	可讀/寫	"
00007	數位輸出 7	0	1	可讀/寫	"
00008	數位輸出 8	0	1	可讀/寫	"
00009	數位輸出 9	0	1	可讀/寫	"
00010	數位輸出 10	0	1	可讀/寫	"
00011	數位輸出 11	0	1	可讀/寫	"
00012	數位輸出 12	0	1	可讀/寫	"
00013	數位輸出 13	0	1	可讀/寫	"
00014	數位輸出 14	0	1	可讀/寫	"
00015	數位輸出 15	0	1	可讀/寫	"
00016	數位輸出 16	0	1	可讀/寫	"
30001	韌體版本 模組型式	無	無	可讀	高位元組＝韌體版本 低位元組＝101
40002	數位輸出控制	無	無	可讀/寫	D016～D01＝Bit15～Bit0
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	通訊異常，輸出狀態	0	255	可讀/寫	0=保持最後狀態，1～255 設定 保持最後狀態時間
40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400,57600,115200
40122	同位元	0	2	可讀/寫	0 = 無 none,1=偶 even,2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)

數位輸出															位 址	
MSB					LSB											
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		0
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	40002

4 Modbus TCP IO Modules

4.1 DCS-16DI-E – 16 Channel Digital Inputs with Counters

4.1.1 Description

The DCS-16DI-E module is a 16-channel digital input module. The inputs are isolated from the logic by bi-directional opto-couplers. The inputs are divided into 2 isolated groups of 8 inputs each. This allows for many configurations in which the input module may be used. One such configuration could be where one group is connected as common positive and the second group connected as common negative.



4-1 DCS-16DI-E

The counters operate in three modes:

- ❖ In **mode 0**: All the counters are disabled.
- ❖ In **mode 1**: The counters are 32-bit counters allowing a count value from 0 to 4294967295. The count value can be cleared by writing a zero to the associated registers or preset to any other value using the same method.
- ❖ In **mode 2**: The inputs are connected as up/down counters. Input 1 will increment counter 1 whilst input 2 decrements counter1. In the same way, inputs 3&4 operate counter 2, inputs 5&6 operate counter 3 and inputs 7&8 operate counter 4, etc.

When the input filter is configured for > 10ms (Input Filter > 1), the 16 counters are saved in non-volatile memory and the count value will be saved when power fails.

The format of the registers allows the status of the inputs to be read as either single bits or all at once as a single register on the Modbus network.

Each DCS-16DI-E Module has a unique Ethernet IP address which must be programmed into the PC or PLC. The IP address in the DCS-16DI-E Module is configured via the Web Server. Any standard Web browser such as Internet Explorer can be used to access the web pages where configuration is carried out. The modules are factory programmed with a default IP address of 192.168.0.112. This address must be changed before the module is added to an existing network.

The web page address for viewing the digital input status parameters is <http://192.168.0.112/index.htm> and the address for viewing the counters is <http://192.168.0.112/counters.htm>.

The web page address for configuring the module is <http://192.168.0.112/ip.htm> and the web page for configuring the counters is <http://192.168.0.112/countcfg.htm>.

4.1.2 Technical Specification of DCS-16DI-E

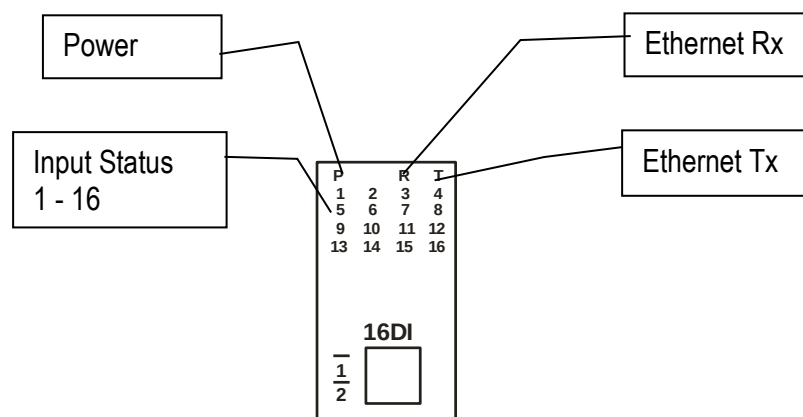
Power Supply	Logic Supply Voltage	12 -24 Vdc
	Logic Supply Current	75mA @ 12V / 39mA @ 24V
Digital Inputs	Input Points	16
	Input Voltage Range	12 - 24 Vdc
	Input Current per input	5mA @ 12Vdc / 11mA @ 24Vdc
	Isolation	1500Vrms between field and logic
Counters (Filter disabled)	Inputs	1 to 16
	Resolution	32 Bits
	Frequency	1KHz (max)
	Pulse Width	500us (min)
Counters (Filter > 1)	Inputs	1 to 16
	Resolution	32 Bits
	Frequency	25Hz (max)
	Pulse Width	20ms (min)
Ethernet	10/100Mbps/s	Twisted pair.
Temperature	Operating Temperature.	-40°C to + 80°C
	Storage Temperature	-40°C to + 85°C
Connectors	Logic Power and Comms.	4 Pin Connector on underside of unit
	Inputs	18 Way screw connector on front
	Ethernet	RJ45 on top side of unit.

4-1 DCS-16DI-E Specifications

Note: Inputs 1 to 16 are used as both digital inputs and counter inputs.

4.1.3 Status Indicators

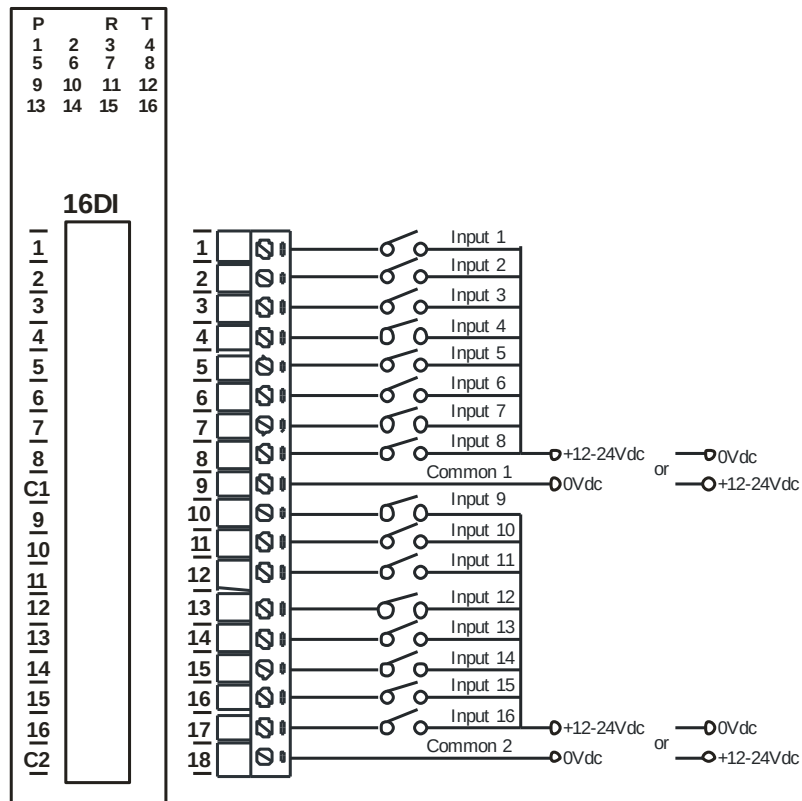
Power: Flashes to indicate the CPU is running.
RS485 Rx: Flashes to indicate the unit has received a valid Modbus message.
RS485 Tx: Flashes to indicate the unit has sent a Modbus message.
Input Status: "OFF" when the input is off.
"ON" when the input is on.



4-2 DCS-16DI-E Status Indicators

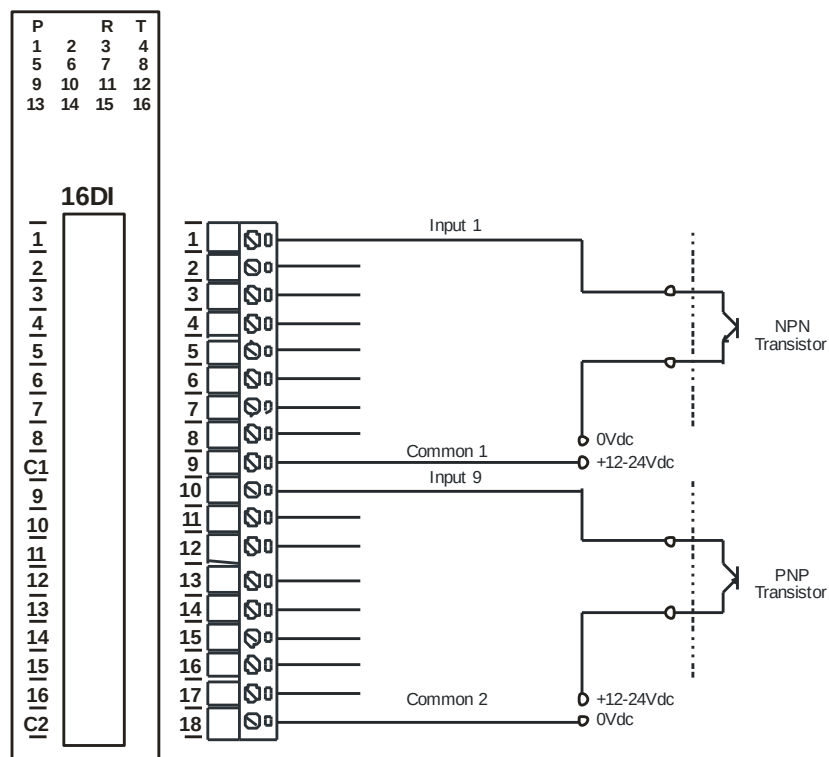
4.1.4 Wiring

The following diagram shows how the digital inputs are connected to potential free switches. The common can be connected to positive or negative as indicated.



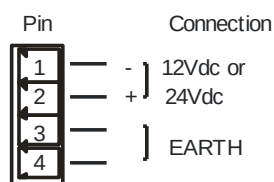
4-3 DCS-16DI-E Wiring -Potential Free Switch

The following diagram shows how the digital inputs are connected a NPN transistor or a PNP transistor.



4-4 DCS-16DI-E Wiring -NPN / PNP Transistor

The following diagram shows the wiring for the power.



4-5 DCS-16DI-E Power Wiring

4.1.5 Configuration

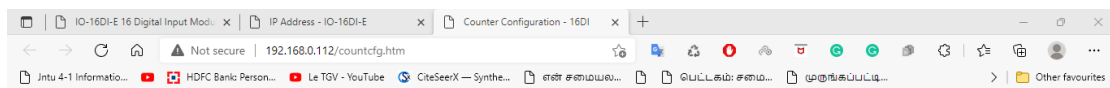
The Web page address "192.168.0.112/ip.htm" is entered into the address line of the browser window to access the configuration page. This page allows the user to change the IP address of the Modbus TCP Module and to enter a Module Description Name and Input Names for identification/maintenance purposes.

4-6 DCS-16DI-E Web Page Configuration

- IP Address:** The new IP address can be entered into the web page as shown above. After this has been done, you must click the Submit button to send the values to the Module. The screen will now be updated and if successful will continue to display the new IP address. The new IP address will only be effective after the Module power has been switched off and on again. This feature allows you to check that the correct IP address has been entered before being activated. If the IP address has been entered incorrectly and the power has not been switched off, it is possible to re-enter the correct IP address. If the power has been switched off and back on again, the Module will not communicate until you enter the new IP address into the address line of the browser window.
- Default Gateway IP Address:** A **default gateway** is a node (a router) on a computer network that serves as an access point to another network. In enterprises, however, the gateway is the computer that routes the traffic from a PC to the outside network that is serving the Web pages. It is only necessary to configure the default gateway IP address if the PC that is accessing the Module is on a different network.

- **Subnet Mask:** In computer networks, a **subnetwork** or **subnet** is a range of logical addresses within the address space that is assigned to an organization. The subnet mask is used to inform the Module that it must send its replies to the gateway if the IP address of the PC is on a different network. When the subnet mask is set to "0.0.0.0" then it is effectively disabled and the default gateway is not used. A typical subnet mask would be "255.255.255.0".
- **Socket Timeout:** If a socket connection is broken, say due to a network fault, it must timeout to free it up so that it can be used again. This timer is triggered by activity on the module, so if there is no communications activity for longer than the timeout period, the socket will close.
- **Module Compatibility:** When the value is zero "0", the Modbus registers are configured in the format for a Modbus TCP module. When the value is set to one "1", the Modbus registers are reconfigured to match the format of the Modbus TCP modules. This is useful if a new Modbus TCP module is being used to replace an old Modbus TCP module in an existing system.
- **Module Name:** This field allows you to enter a module description name into the Modbus TCP Module. This is an identifier for diagnostic/maintenance purposes and is chosen to best describe the Modbus TCP Module in the system by name or number.
- **Input Names:** These fields allow you to enter an input description name into the Modbus TCP Module. This is an identifier for diagnostic/maintenance purposes and is chosen to best describe the particular input by name or number.

The Web page address "**192.168.0.112/countcfg.htm**" is entered into the address line of the browser window to access the counter configuration page. This page allows you to enter a Counter Description Name for identification/maintenance purposes.



16DI - DIGITAL INPUT MODULE

COUNTER CONFIGURATION

Counter Mode 0=disable, 1=up count, 2=up/down count

Input Filter X10 milliseconds

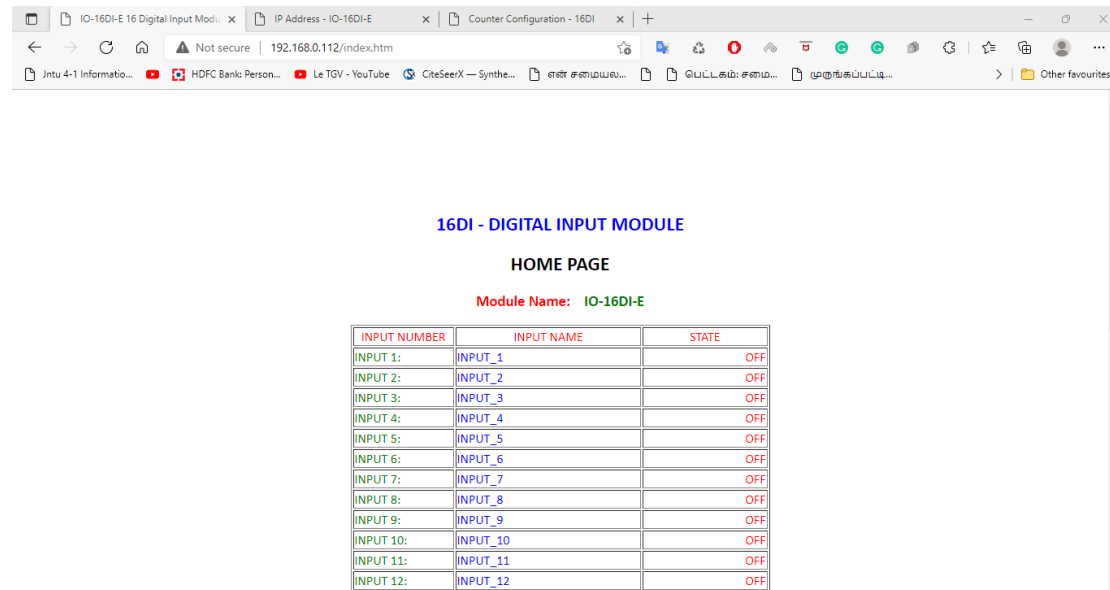
[RETURN TO IP PAGE](#)

4-7 DCS-16DI-E Web Page Counter Configuration

- **Counter Mode:** Enter 0, 1 or 2 to submit the required mode.
- **Input Filter:** The input filter is used to prevent false inputs and counting due to electrical noise or contact bounce.

4.1.6 Viewing web pages

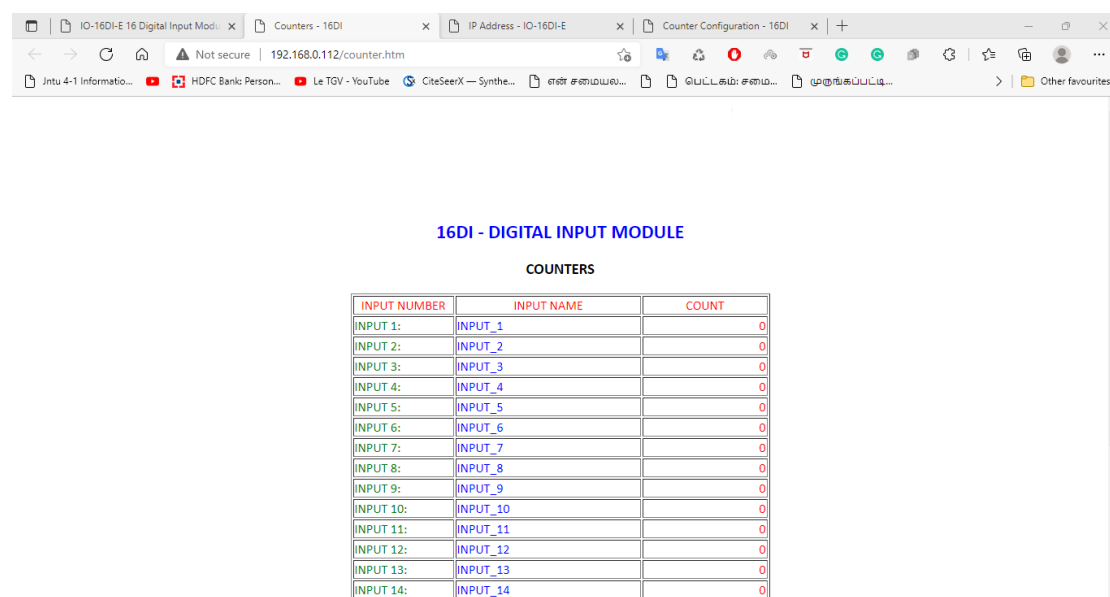
To view the default Web page in the Modbus TCP Module, start the Web browser and type "192.168.0.112" into the address line of the browser window. The main page will now be displayed in the browser window.



4-8 DCS-16DI-E Web Page View IO Status

- **Input Number:** This refers to the actual input number on the terminals of the module.
- **Input Name:** This is the name that was entered in the configuration page to best describe the inputs.
- **State:** This is the current state of the inputs. To get an updated reading it is necessary to refresh the browser window to upload the web page again.

To view the Counter Web page in the Modbus TCP Module, start the Web browser and type "192.168.0.112/counter.htm" into the address line of the browser window.



4-9 DCS-16DI-E Web Page View Counter Status

- **Counter:** This refers to the actual input number on the terminals of the module.
- **Input Name:** This is the name that was entered in the configuration page to best describe the inputs.
- **Count:** This is the current count on the inputs. To get an updated reading it is necessary to refresh the browser window to upload the web page again.
- **Counter Configuration:** This is the mode as described at the beginning of this section.

4.1.7 DCS-16DI-E -Modbus Mapping (Module Type = 148)

Modbus Address	Register Name	Low Limit	High Limit	Access	Description
10001	Digital Input 1	0	1	R	Status of Digital Inputs.
10002	Digital Input 2	0	1	R	"
10003	Digital Input 3	0	1	R	"
10004	Digital Input 4	0	1	R	"
10005	Digital Input 5	0	1	R	"
10006	Digital Input 6	0	1	R	"
10007	Digital Input 7	0	1	R	"
10008	Digital Input 8	0	1	R	"
10009	Digital Input 9	0	1	R	"
10010	Digital Input 10	0	1	R	"
10011	Digital Input 11	0	1	R	"
10012	Digital Input 12	0	1	R	"
10013	Digital Input 13	0	1	R	"
10014	Digital Input 14	0	1	R	"
10015	Digital Input 15	0	1	R	"
10016	Digital Input 16	0	1	R	"
30001	S/W Version / Module Type	N/A	N/A	R	High Byte = Software Version Low Byte = 148
30002	Digital Inputs	N/A	N/A	R	Digital Inputs in 16 bits. 16 - 1.
40003	Counter 1 MSB	0	65535	R/W	Counter MSB and LSB combine to give a 32 bit Counter with range 0 to 4294967295.
40004	Counter 1 LSB	0	65535	R/W	
40005	Counter 2 MSB	0	65535	R/W	"
40006	Counter 2 LSB	0	65535	R/W	"
40007	Counter 3 MSB	0	65535	R/W	"
40008	Counter 3 LSB	0	65535	R/W	"
40009	Counter 4 LSB	0	65535	R/W	"
40010	Counter 4 LSB	0	65535	R/W	"
40011	Counter 5 MSB	0	65535	R/W	"
40012	Counter 5 LSB	0	65535	R/W	"
40013	Counter 6 MSB	0	65535	R/W	"
40014	Counter 6 LSB	0	65535	R/W	"
40015	Counter 7 MSB	0	65535	R/W	"
40016	Counter 7 LSB	0	65535	R/W	"
40017	Counter 8 MSB	0	65535	R/W	"
40018	Counter 8 LSB	0	65535	R/W	"
40019	Counter 9 MSB	0	65535	R/W	"
40020	Counter 9 LSB	0	65535	R/W	"

Modbus Address	Register Name	Low Limit	High Limit	Access	Description
40021	Counter 10MSB	0	65535	R/W	"
40022	Counter 10LSB	0	65535	R/W	"
40023	Counter 11MSB	0	65535	R/W	Counter MSB and LSB combine to give a 32 bit
40024	Counter 11LSB	0	65535	R/W	Counter with range 0 to 4294967295.
40025	Counter 12MSB	0	65535	R/W	"
40026	Counter 12LSB	0	65535	R/W	"
40027	Counter 13MSB	0	65535	R/W	"
40028	Counter 13LSB	0	65535	R/W	"
40029	Counter 14MSB	0	65535	R/W	"
40030	Counter 14LSB	0	65535	R/W	"
40031	Counter 15MSB	0	65535	R/W	"
40032	Counter 15LSB	0	65535	R/W	"
40033	Counter 16MSB	0	65535	R/W	"
40034	Counter 16LSB	0	65535	R/W	"
40035	Counter Capture	0	65535	R/W	Bit1 = 1 to Capture Counter1, Bit2 = 1 to Capture Counter2, etc.
40036	CCounter 1 MSB	0	65535	R/W	Capture Counter Registers. MSB and LSB
40037	CCounter 1 LSB	0	65535	R/W	combine to give a 32-bit Value.
40038	CCounter 2 MSB	0	65535	R/W	Counter with range 0 to 4294967295.
40039	CCounter 2 LSB	0	65535	R/W	
40040	CCounter 3 MSB	0	65535	R/W	"
40041	CCounter 3 LSB	0	65535	R/W	"
40042	CCounter 4 LSB	0	65535	R/W	"
40043	CCounter 4 LSB	0	65535	R/W	"
40044	CCounter 5 MSB	0	65535	R/W	"
40045	CCounter 5 LSB	0	65535	R/W	"
40046	CCounter 6 MSB	0	65535	R/W	"
40047	CCounter 6 LSB	0	65535	R/W	"
40048	CCounter 7 MSB	0	65535	R/W	"
40049	CCounter 7 LSB	0	65535	R/W	"
40050	CCounter 8 MSB	0	65535	R/W	"
40051	CCounter 8 LSB	0	65535	R/W	"
40052	CCounter 9 MSB	0	65535	R/W	"
40053	CCounter 9 LSB	0	65535	R/W	"
40054	CCounter 10MSB	0	65535	R/W	"
40055	CCounter 10LSB	0	65535	R/W	"
40056	CCounter 11MSB	0	65535	R/W	"
40057	CCounter 11LSB	0	65535	R/W	"
40058	CCounter 12MSB	0	65535	R/W	"
40059	CCounter 12LSB	0	65535	R/W	"
40060	CCounter 13MSB	0	65535	R/W	"
40061	CCounter 13LSB	0	65535	R/W	"

Modbus Address	Register Name	Low Limit	High Limit	Access	Description
40062	CCounter 14MSB	0	65535	R/W	"
40063	CCounter 14LSB	0	65535	R/W	"
40064	CCounter 15MSB	0	65535	R/W	"
40065	CCounter 15LSB	0	65535	R/W	"
40066	CCounter 16MSB	0	65535	R/W	"
40067	CCounter 16LSB	0	65535	R/W	"
40101	Counter Mode	0	2	R/W	0=Disable, 1=Up Counting, 2=Up/Down Count
40102	Input Filter	0	65535	R/W	0 = Disable, >0 = Enable. (x10ms)
40103	Capture Zero	0	65535	R/W	0 = Disabled, bit1 = auto zero counter 1.

4-2 DCS-16DI-E Modbus Mapping

4.1.7.1 Digital Input Register

The digital inputs can be read in a single register as follows:

MSB		DCS-16DI-E DIGITAL INPUTS												LSB		Address
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1	30002
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Digital Input Number

4-3 DCS-16DI-E Digital Input Register

4.1.7.2 Counter Registers

The counters are stored as two 16-bit registers. The first register is the High Register (MSB) and the second register is the Low Register (LSB). To get the actual 32-bit count value the registers must be combined as follows:

Counter High Value (MSB) = Register 40003.

Counter Low Value (LSB) = Register 40004.

Counter Value = (Counter High Value X 65536) + Counter Low Value.

4.1.7.3 Counter Capture.

To capture a counter a 1 must be written to the corresponding bit position in the Counter Capture Register 40035. For example:

1. Writing 1 to Register 40035 results in Counter 1 value being captured to Counter Capture 1.
2. Writing 2 to Register 40035 results in Counter 2 value being captured to Counter Capture 2.
3. Writing 3 to Register 40035 results in Counter 1 value being captured to Counter Capture 1 and Counter 2 value being captured to Counter Capture 2.

Once the module has Captured the counters, the Counter Capture Register 40035 is cleared to zero. It is possible to read this register to get confirmation that the capture is complete before reading the captured counter values.

4.1.7.4 Counter Auto Zero.

The counter being captured can be auto zeroed. The purpose of this function is to let the module zero the counter so that no counts get lost due to delays from communication latency, etc.

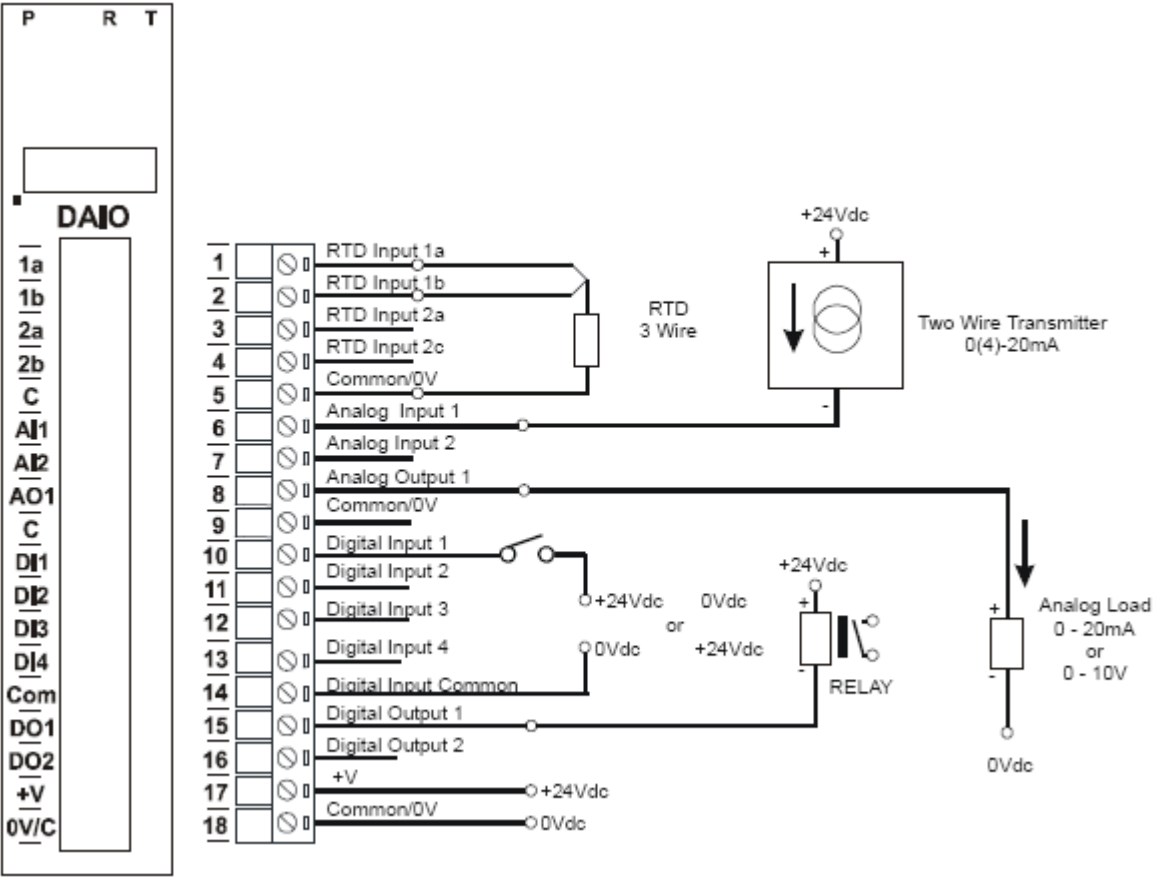
To ensure that a counter is auto zeroed, a 1 must be written to the corresponding bit position in the Capture Zero Register 40103. For example:

Writing 1 to Register 40103 results in Counter 1 value being zeroed when the Counter Capture bit is 1.

The value in the Capture Zero Register 40103 is permanently stored in memory and only has to be configured once.

DCS-DAIO

接線圖:



7.2.2 指撥開關設定

開關	功能	說明
1	位址 +1	設定 IO 模組站號
2	位址 +2	“
3	位址 +4	“
4	位址 +8	“
5	位址 +16	“
6	位址 +32	“
7	位址 +64	“
8	-	不使用
9	-	不使用
10	通訊參數	Off: 為預設值 9600/N/8/1，On: 可經由 IO Studio 變更

7.2.3 Modbus 位址表

位址	暫存器名稱	低限值	高限值	存取	說明
10001	數位輸入 1	0	1	可讀	數位輸入狀態
10002	數位輸入 2	0	1	可讀	"
10003	數位輸入 3	0	1	可讀	"
10004	數位輸入 4	0	1	可讀	"
00017	數位輸出 1	0	1	可讀/寫	數位輸出控制
00018	數位輸出 2	0	1	可讀/寫	"
30001	韌體版本 模組型式	無	無	可讀	高位元組=韌體版本 低位元組 = 112
30002	數位輸入狀態	無	無	可讀	DI4~DI1=Bit4~Bit0
40003	數位輸出控制	無	無	可讀/寫	DO4~DO1=Bit4~Bit0
40004	RTD 輸入 1	-xxx.x	yyyy.y	可讀	參考輸入範圍表
40005	RTD 輸入 2	-xxx.x	yyyy.y	可讀	解析度 0.1℃
40006	類比輸入 1	0	4095	可讀	輸入 0~10V、0~20mA
40007	類比輸入 2	0	4095	可讀	"
40008	類比輸出 1	0	4095	可讀/寫	輸出 0~10V、0~20mA
40009	計數器 1 MSB	0	65535	可讀/寫	計數器需 2 個 Word
40010	計數器 1 LSB	0	65535	可讀/寫	計數器值域 0 ~4294967295.
40011	計數器 2 MSB	0	65535	可讀/寫	"
40012	計數器 2 LSB	0	65535	可讀/寫	"
40013	計數器 3 MSB	0	65535	可讀/寫	"
40014	計數器 3 LSB	0	65535	可讀/寫	"
40015	計數器 4 MSB	0	65535	可讀/寫	"
40016	計數器 4 LSB	0	65535	可讀/寫	"
30100	指撥開關	0	65535	可讀	指撥開關設定狀態
40101	通訊異常, 輸出狀態	0	255	可讀/寫	0=保持最後狀態, 1~255 設定保持最後狀態時間
40102	計數模式	0	2	可讀/寫	0=無作用, 1=上數, 2=上/下數
40103	輸入濾波	0	65535	可讀/寫	0=除能, >1=致能. (x10ms)
40104	RTD 1 型式	1	7	可讀/寫	參考 RTD 型式參數表
40105	RTD 2 型式	1	7	可讀/寫	參考 RTD 型式參數表
40106	類比輸入 1 型式	1	8	可讀/寫	1 = 0-4095 (mA input) 2 = 0-20mA 3=+/- 20mA 4 = 0-4095 (V input) 5=0-10.000 V 6=+/- 10.000 V 7=0 -1.0000 V 8=+/- 1.0000 V
40107	類比輸入 2 型式	1	8	可讀/寫	"
40108	類比輸出型式	1	2	可讀/寫	1 = 0-20mA, 2 = 0-10V
40109	Line Frequency	50	60	可讀/寫	線上頻率
40110	單位	1	2	可讀/寫	1=℃, 2=℉

40121	通訊速度	2400	11520	可讀/寫	2400, 4800, 9600, 19200, 38400, 57600, 115200
40122	同位元	0	2	可讀/寫	0 = 無 none, 1 = 偶 even, 2 = 奇 odd
40123	停止位元	1	2	可讀/寫	1 = 1 停止位元, 2 = 2 停止位元
40124	通訊回答延遲	0	65535	可讀/寫	0 = 除能, >1 = 致能. (x10ms)

7.2.4 輸入型式

RTD 型式	代號	型式	範圍	誤差值
類比輸入	1	PT100	-200~850℃	± 0.3℃IEC 751:1983
	2	Ni120	-80~320℃	± 0.3℃
	3	PT1000	-200~850℃	± 0.3℃
	4	Ni1000-DIN	-200~850℃	± 0.3℃
	5	Ni1000-Landys&Gyr	-200~850℃	± 0.3℃
	6	電阻 Ohms	10~400 Ω	± 0.05%
	7	電阻 Ohms	100~4000Ω	± 0.05%
	代號	型式	解析度	
	1	0~4095	12 bits	
	2	0~20.000mA	1uA	
	3	+/-20.000mA	1uA	
	4	0~4095	12 bits	
	5	0~10.000 V	1mV	
	6	+/- 10.000 V	1mV	
	7	0~1.0000 V	0.1mV	
	8	+/- 1.0000 V	0.1mV	

7.2.5 計數器功能

該模組可設定成計數器功能使用，改變參數【40102 計數模式】如下。

【40102 計數模式】=0：模式 0，計數器無作用。

【40102 計數模式】=1：模式 1，上數計數器。DI 點每動作 1 次，暫存器數值累加 1。每一組計數器需要 2 個 word(32Bit)，數值範圍 0 ~4294967295。

【40102 計數模式】=2：模式 2，上/下數計數器。當 DI1 每動作 1 次，暫存器 A 數值累加 1；若 DI2 每動作 1 次，則暫存器 A 數值遞減 1。DI2(上數)/DI3(下數)一組、DI4(上數)/DI5(下數)……以此類推。

無斷電記憶：

輸入脈波頻率最大值：1KHz。

脈波寬度：需大於 500us。

