



ISO 9001  
REGISTERED

# NEW-FLOW

MANUFACTURE OF DIFFERENTIAL PRESSURE GAUGE  
**DPG4000** (Piston Type) & **DPG5000** (Diaphragm Type)  
AND CONTROL INSTRUMENTS

差壓計操作說明書  
*Instruction Manual*



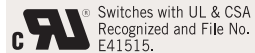
**DPG5000**

**DPG4000**

**Patent No.**

M449263  
China: ZL 2012 2 0666839.5

**Approvals:**



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Instruction No.: 20180402-dpg4000/5000-01

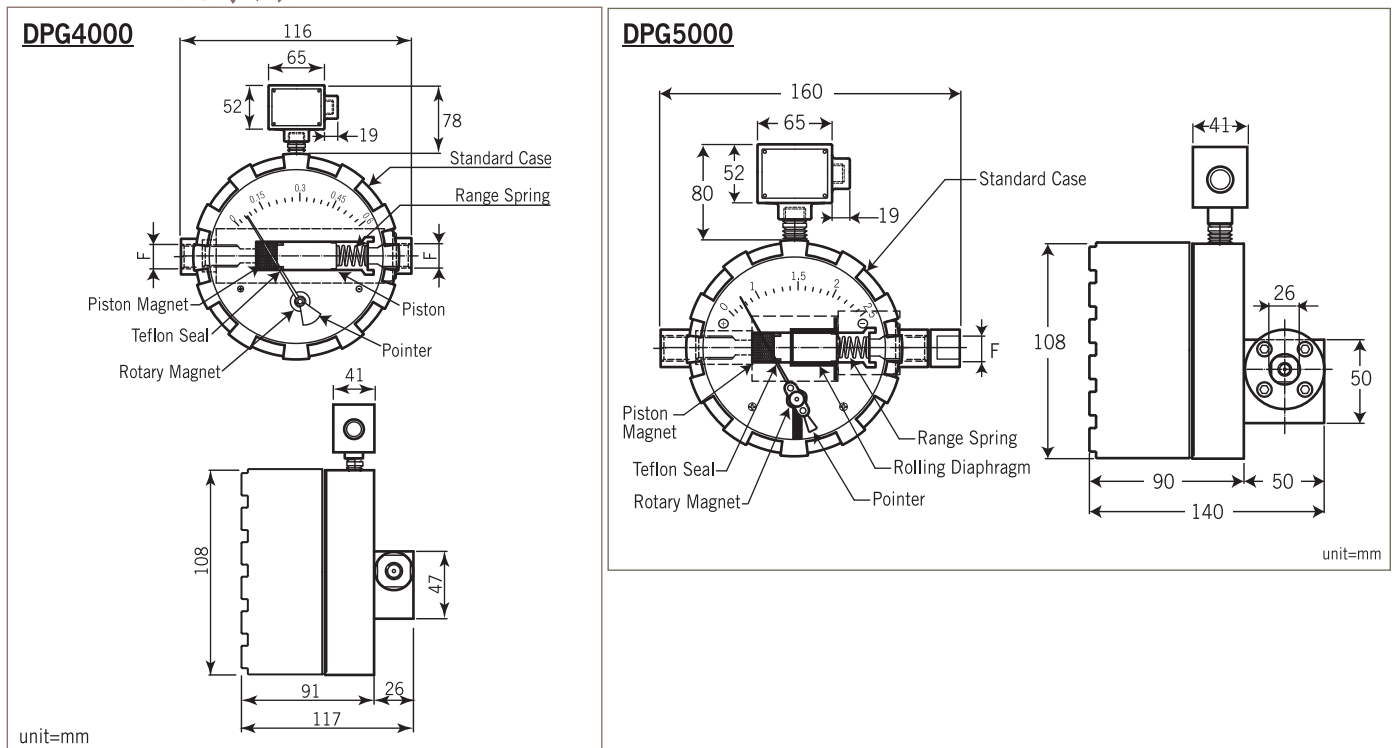


# 1.0 INTRODUCTION & DESCRIPTION

## Technical Data 規格說明

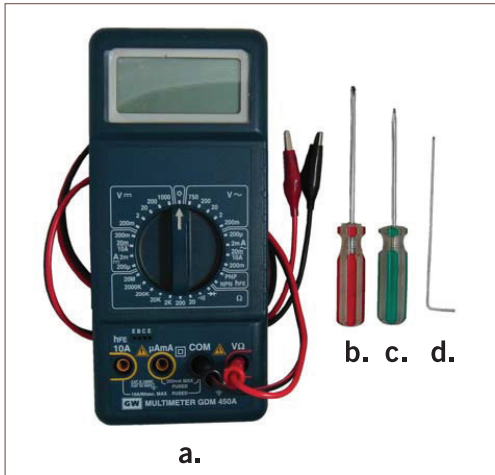
DPG4000– Piston Type	DPG5000– Diaphragm Type																																																																																												
<p><b>Dial:</b> <math>\phi 4''</math></p> <p><b>Accuracy:</b> <math>\pm 2\%</math> F.S (on rising pressure)</p> <p><b>Switch Data:</b> One SPDT micro switch or Two SPDT micro switches, 3amps 125/250VAC; Dead Band <math>\pm 12\%</math></p> <p><b>Output Signal:</b> 4~20mA, 2-wires, DC24V power supply</p> <p><b>Housing:</b> Die cast aluminum alloy with paint</p> <p><b>Housing Protection:</b> IP66</p> <p><b>Electronic Connection:</b> Standard <math>\frac{1}{2}''</math> NPT female; <math>\frac{3}{4}''</math> NPT female available</p> <p><b>Pressure Element:</b> Wetted parts all in SS316</p> <p><b>Process Connection:</b> <math>\frac{1}{4}''</math> NPT female; others with adaptor on request</p> <p><b>Working Pressure:</b> 200 kg/cm<sup>2</sup> (Both of High &amp; Low side must be pressured on line at the same time.)</p> <p><b>Working Temperature:</b> max. 80°C</p>	<p><b>Dial:</b> <math>\phi 4''</math></p> <p><b>Accuracy:</b> <math>\pm 2\%</math> F.S (on rising pressure)</p> <p><b>Switch Data:</b> One SPDT micro switch or Two SPDT micro switches, 3amps 125/250VAC; Dead Band <math>\pm 12\%</math></p> <p><b>Output Signal:</b> 4~20mA, 2-wires, DC24V power supply</p> <p><b>Housing:</b> Die cast aluminum alloy with paint and SS316 available</p> <p><b>Housing Protection:</b> IP66</p> <p><b>Electronic Connection:</b> Standard <math>\frac{1}{2}''</math> NPT female; <math>\frac{3}{4}''</math> NPT female available</p> <p><b>Pressure Element:</b> Diaphragm- Viton; other parts all in SS316</p> <p><b>Process Connection:</b> <math>\frac{1}{2}''</math> or <math>\frac{1}{4}''</math> NPT female available</p> <p><b>Working Pressure:</b> 200 kg/cm<sup>2</sup> (Both of High &amp; Low side must be pressured on line at the same time.)</p> <p><b>Working Temperature:</b> max. 80°C</p>																																																																																												
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## Dimensions 尺寸圖



## 2.0 INSTRUCTION- Micro Switch

### Instruction Manual 操作步驟說明



#### STEP. 1

First of all, please arrange the necessary tools as following.

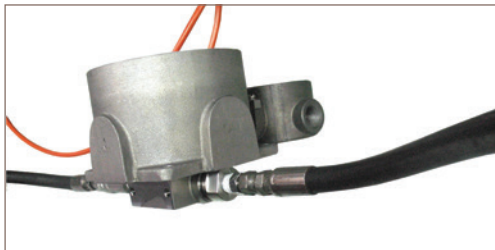
首先，請先準備所需工具如下

- Multimeter / 三用電錶
- “+” Driver / 十字螺絲起子
- “-” Driver / 一字螺絲起子
- 1.5mm Hexagon Key Wrench Set / 六角板手1.5mm



#### STEP. 2

Please open the top cover by rotating  
請將差壓計的上蓋逆時針轉開。

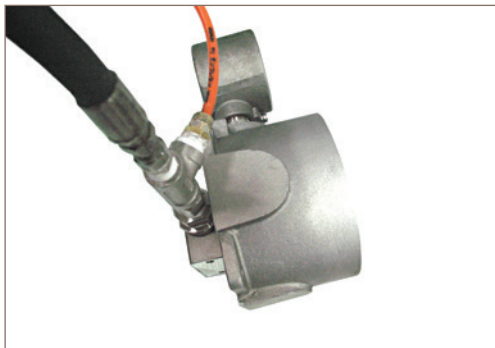


#### STEP. 3

High & Low side got the air pressure simultaneously.

It has to according to the working pressure, this step is for the  
“Leak Hunting”.

高壓端及低壓端必須同時受壓。請步驟為「檢漏」測試。



#### STEP. 4

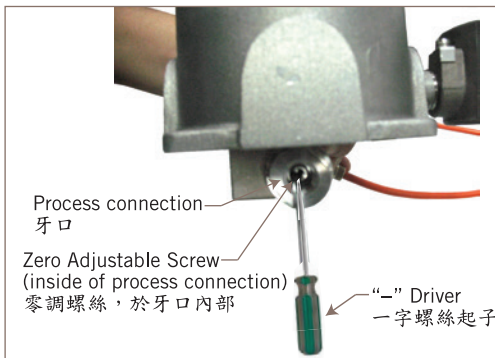
Fill the air into High side and Low side according to the working pressure,  
then relief the pressure from Low side and keep it in the range of  $\Delta P$ .  
( $\Delta P$ : High pressure deduct Low pressure).

This is in order to correct the range of  $\Delta P$  and make it for sure.

依據貴司的操作壓力填充氣體進入高壓端及低壓端後，由低壓端  
釋放壓力，並將壓力維持在差壓範圍內。

(差壓=高壓端壓力扣掉低壓端壓力)

此步驟為確定差壓範圍。



#### STEP. 5

If the pointer didn't return zero, the customer has to use the “-” Driver to  
revolve zero adjustable screw. (please refer to the diagram as left.)

若指針無法歸零，需請客戶使用「一字螺絲起子」轉動  
位於牙口內的零調螺絲。請參考左圖。

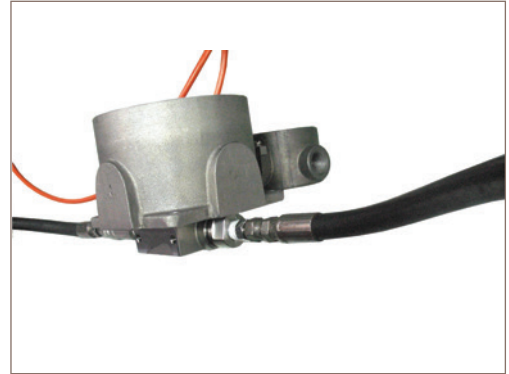
## 2.0 INSTRUCTION- Micro Switch

### STEP. 6

After the zero setting and adjustment, fill the pressure into the High side and Low side at the same time, then relief the pressure from Low side. This is in order to calibrate for each range point.

(Ex.: If the range is 4 kg/cm<sup>2</sup>, we have to fill the 4 kg/cm<sup>2</sup> pressure into High side first, and double check the each range point 1,2,3,4kg/cm<sup>2</sup> step by step.)

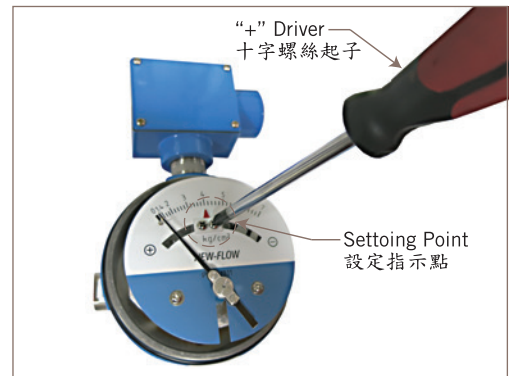
完成指針歸零步驟後，請依據貴司的操作壓力同時填充氣體進入高壓端及低壓端，之後由低壓端釋放壓力。此步驟是為檢測每一壓力點。(例：壓力範圍為4 kg/cm<sup>2</sup>，我們必須填充的4 kg/cm<sup>2</sup>壓力進入高壓端，並逐步檢測每一壓力點1,2,3,4kg/cm<sup>2</sup>是否正確。)



### STEP. 7

Loosen the screw by "+" Diver, and remove the red arrowhead by hand to the position what the customer requires pressure point. Then, tighten the screw in place.

使用螺絲起子將螺絲鬆開，並將標示紅色的箭頭移置所需的設定點後，再將螺絲鎖緊。



### STEP. 8

Set the point, please use the 1.5mm Hexagon Key Wrench to adjust the cam, and hold the pointer with one hand to make the axle center stable.

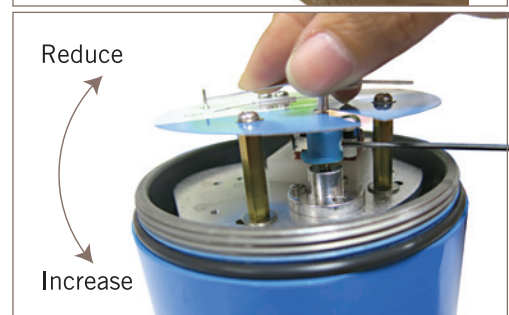
設定動作點時，請使用1.5 mm六角扳手調整凸輪，另一手請固定在指針上，使軸凸輪心不會移動。



### STEP. 9

The cam is under the plate, and use the Hexagon Key Wrench to set the point. Adjust the cam clockwise to reduce the set point; counterclockwise to increase the set point.

面板下有一凸輪可用六角扳手設定動作點。請先將六角螺絲放鬆。凸輪往順時鐘方向轉，設定點越小；反之往逆時針方向轉，設定點越大。



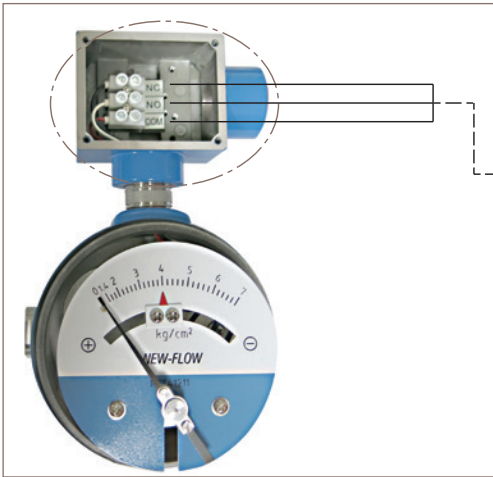
### STEP. 5

It is able to use the hand to remove the pointer to the set point as request, but it will be a little bit inaccuracy. Therefore, please fine tuning the cam by testing the pressure.

欲設定動作點時，可先將指針用手移往需設定的動作點，直到指針在設定動作點，但動作點會有些微誤差，故仍需做壓力測試來微調凸輪。



## 2.0 INSTRUCTION- Micro Switch



### Wiring Drawing

#### SPDT x 1

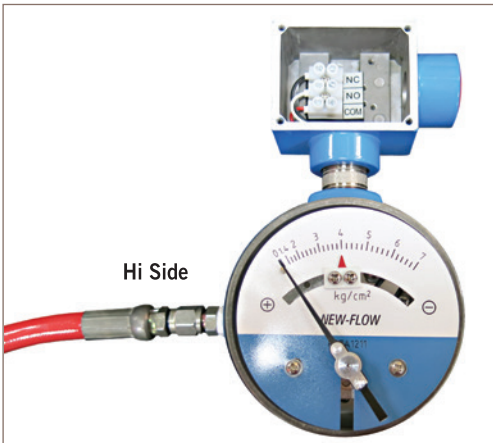
NC	Black Wire 黑線
NO	White Wire 白線
COM	Red Wire 紅線

#### SPDT x 2

NC	Black Wire 黑線
NO	White Wire 白線
COM	Red Wire 紅線
NC	Black Wire 黑線
NO	White Wire 白線
COM	Red Wire 紅線

#### STEP. 1

Please open the terminal cover, and test the switch function (SPDT x 1, 1A1B) (SPDT x 2, 2A2B) by Multimeter.  
請將接線盒上蓋打開，並用三用電錶測試作動。



#### STEP. 2

Please test the pressure at Hi Side to confirm the set point.  
設定完成後，請再H端做壓力測試動作。

# 2.0 INSTRUCTION- 4~20mA Output

## Main Parts List 主要零件

**Output:** 4~20mA, 2 wire system

**Power Supply:** 24 VDC

**Output:** Linear 4~20mA (2 wires system)

**Accuracy:** ±2% F.S

**Tool:** Multimeter, Program Communicator (GTP01), Power Supply (24VDC), “-” Driver

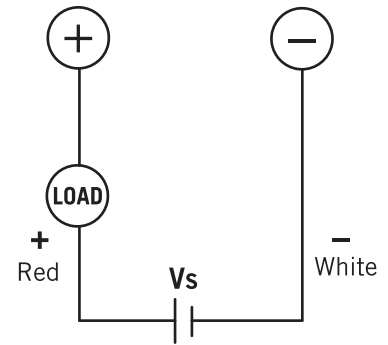
(三用電錶，規劃器GTP01，直流電源供應器24VDC，一字螺絲起子)

**Communication Functions:** Model GTP01 (additional charge)(規劃器GTP01需另購)

Please keep flow pointer in zero match to 4mA.

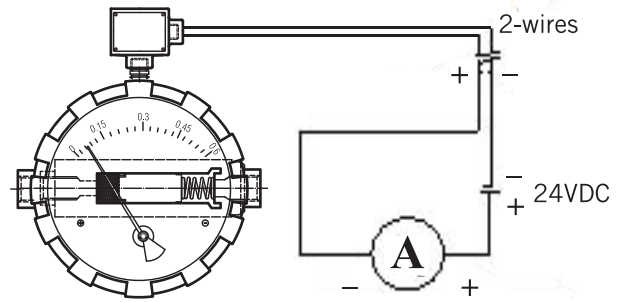
DPG4000 & B DPG5000 don't need to calibration in user side at moment.

## Connection Diagram



Program Communicator (GTP01)

此開關往下，方可設定。  
Put this switch down before the program.



## Notice

After setting completion, please indeed lock the upper cover tightly, and have to a cable gland in entrance fixed cable to make sure water proof.

## Program Steps Method 規劃步驟

**Step 1.** The junction terminal of program communicator with the circuit board as Fig. A. Then proceed to under steps.

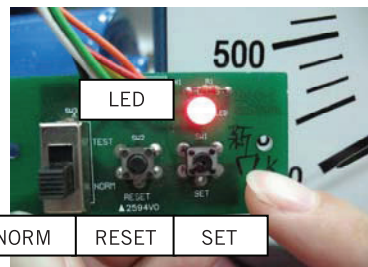
(將規劃器插入基板中，且接線完成後，如圖A，將面板鎖上並且做指針歸零動作。)

排線插入基板中  
Connect junction terminal with circuit board.



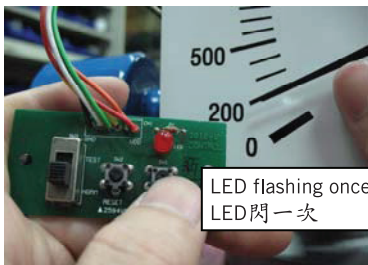
**Step 2.** Press and hold down the RESET button for 5 seconds, the LED lamp will light. Then release press and to keep indicating pointer on “0” point of scale. Then press SET button to start proceed another step. LED lamp will become dark.

(按住RESET鈕5秒鐘後，LED會亮。表示可開始規劃。指針在零點位置0%時，按SET。LED滅掉。)



**Step 3.** To move indicating pointer to 10% of full scale, LED will flashing once on intermittence. Then, press SET button and start another steps.

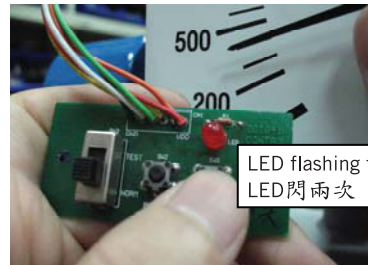
(指針達全刻度之10%時，按SET。)



LED flashing once  
LED閃一次

**Step 4.** To move indicating pointer to 20% of full scale, LED will flashing twice on intermittence. Then, press SET button and start another steps.

(指針達全刻度之20%時，按SET。)

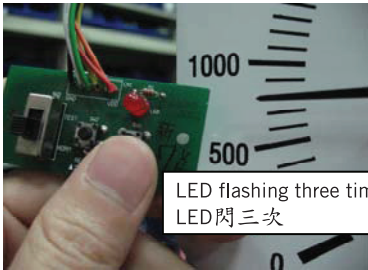


LED flashing twice  
LED閃兩次

## 2.0 INSTRUCTION- 4~20mA Output

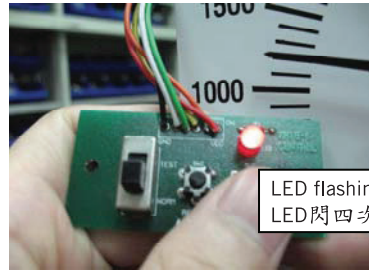
### Program Steps Method 規劃步驟

**Step 5.** To move indicating pointer to 40% of full scale, LED will flashing three times on intermittence. Then, press SET button and start another steps.  
(指針達全刻度之40%時，按SET。)



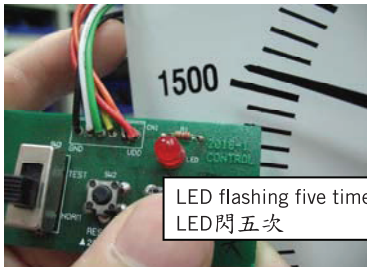
LED flashing three times  
LED閃三次

**Step 6.** To move indicating pointer to 60% of full scale, LED will flashing four times on intermittence. Then, press SET button and start another steps.  
(指針達全刻度之60%時，按SET。)



LED flashing four times  
LED閃四次

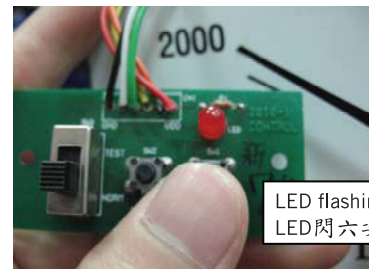
**Step 7.** To move indicating pointer to 80% of full scale, LED will flashing five times on intermittence. Then, press SET button and start another steps.  
(指針達全刻度之80%時，按SET。)



LED flashing five times  
LED閃五次

**Step 8.** To move indicating pointer to 100% of full scale, LED will flashing six times on intermittence. Then, press SET button, LED will become dark. At the meantime, the procedure of program sets are finished.

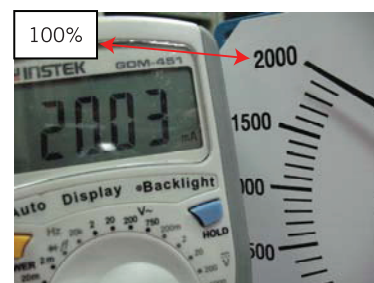
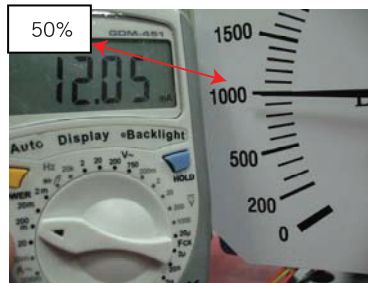
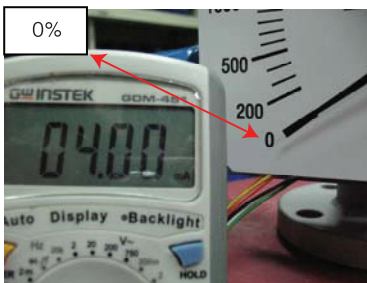
(指針達全刻度之100%時，按SET此時LED滅即表示規劃完成。)



LED flashing six times  
LED閃六次

**Step 9.** After completion the above-mentioned steps, please check of the full scale 0~100% compare with the output signal 4~20mA or not. If output signal can't match to the indicator as under pressure table of step 10, it should be re-set again according to Program Steps Method.

(規劃完成後，請檢查刻度0~100%是否配合4~20mA之輸出訊號。如輸出訊號有誤或誤差太大，請重新規劃。)



**Step 10.** Pressure table and output signal (example: flow range 0~7 kg/cm<sup>2</sup>) (規劃範例壓力範圍為 0~7 kg/cm<sup>2</sup>)

mA	%	Kg/cm <sup>2</sup>	LED 狀態
4	0	0	Off 滅
5.6	10	0.7	Flash once 閃一次
7.2	20	1.4	Flash twice 閃兩次
10.4	40	2.8	Flash three times 閃三次
13.6	60	4.2	Flash four times 閃四次
16.8	80	5.6	Flash five times 閃五次
20	100	7	Flash six times 閃六次



OK.LED off



## 2.0 INSTRUCTION- 4~20mA Output

### Notice 注意事項

1. Above all, please confirm the input power supply and the wiring mode that are correct.  
請確保輸入電源與接線方式是否正確。
2. If the process of program set is error, please press and hold down the SET button until the LED lamp turns off.  
Then re-set it again according to Program Steps Method.  
規劃過程中如有誤，請連續按SET鈕直到LED燈滅，再重複規劃步驟。
3. Moves the indicator by manual and test run directly after the D/P gauge completion of installed, all of they are workable.  
用手移動指針或差壓計安裝完成後直接試車規劃都可行。
4. The flow meter has completed program before shipping, therefore it doesn't need to program once more.  
產品出貨都已規劃完畢無須再次規劃。
5. Put Dit-Switch down before the program.  
指撥開關需往下按，才可規劃。