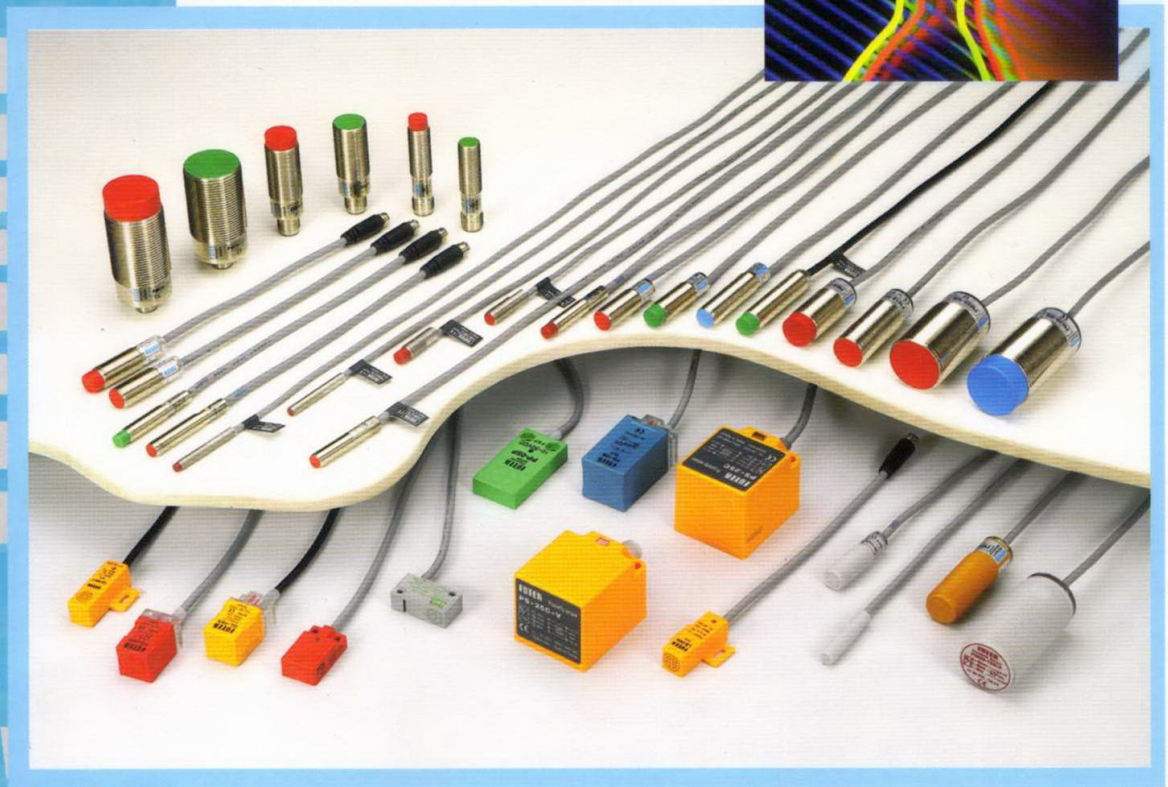
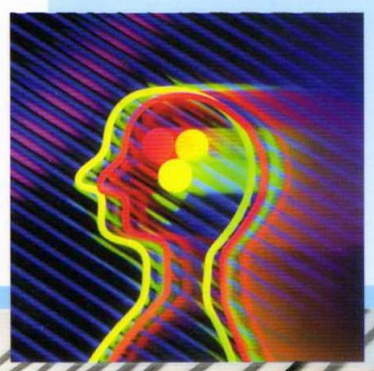


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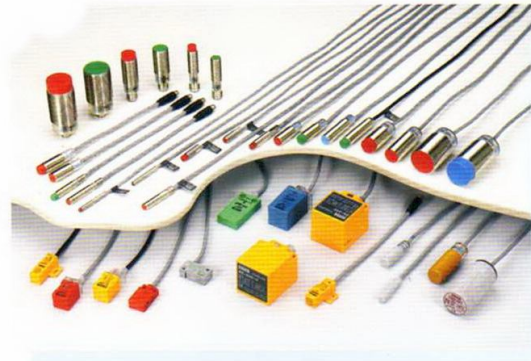
**Inductive  
Proximity sensor  
Capacitive  
Proximity sensor**

**CE Rohs**



**陽明電機股份有限公司  
FOTEK CONTROLS CO., LTD.**

- ❖ All DC type with 「Short-circuit」 & 「Polarity reversed」 protection.  
直流型都附「短路保護」及「極性保護」回路
- ❖ All AC type with 「surge absorbing circuit」 to avoid surge damage.  
交流型都附「突波吸收回路」可有效防止突波破壞
- ❖ High solid compact structure 「IP-67」 suited to applied in any poor circumstance.  
堅固結構「IP-67」適用各種惡劣環境
- ❖ All models with 「operating pilot.」  
全機種都附「動作指示燈」



## ◆ Guiding of model / 型號索引

### Tubular type

Ex.  $\frac{PM}{1} \frac{12}{2} - \frac{04}{3} \frac{NB}{4} \frac{S}{5} - \frac{M12}{6} \frac{7}{7}$

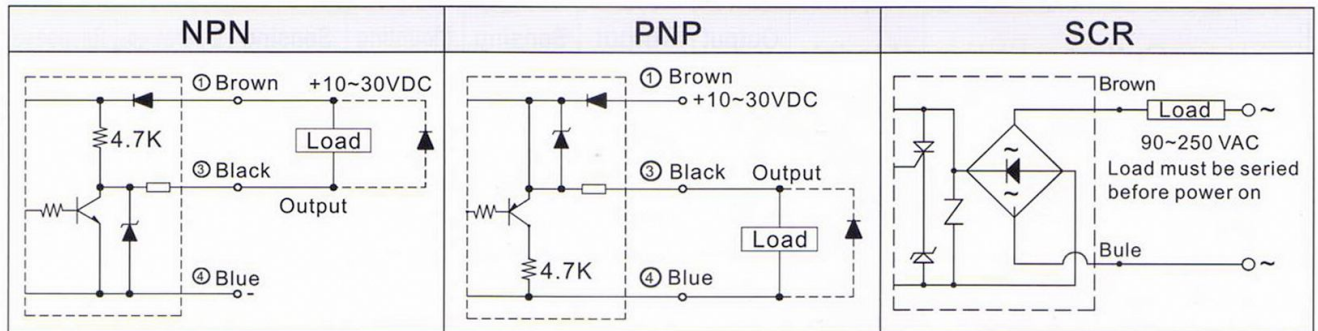
- 1> Type / 型式  
PM = Screw type / 螺絲型
- 2> Outline diameter / 外徑  
05 = M5 x 1.0    08 = M8 x 1.0    12 = M12 x 1.0  
18 = M18 x 1.0    30 = M30 x 1.5
- 3> Sensing distance / 感應距離  
01 = 1.0 mm    02 = 2.0 mm    04 = 4.0 mm  
05 = 5.0 mm    08 = 8.0 mm    10 = 10.0 mm  
15 = 15.0 mm    20 = 20.0 mm    25 = 25.0 mm
- 4> Output method / 輸出方式  
N = NPN    P = PNP    S = SCR
- 5> Output status / 輸出狀態  
Non = NO type    B = NC type
- 6> Length or shape or material of body / 本體  
Non = Cu plated Ni / 銅鍍鎳  
S = Short type / 短型  
E = Body with all screw / 全牙型  
K = Stainless steel / 白鐵
- 7> Connection method / 接線方式  
Non = Lead wire type / 出線式  
PG = M8 lead wire type / M8 接頭出線式  
M12 = M12 connector type / M12 接頭式

### Square type

Ex.  $\frac{LS}{1} - \frac{04}{2} \frac{NB}{3} \frac{V}{4} - \frac{PG}{5} \frac{6}{6}$

- 1> Type / 型式  
LS = Long square type / 長條型  
BS = Micro switch type / 微動開關型  
PS = Square type / 方型  
PL = Long square type / 長方型  
PP = Plate type / 扁型
- 2> Sensing distance / 感應距離  
02 = 2.0 mm    04 = 4.0 mm  
05 = 5.0 mm    08 = 8.0 mm  
10 = 10.0 mm    15 = 15.0 mm  
25 = 25.0 mm
- 3> Output method / 輸出方式  
N = NPN    P = PNP    S = SCR
- 4> Output status / 輸出狀態  
Non = NO type    B = NC type
- 5> Sensing direction / 檢測方向  
Non = Horizontal type / 水平式  
V = Vertical type / 垂直式
- 6> Connection method / 接線方式  
Non = Lead wire type / 出線式  
PG = M8 lead wire type / M8 接頭出線式  
M12 = M12 connector type / M12 接頭式

◆ Output circuit & connection diagram / 輸出回路及接線圖



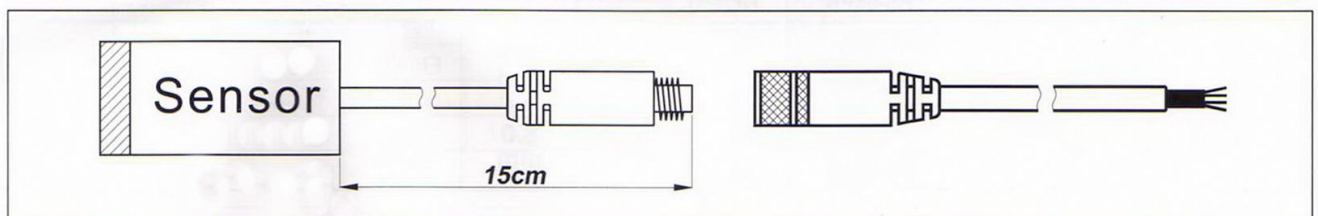
◆ General data / 共同規格

Specification		DC type	AC type
Operating voltage	工作電壓	10 ~ 30 VDC	90 ~ 250 VAC
Power ripple	電源漣波	<20% of Vp-p	50/60Hz
Output current	輸出電流	150 mA max.	100mA max.
Current consumption	消耗電流	10 mA max.	2.0mA max.
Residual voltage	殘留電壓	< 0.1V	< 15V
Leakage current	洩漏電流	<0.8 mA	<4.0 mA
Hysteresis	應差	< 10% of sensing distance	
Thermal drift	溫度漂移	< 10 $\mu$ m/ $^{\circ}$ C	
Voltage drift	電壓漂移	< 1 $\mu$ m/V	
Protection circuit	保護回路	Short-circuit & Polarity reversed	surge absorbing circuit
Operating Temperature	工作溫度	- 25 $^{\circ}$ C ~ +80 $^{\circ}$ C	
Operating humidity	工作濕度	35% ~ 95% RH	
Protection class	保護等級	IP-67	
Color of sensing face	感應面顏色	NPN=Red ; PNP=Green	Blue

◆ Application hints

While a switching power supply is used, please be sure to ground the FG (Frame ground) and the G (Ground) terminal, if failure to do so, it may resulting malfunction of the sensor for the noise of the switching power supply. Meanwhile, the ripple of the DC power supply is required less than 20% to avoid resulting malfunction of the sensor.

◆ M8 lead wire connection [Available for all sensor]



◆ **Square type [Plastic housing]**

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Sensing direction	Operating voltage	Response frequency
	LS-04N	NO	NPN	<b>4.0 mm</b>	Non-flushed	Horizontal	10~30 VDC	2KHz
	LS-04NB	NC						
	LS-04P	NO	PNP					
	LS-04PB	NC						
	LS-04N-V	NO	NPN	<b>4.0 mm</b>	Non-flushed	Vertical	10~30 VDC	2KHz
	LS-04NB-V	NC						
	LS-04P-V	NO	PNP					
	LS-04PB-V	NC						
	SP-05N	NO	NPN	<b>5.0 mm</b>	Flushed	Vertical	10~30 VDC	800Hz
	SP-05NB	NC						
	SP-05P	NO	PNP					
	SP-05PB	NC						
	SP-08N	NO	NPN	<b>8.0 mm</b>	Non-flushed	Vertical	10~30 VDC	800Hz
	SP-08NB	NC						
	SP-08P	NO	PNP					
	SP-08PB	NC						
	BS-02N	NO	NPN	<b>2.0 mm</b>	Flushed	Vertical	10~30 VDC	2KHz
	BS-02NB	NC						
	BS-02P	NO	PNP					
	BS-02PB	NC						
	BS-04N	NO	NPN	<b>4.0 mm</b>	Non-flushed	Horizontal	10~30 VDC	2KHz
	BS-04NB	NC						
	BS-04P	NO	PNP					
	BS-04PB	NC						
	PP-05N	NO	NPN	<b>5.0 mm</b>	Flushed	Vertical	10~30 VDC	800Hz
	PP-05P	NO	PNP					
	PP-08N	NO	NPN	<b>8.0 mm</b>				
	PP-08P	NO	PNP					
	PS-05N	NO	NPN	<b>5.0 mm</b>	Non-flushed	Horizontal	10~30 VDC	800Hz
	PS-05NB	NC						
	PS-05P	NO	PNP					
	PS-05PB	NC						
	PS-08N	NO	NPN	<b>8.0 mm</b>	Non-flushed	Horizontal	10~30 VDC	800Hz
	PS-08NB	NC						
	PS-08P	NO	PNP					
	PS-08PB	NC						
	PS-05S	NO	SCR	<b>5.0 mm</b>	Flushed	Horizontal	90~250 VAC	20Hz
	PS-05SB	NC						
	PS-08S	NO	SCR	<b>8.0 mm</b>	Non-flushed			
	PS-08SB	NC						

◆ Square type 【Plastic housing】

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Sensing direction	Operating voltage	Response frequency
	PL-05N	NO	NPN	5.0 mm	Flushed	Horizontal	10~30 VDC	800Hz
	PL-05NB	NC						
	PL-05P	NO	PNP					
	PL-05PB	NC						
	PL-08N	NO	NPN	8.0 mm	Non-flushed	Horizontal	10~30 VDC	800Hz
	PL-08NB	NC						
	PL-08P	NO	PNP					
	PL-08PB	NC						
	PS-10N	NO	NPN	10.0 mm	Non-flushed	Horizontal	10~30 VDC	500Hz
	PS-10NB	NC						
	PS-10P	NO	PNP					
	PS-10PB	NC						
	PS-15N	NO	NPN	15.0 mm	Non-flushed	Horizontal	10~30 VDC	500Hz
	PS-15NB	NC						
	PS-15P	NO	PNP					
	PS-15PB	NC						
	PS-10S	NO	SCR	10.0 mm	Non-flushed	Horizontal	10~30 VDC	500Hz
	PS-10SB	NC		15.0 mm				
	PS-15S	NO						
	PS-15SB	NC						
	PS-25C	NO	NPN + PNP	25.0 mm	Non-flushed	Horizontal	10~30 VDC	250Hz
	PS-25CB	NC						
	PS-25C-M12	NO						
	PS-25CB-M12	NC						
	PS-25C-V	NO	NPN + PNP	25.0 mm	Non-flushed	Vertical	10~30 VDC	250Hz
	PS-25CB-V	NC						
	PS-25C-V-M12	NO						
	PS-25CB-V-M12	NC						

◆ Fixed bracket

BR-PS-04	BR-PS-05	BR-PS-10	BR-PS-25

◆ **M5 / M8 Tubular type**

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material
	PM05-01N	NO	NPN	<b>0.8 mm</b>	Flushed	2.5KHz	10~30 VDC	SUS 304
	PM05-01NB	NC						
	PM05-01P	NO	PNP					
	PM05-01PB	NC						
	PM05-02N	NO	NPN	<b>1.5 mm</b>	Non-flushed	2.5KHz	10~30 VDC	SUS 304
	PM05-02NB	NC						
	PM05-02P	NO	PNP					
	PM05-02PB	NC						
	PM08-01N	NO	NPN	<b>1.0 mm</b>	Flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM08-01NB	NC						
	PM08-01P	NO	PNP					
	PM08-01PB	NC						
	PM08-02N	NO	NPN	<b>2.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM08-02NB	NC						
	PM08-02P	NO	PNP					
	PM08-02PB	NC						
	PM08-01NS	NO	NPN	<b>1.0 mm</b>	Flushed	2.5KHz	10~30 VDC	SUS 304
	PM08-01NSB	NC						
	PM08-01PS	NO	PNP					
	PM08-01PSB	NC						
	PM08-02NS	NO	NPN	<b>2.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	SUS 304
	PM08-02NBS	NC						
	PM08-02PS	NO	PNP					
	PM08-02PBS	NC						
	PM08-01N-P	NO	NPN	<b>1.0 mm</b>	Flushed	2.5KHz	10~30 VDC	PP
	PM08-01NB-P	NO						
	PM08-01P-P	NO	PNP					
	PM08-01PB-P	NO						
	PM08-02N-P	NO	NPN	<b>2.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	PP
	PM08-02NB-P	NC						
	PM08-02P-P	NO	PNP					
	PM08-02PB-P	NC						
	PM08-01N-K	NO	NPN	<b>1.0 mm</b>	Flushed	2.5KHz	10~30 VDC	SUS 304
	PM08-01NB-K	NC						
	PM08-01P-K	NO	PNP					
	PM08-01PB-K	NC						
	PM08-02N-K	NO	NPN	<b>2.0 mm</b>	Non-flushed	2.5KHz	90~250 VAC	SUS 304
	PM08-02NB-K	NC						
	PM08-02P-K	NO	PNP					
	PM08-02PB-K	NC						

◆ M12 Tubular type

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material
	PM12-02N	NO	NPN	<b>2.0 mm</b>	Flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-02NB	NC						
	PM12-02P	NO	PNP					
	PM12-02PB	NC						
	PM12-02S	NO	SCR					
	PM12-02SB	NC						
	PM12-04N	NO	NPN	<b>4.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-04NB	NC						
	PM12-04P	NO	PNP					
	PM12-04PB	NC						
	PM12-04S	NO	SCR					
	PM12-04SB	NC						
	PM12-02NS	NO	NPN	<b>2.0 mm</b>	Flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-02NBS	NC						
	PM12-02PS	NO	PNP					
	PM12-02PBS	NC						
	PM12-04NS	NO	NPN	<b>4.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-04NBS	NC						
	PM12-04PS	NO	PNP					
	PM12-04PBS	NC						
	PM12-04N-P	NO	NPN	<b>4.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	PBT
	PM12-04NB-P	NC						
	PM12-04P-P	NO	PNP					
	PM12-04PB-P	NC						
	PM12-04S-P	NO	SCR					
PM12-04SB-P	NC							
	PM12-02N-E	NO	NPN	<b>2.0 mm</b>	Flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-02NB-E	NC						
	PM12-02P-E	NO	PNP					
	PM12-02PB-E	NC						
	PM12-04N-E	NO	NPN	<b>4.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-04NB-E	NC						
	PM12-04P-E	NO	PNP					
	PM12-04PB-E	NC						
	PM12-02N-M12	NO	NPN	<b>2.0 mm</b>	Flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-02NB-M12	NC						
	PM12-02P-M12	NO	PNP					
	PM12-02PB-M12	NC						
	PM12-04N-M12	NO	NPN	<b>4.0 mm</b>	Non-flushed	2.5KHz	10~30 VDC	Cu plated Ni
	PM12-04NB-M12	NC						
	PM12-04P-M12	NO	PNP					
	PM12-04PB-M12	NC						

◆ **M18 Tubular type**

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material				
	PM18-05NS	NO	NPN	<b>5.0 mm</b>	Flushed	800Hz	10~30 VDC	Cu plated Ni				
	PM18-05NBS	NC										
	PM18-05PS	NO	PNP									
	PM18-05PBS	NC										
	PM18-08NS	NO	NPN	<b>8.0 mm</b>	Non-flushed	800Hz	10~30 VDC	Cu plated Ni				
	PM18-08NBS	NC										
	PM18-08PS	NO	PNP									
	PM18-08PBS	NC										
	PM18-05N	NO	NPN	<b>5.0 mm</b>	Flushed	800Hz	10~30 VDC	Cu plated Ni				
	PM18-05NB	NC										
	PM18-05P	NO	PNP									
	PM18-05PB	NC										
	PM18-05S	NO	SRC						<b>5.0 mm</b>	Flushed	20Hz	90~250 VAC
	PM18-05SB	NC										
	PM18-08N	NO	NPN	<b>8.0 mm</b>	Non-flushed	800Hz	10~30 VDC	Cu plated Ni				
	PM18-08NB	NC										
	PM18-08P	NO	PNP									
	PM18-08PB	NC										
	PM18-08S	NO	SRC						<b>8.0 mm</b>	Non-flushed	20Hz	90~250 VAC
	PM18-08SB	NC										
	PM18-08N-P	NO	NPN	<b>8.0 mm</b>	Non-flushed	800Hz	10~30 VDC	PP				
	PM18-08NB-P	NC										
	PM18-08P-P	NO	PNP									
	PM18-08PB-P	NC										
	PM18-08S-P	NO	SRC						<b>8.0 mm</b>	Non-flushed	20Hz	90~250 VAC
	PM18-08SB-P	NC										
	PM18-05N-M12	NO	NPN	<b>5.0 mm</b>	Flushed	800Hz	10~30 VDC	Cu plated Ni				
	PM18-05NB-M12	NC										
	PM18-05P-M12	NO	PNP									
	PM18-05PB-M12	NC										
	PM18-08N-M12	NO	NPN	<b>8.0 mm</b>	Non-flushed	800Hz	10~30 VDC	Cu plated Ni				
	PM18-08NB-M12	NC										
	PM18-08P-M12	NO	PNP									
	PM18-08PB-M12	NC										



◆ M30 Tubular type

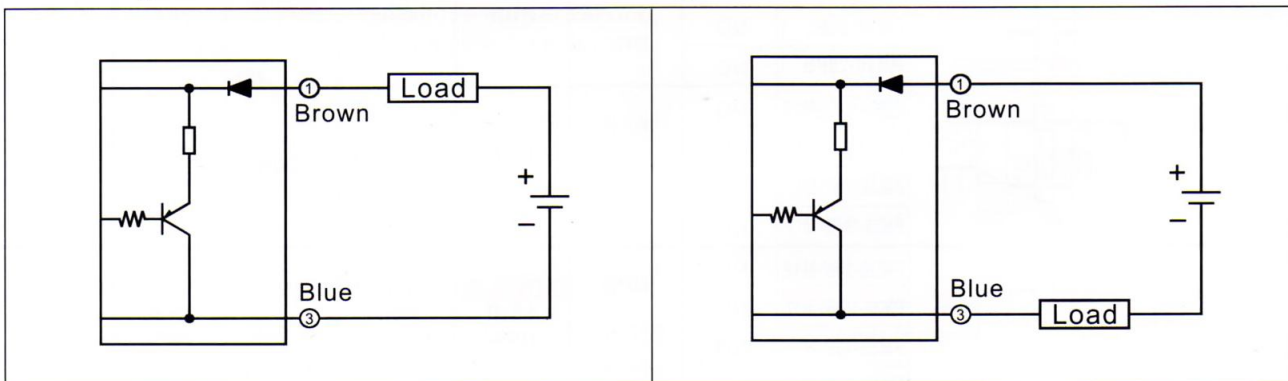
Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material
	PM30-10N	NO	NPN	10.0 mm	Flushed	500Hz	10~30 VDC	Cu plated Ni
	PM30-10NB	NC						
	PM30-10P	NO	PNP					
	PM30-10PB	NC						
	PM30-15N-S	NO	NPN	15.0 mm	Non-flushed	500Hz	10~30 VDC	Cu plated Ni
	PM30-15NB-S	NC						
	PM30-15P-S	NO	PNP					
	PM30-15PB-S	NC						
	PM30-15N	NO	NPN	15.0 mm	Non-flushed	500Hz	10~30 VDC	Cu plated Ni
	PM30-15NB	NC						
	PM30-15P	NO	PNP					
	PM30-15PB	NC						
	PM30-10S	NO	SCR	10.0 mm	Flushed	20Hz	90~250 VAC	Cu plated Ni
	PM30-10SB	NC	SCR					
	PM30-15S	NO	SCR	15.0 mm	Non-flushed	20Hz	90~250 VAC	Cu plated Ni
	PM30-15SB	NC	SCR					
	PM30-15N-P	NO	NPN	15.0 mm	Non-flushed	500Hz	10~30 VDC	PBT
	PM30-15NB-P	NC						
	PM30-15P-P	NO	PNP					
	PM30-15PB-P	NC						
	PM30-20N-P	NO	NPN	20.0 mm	Non-flushed	200Hz	10~30 VDC	
	PM30-20NB-P	NC						
	PM30-20P-P	NO	PNP					
	PM30-20PB-P	NC						
	PM30-15S-P	NO	SCR	15.0 mm	Non-flushed	20Hz	90~250 VAC	
	PM30-15SB-P	NC						
	PM30-20N	NO	NPN	20.0 mm	Non-flushed	200Hz	10~30 VDC	Cu plated Ni
	PM30-20NB	NC						
	PM30-20P	NO	PNP					
	PM30-20PB	NC						
	PM30-10N-M12	NO	NPN	10.0 mm	Flushed	500Hz	10~30 VDC	Cu plated Ni
	PM30-10NB-M12	NC						
	PM30-10P-M12	NO	PNP					
	PM30-10PB-M12	NC						
	PM30-15N-M12	NO	NPN	15.0 mm	Non-flushed	500Hz	10~30 VDC	Cu plated Ni
	PM30-15NB-M12	NC						
	PM30-15P-M12	NO	PNP					
	PM30-15PB-M12	NC						

- ❖ High reliability with 「short-circuit」 & 「Polarity reversed」 protection circuit.  
全機種附「短路保護」及「極性保護」回路
- ❖ Low leakage current : 0.8mA max.  
洩漏電流小於「0.8mA」
- ❖ Protection class : IP-67  
防水等級 : 「IP-67」
- ❖ Positive or Negative connection are available  
可適用「正輸出」或「負輸出」接線法

◆ **General data / 共同規格**

Specification 規格	Data
Operating voltage 工作電壓	10 ~ 30 VDC
Power ripple 電源漣波	< 20% of Vp-p
Hysteresis 應差	< 10% of sensing distance
Leakage current 洩漏電流	0.8mA max.
Residual voltage 殘留電壓	4.0V max.
Output current 輸出電流	5.0 ~ 150 mA max.
Protection circuit 保護電路	Short-circuit & Polarity reversed protection circuit.
Connection method 接線方式	2cores/4φ x 2m · M12 connector or M8 lead wire
Housing material 外殼材質	Cu plated Ni or PBT
Protection class 保護等級	IP-67
Operating temperature 工作溫度	- 25°C ~ +80°C
Operating humidity 工作濕度	35% ~ 95% RH

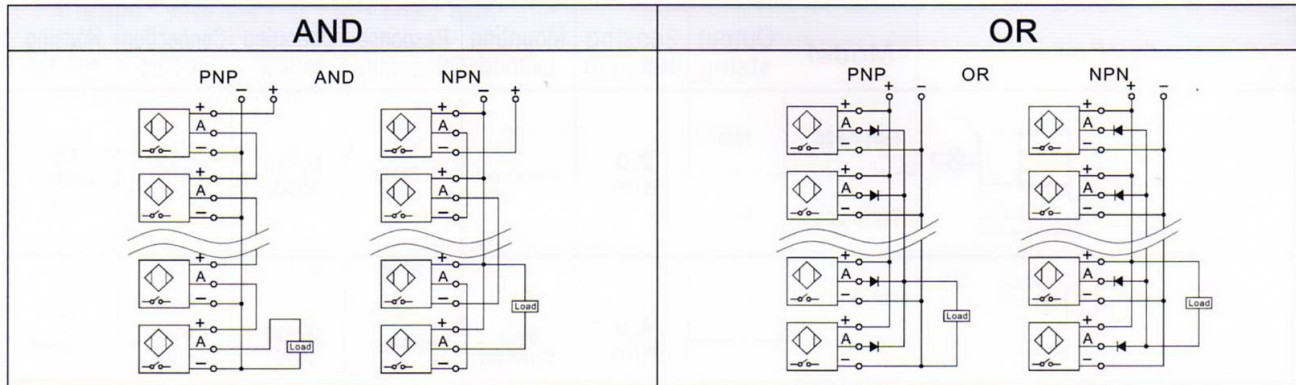
◆ **Output circuit & connection diagram / 輸出回路及接線圖**



◆ Specification / 規格

Outline	Model	Output status	Sensing distance	Mounting method	Response frequency	Operating voltage	Connection method	Housing material
	TW12-02C	NO	2.0 mm	Flushed	1.0kHz	10~30 VDC	Lead wire	Cu plated Ni
	TW12-02CB	NC						
	TW12-04C	NO	4.0 mm	Non-flushed	800Hz	10~30 VDC	Lead wire	Cu plated Ni
	TW12-04CB	NC						
	TW12-02C-M12	NO	2.0 mm	Flushed	1.0kHz	10~30 VDC	M12 connector	Cu plated Ni
	TW12-02CB-M12	NC						
	TW12-04C-M12	NO	4.0 mm	Non-flushed	800Hz	10~30 VDC	M12 connector	Cu plated Ni
	TW12-04CB-M12	NC						
	TW18-05C	NO	5.0 mm	Flushed	500Hz	10~30 VDC	Lead wire	Cu plated Ni
	TW18-05CB	NC						
	TW18-08C	NO	8.0 mm	Non-flushed	400Hz	10~30 VDC	Lead wire	Cu plated Ni
	TW18-08CB	NC						
	TW18-05C-M12	NO	5.0 mm	Flushed	500Hz	10~30 VDC	M12 connector	Cu plated Ni
	TW18-05CB-M12	NC						
	TW18-08C-M12	NO	8.0 mm	Non-flushed	400Hz	10~30 VDC	M12 connector	Cu plated Ni
	TW18-08CB-M12	NC						

### ◆ Connecting method of AND & OR

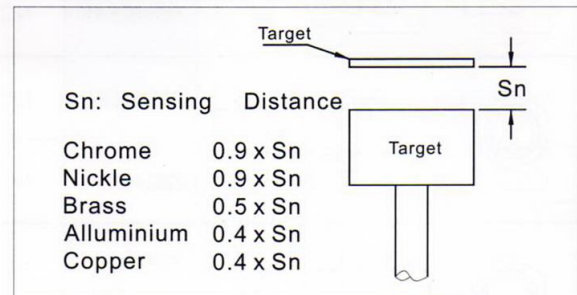


### ◆ Basic definition of Inductive proximity sensor / 基本定義

#### ✿ Target / 標準檢測物

Which is a steel, 1mm thickness, square form with width equal to the diameter of the sensing surface, if the target is made of a different material, the sensing distance must be multiplied by the Correction factor.

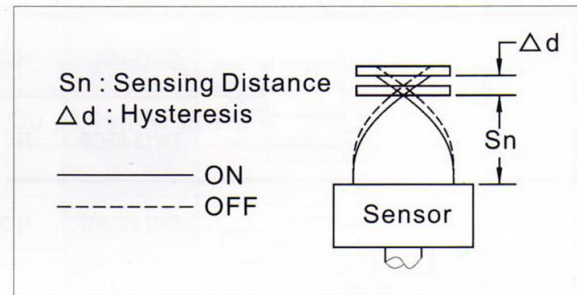
標準檢測物是方型鐵片，厚度1mm，長寬等於感測器的感應面直徑。如果標準檢測物的材質不是鐵則感測距離須依右圖的修正係數修正。



#### ✿ Hysteresis / 應差

Hysteresis is the different distance between the operating points that the target is approaching and leaving the sensing area of the sensor, the value is expressed as a percentage of the sensing distance ( $\Delta d/Sn\%$ )

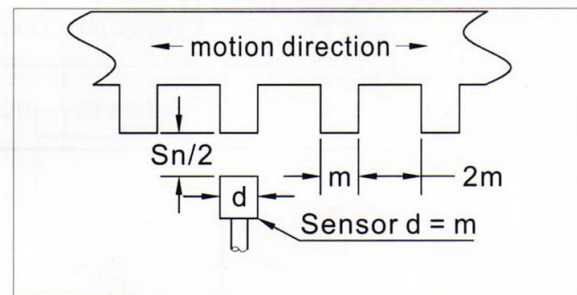
應差是感測器的動作點與復歸點的距離，一般是以動作點與復歸點的距離除以感應距離後以百分比表示。



#### ✿ Switch frequency / 響應頻率

It is the maximum response frequency per second, based on a pulse ratio 1 : 2, the sketch shows the condition of test.

響應頻率是以ON / OFF 比 = 1 : 2 的條件所測得每秒最高響應頻率。測試條件如右圖所示。



#### ✿ Accuracy (Repetition) / 重複精度

Tolerance of operating position that sensor is certainly operated under the same condition.

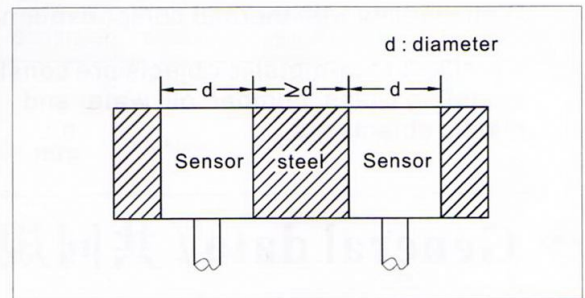
在相同的條件下所測得的最大動作點與最小動作點的差值。

◆ Notice of installing for the Inductive proximity sensor / 安裝注意事項

✿ Flushed type / 埋入式

A proximity sensor can be flushed mounted in metal and surrounded by metal up to the level of the sensing face.

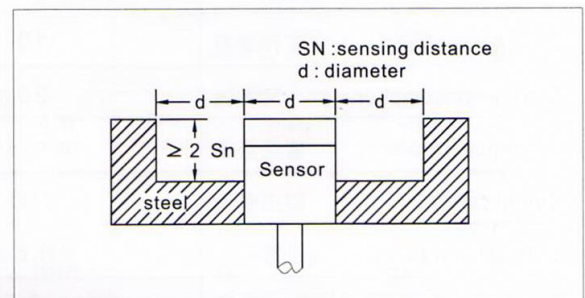
近接感測器可完全埋入金屬物即感應面四周可受金屬物包圍。



✿ Non-flushed / 非埋入式

A proximity sensor cannot be mounted in metal, clear zone of 3 times of the diameter of the sensing surface must be keep.

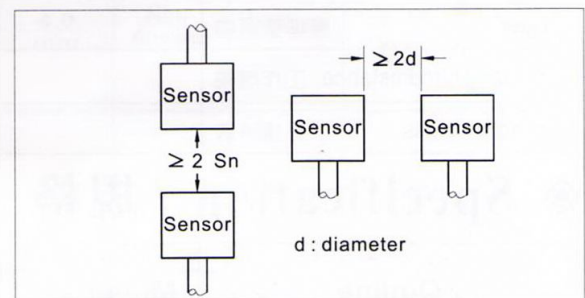
近接感測器感應面四周不可受金屬物包圍，淨空範圍必須是近接感測器感應面直徑的三倍距離以上。



✿ Mutual interference / 互相干擾

To install the inductive proximity sensors of the same model by face to face or side by side, please set the minimum distance between the sensors larger than the diameter of sensor, to avoid the malfunction.

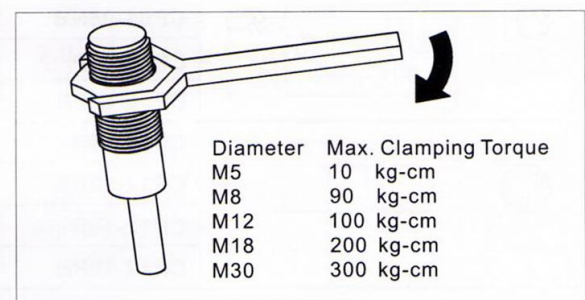
近接感測器不可以面對面或並排方式安裝，如果要以上述方式安裝務必保持近接感測器感應面直徑的一倍距離以上。



✿ Clamping torque / 鎖緊扭力

Be sure to set a spring washer when fixing the sensor, Don't tighten the mounting screw of PM series with a clamping torque higher than the right value.

安裝近接感測器時務必使用止滑墊圈以防止鬆脫。安裝 Pm 系列近接感測器時鎖緊扭力請勿超出最大扭力值以免損壞近接感測器。



✿ Notice of Wiring / 配線注意事項

To avoid being influenced by noise, try best to separate the cable of the sensor from the power lines and high tension lines. if extend the sensor cable, please use a cable which diameter as same as that.

避免雜訊干擾，請盡量將感測器的電線與動力線或高壓線分離，不要綁在在一起。如果要延長感測器的電線請盡量使用和感測器的電線相同規格的電線。

- ❖ Sensitivity adjuster : 14 turns trimmer
- ❖ High stability with thermal compensation
- ❖ Metallic & Non-metallic objects are sensible  
Including Glass, Lumber, oil, water and plastic objects ets.



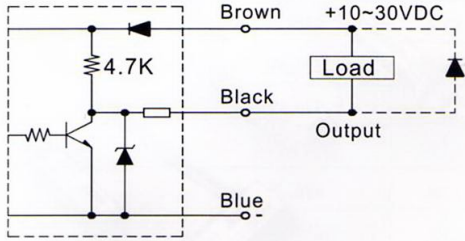
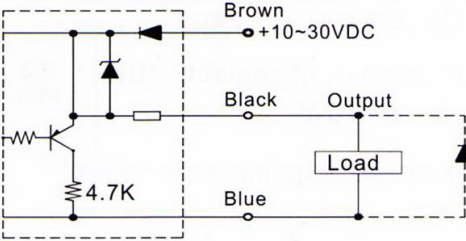
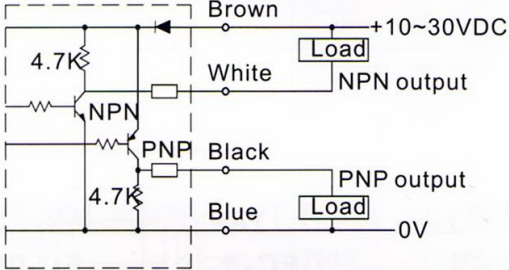
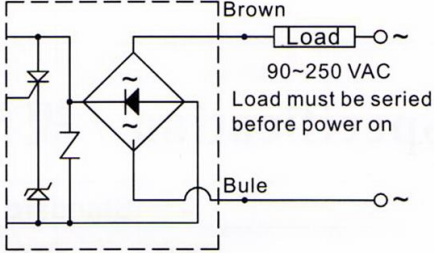
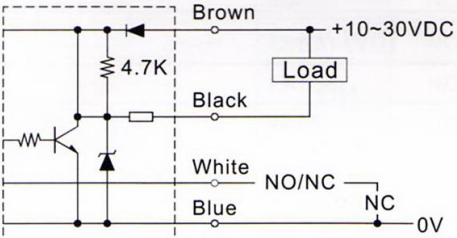
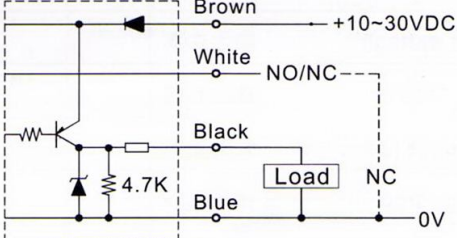
### ◆ General data / 共同規格

Specification 規格	DC type	AC type
Operating voltage 工作電壓	10~30 VDC	90~250 VAC
Current consumption 耗電流	20 mA max.	1.5 VA max.
Response frequency 響應頻率	100 Hz	15 Hz
Output current 輸出電流	150 mA max.	100 mA max.
Leakage current 洩漏電流	0.8 mA max.	2.0 mA max.
Residual voltage 殘留電壓	0.8 V max.	
Protection circuit 保護電路	Short circuit & Polarity reversed	Surge absorbing
Target 標準檢測物	Grounded metal plate (50x50x1mm)	
Operating circumstance 工作環境	-25°C ~ +80°C ; 35% ~ 95% RH	
Protection class 保護等級		

### ◆ Specification / 規格

Outline	Model	Output status	Output method	Sensing distance	Operating voltage	Sensitivity adjuster	Housing material
	CP08-06N	NO	NPN	6.0 mm	10~30 VDC	Non	PP
	CP08-06NB	NC					
	CP08-06P	NO	PNP				
	CP08-06PB	NC					
	CP12-10N	NO	NPN	10.0 mm	10~30 VDC	Non	PBT
	CP12-10NB	NC					
	CP12-10P	NO	PNP				
	CP12-10PB	NC					
	CP18-30N	NO / NC	NPN	20.0 mm	10~30 VDC	14 turns trimmer	PP
	CP18-30P	NO / NC	PNP				
	CP30-50C	NO	NPN&PNP	30.0 mm	10~30 VDC	14 turns trimmer	PBT
	CP30-50CB	NC					
	CP30-50S	NO	SCR		90~250 VDC		
	CP30-50SB	NC					

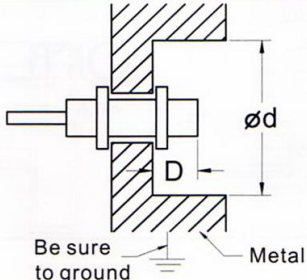
◆ Output circuit & connection diagram / 輸出回路及接線圖

<p style="text-align: center;"><b>NPN (3 wires)</b></p> 	<p style="text-align: center;"><b>PNP (3 wires)</b></p> 
<p style="text-align: center;"><b>NPN &amp; PNP</b></p> 	<p style="text-align: center;"><b>SCR</b></p>  <p>90~250 VAC Load must be series before power on</p>
<p style="text-align: center;"><b>NPN (NO/NC changeable)</b></p>  <p style="text-align: center;">Output Status NO : White wire open      白色線不接 NC : White wire connected to 0V 白色線接0V</p>	<p style="text-align: center;"><b>PNP (NO/NC changeable)</b></p>  <p style="text-align: center;">Output Status NO : White wire open      白色線不接 NO : White wire connected to 0V 白色線接0V</p>

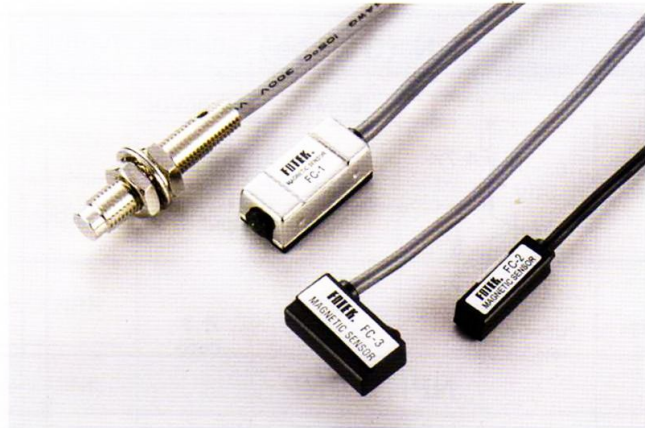
◆ Precaution / 注意事項

**\* Effects of surrounding metal / 周圍金屬效應**

- 1> To avoid the sensor may malfunction, Please ground the metal fixed bracket .
- 2> Please be sure to provide a minimum distance as shown in the table.
- 1> 請將靜電容感測器的金屬固定架接地以提高抗干擾能力。
- 2> 靜電容感測器感應面四周不可物體包圍，淨空範圍請參考下圖。

	<b>Distance (mm)</b>		
	<b>MODEL</b>	<b>D</b>	<b>dφ</b>
	CP08	12	24
	CP12	12	36
	CP18	24	48
	CP30	24	60

- ❖ Free voltage : AC/DC suitable  
交直流電兩用
- ❖ Wide voltage range : 5 ~ 240V  
廣泛工作電壓範圍 : 5 ~ 240V
- ❖ High capacity of contact : 10W  
高接點容量 : 10W
- ❖ High speed response time : 1 ms  
高速應答 : 1 ms
- ❖ Long life over 10<sup>7</sup> times  
壽命超過百萬次以上



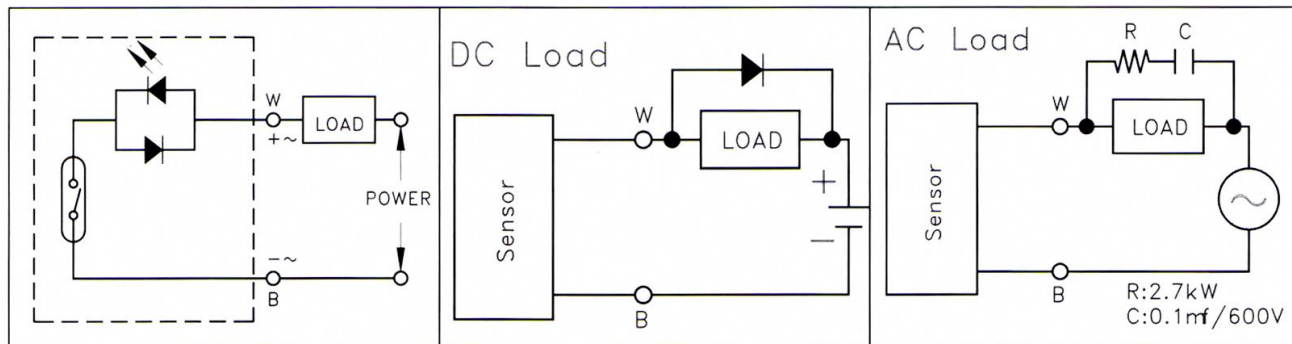
## ◆ Specification / 規格

Type	型式	Standard Type	Mini Type	T Type	M8 Type
Model	型號	FC-1	FC-2	FC-3	FC-08
Operating voltage	工作電壓	5 ~ 240 V AC/DC			
Rated current	額定電流	50 mA max.			
Rated wattage	額定功率	10W max.			
Output status	輸出狀態	NO			
Response Frequency	響應頻率	1 ms			
Voltage drop	輸出壓降	2V max.			
Connection method	出線方式	2m / 2 cores			
Vibration resistance	抗震動	10 ~ 55H z / 1.5 mm ; 2 hours in X.Y.Z direction			
Operating circumstance	工作環境	-25°C ~ 70°C ; 35% ~ 85% RH			
Protection class	保護等級	IP-66	IP-64	IP-66	IP-67
Weight	重量	42g	33g	35g	55g

Standard Type	Mini Type	T Type	M8 Type

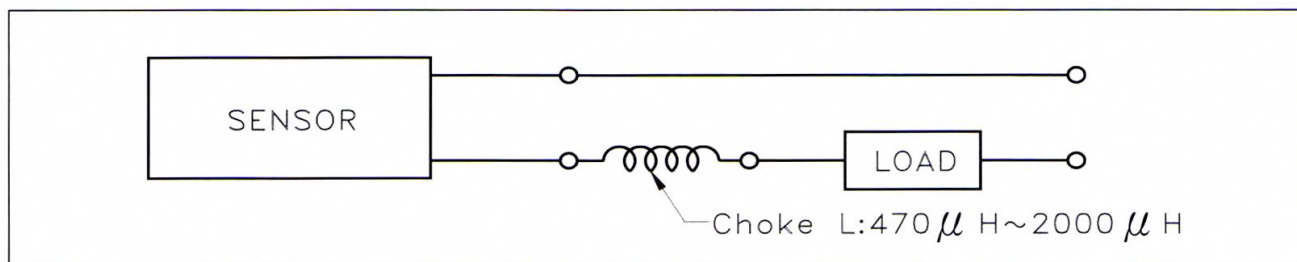


◆ Output circuit & Protection circuit / 輸出及保護回路



◆ Notice / 注意事項

If the lead wire of the Reed sensor is extended over 10m,  
Please series the choke to the reed sensor, as closure as possible.



◆ Fixed parts / 固定帶

**Band**  
PN-16-S

Material of cylinder  
S : Stainless steel  
A : Aluminum Ally

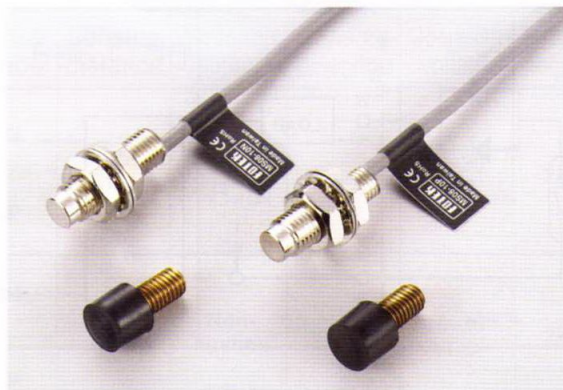
Diameter of cylinder  
16 :  $\phi$ 16.0  
20 :  $\phi$ 20.0  
:  
:  
150 :  $\phi$ 150.0

**Bracket** Unit : mm

Model	A	B	C	D
PM-6	20.5	31.0	6.0	12.0
PM-8	20.5	34.0	8.0	12.0
PM-10	21.0	36.0	10.0	12.0

Technical drawings show dimensions: 15.5, 15.0, 9.0, 96.0, D, B, C, and A.

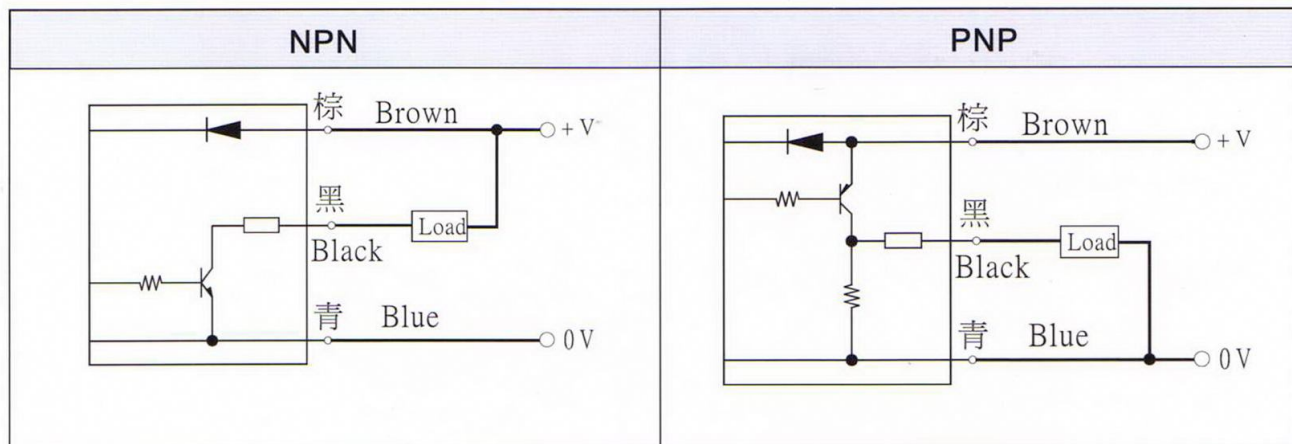
- ❖ High compact structure  
堅固結構
- ❖ High reliability with protection circuit  
高可靠度附保護回路
- ❖ Solid state output : 150 mA max.  
無接點輸出 : 150 mA max.
- ❖ High response frequency : 1.2K Hz  
高速響應頻率 : 1.2K Hz



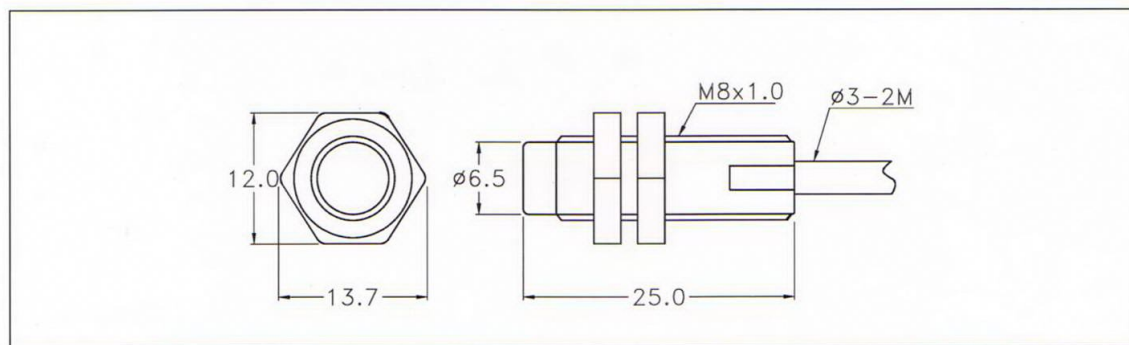
## ◆ Specification / 規格

Model		MS08-10N	MS08-10P
Output method		NPN	PNP
Sensing distance	感應距離	8 ~ 12 mm (with MS-M6)	
Response frequency	響應頻率	1.2 K Hz min.	
Operating voltage	工作電壓	10 ~ 30 VDC	
Power ripple	電源漣波	20% of Vp-p max.	
Output current	輸出電流	150mA max.	
Current consumption	消耗電流	10mA max.	
Residual voltage	殘留電壓	0.8V max.	
Leakage current	洩漏電流	0.1mA	
Hysteresis	應差	20% of sensing distance max.	
Thermal drift	溫度漂移	20 $\mu$ m / $^{\circ}$ C max.	
Voltage drift	電壓漂移	2.0 $\mu$ m / V max.	
Protection circuit	保護回路	Short-circuit & Polarity reversed protection	
Operating Temperature	工作溫度	- 25 $^{\circ}$ C ~ +80 $^{\circ}$ C	
Operating humidity	工作濕度	35% ~ 95% RH	
Protection class	保護等級	IP - 67	

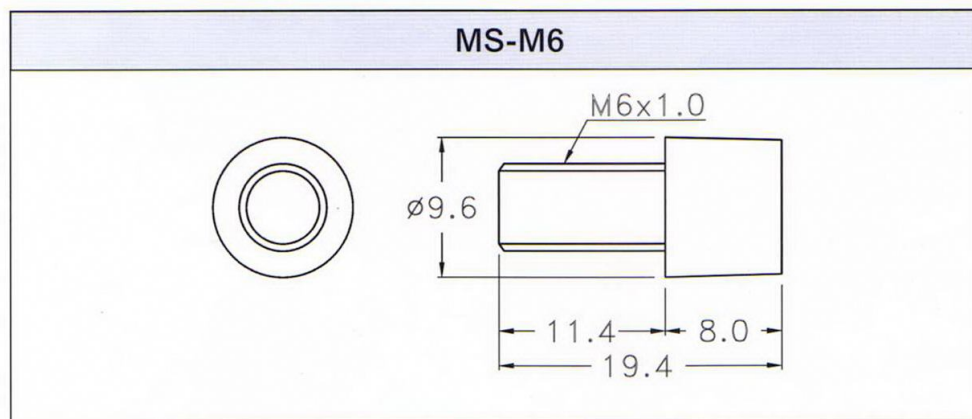
◆ Output circuit & connection diagram / 輸出回路及接線圖



◆ Outline dimension / 外形尺寸



◆ Magnet / 磁鐵



# ◇ M8 & M12 Connecting lead wire cable/ M8 & M12接頭線

Model	Outline																						
M8-3C-□m	<table border="1"> <thead> <tr> <th>4P PLUG</th> <th>COLOR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BROWN</td> </tr> <tr> <td>2</td> <td>BLACK</td> </tr> <tr> <td>3</td> <td>BLUE</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>規格</th> <th>"A"</th> <th>"B"</th> <th>"C"</th> </tr> </thead> <tbody> <tr> <td>M8-3m</td> <td>3m</td> <td>50±3mm</td> <td>5±1mm</td> </tr> <tr> <td>M8-5m</td> <td>5m</td> <td>50±3mm</td> <td>5±1mm</td> </tr> </tbody> </table> 	4P PLUG	COLOR	1	BROWN	2	BLACK	3	BLUE	規格	"A"	"B"	"C"	M8-3m	3m	50±3mm	5±1mm	M8-5m	5m	50±3mm	5±1mm		
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Specification may be modified without  
notice in advance.

規格變更恕不事先通知

B-40