DC TYPE WITH SHORT CIRCUIT PROTECTION
 AND POLARITY REVERSED PROTECTION

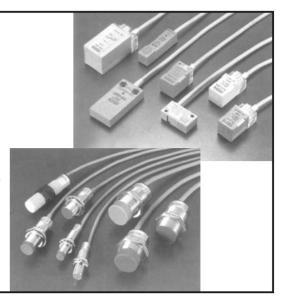
直流型都附有短路保護和極性反接保護迴路

AC TYPE WITH SURGE ABSORBING CIRCUIT MAY AVOID SURGE DAMAGED

交流型都附有突波吸收迴路可避免突波破壞

- ※ HIGH SOLID COMPACT STRUCTURE IP-67
 SUITED TO BE APPLIED IN THE POOR CIRCUMSTANCE
 堅固結構- IP67- 適用各種環境
- ALL MODELS WITH OPERATIN LED,
 EASY TO ADJUSTED

全機種附動作指示燈便於安裝調整



■ Guiding of Model 型號索引

TUBULAR TYPE

Ex. $\frac{PM}{\bigcirc} - \frac{12}{\bigcirc} \frac{04}{\bigcirc} - \frac{N}{\bigcirc} \frac{B}{\bigcirc} - \frac{S}{\bigcirc} - \frac{M12}{\bigcirc}$

1> TYPE型式 PM= SCREW TYPE螺絲型

2> OUTLINE DIAMETER 外徑 08=M8x1.0 18=M18x1.0 12=M12x1.0 30=M30x1.5

3> SENSING DISTANCE 檢測距離 02=2.0 mm 10=10. mm 05=5.0 mm 15=15.0 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 B= NC TYPE

6> LENGTH OF BODY 本體長度 NON= STANDARD TYPE S= SHORT TYPE

7> CONNECTING METHOD 接線方式 NON= LEADWIRE TYPE M12= M12 CONNECTOR TYPE PG= M8 LEAD WIRE CONNECTOR TYPE

SQUARE TYPE

Ex. <u>LS</u> - <u>04</u> <u>N</u> <u>B</u> - <u>V</u>- <u>PG</u> <u>6</u>

1> TYPE型式 PS=SQUARE TYPE PP=PLATE TYP PL=LONG TYPE BS=MICRO TYPE

2> SENSING DISTANCE檢測距離 04= 4.0 mm 10= 10.0mm 05= 5.0 mm 15= 15.0 mm

3> OUTPUT METHOD 輸出方式 N= NPN P= PNP

4> OUTPUT STATUS輸出狀態 NON= NO TYPE B= NC TYPE B= NC TYPE

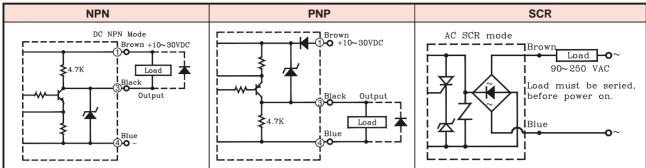
5> DIRECTION OF SENSING
V= VERTICAL TYPE 垂直式
NON= HORIZONTAL TYPE 水平式

6> CONNECTION METHOD接線方式
NON= LEAD WIRE TYPE
PG= M8 LEAD WIRE CONNECTOR TYPE

NOTE: THE B<NC> TYPE HAVE NO STOCK MAYBE,ACCEPTED ORDER TO MANUFACTURE



Output Circuit & Connection Diagram



General Data

Specification	DC Type	AC Type					
Operating Voltage	10~30 VDC	90~250VAC					
Power Ripple	< 20% of Peak to Peak	50/60Hz					
Output Current	150mA max.	100mA max.					
Current Consumption	< 10mA	< 2mA					
Residual Voltage	< 0.1V						
Leakage Current	< 0.8mA	< 4.0mA					
Hysteresis	<10% of Sensing Distance						
Thermal Drift	<10 μ m/C						
Voltage Drift	<1 \(\mu \)						
Protection Circuit	Short Circuit & Polarity Reversed Protection	Surge Protection Circuit					
Operating Temp./Hum.	-20° C~+80° C ; 35%~95% RH						
Protection Class	IP-67						
Wiring Method	3 Cores / 4.2 φ X 2m	2 Cores / 4.2 φ X 2m					
Color of Sensing Face	NPN : Red ;PNP ;Green	Blue					

Application Hints

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





Square Type 〈 Plastic Housing 〉

		Output	Sensing	Mounting	Sensing	Operating	Response
Outline Dimension	Model	Method	Distance	Method	Direction	Voltage	Frequency
2.0 1.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	LS-04N-V	NPN					2KHZ
	LS-04P-V	PNP]	Non-	Vertical	10 ~ 30	
	LS-04N	NPN	4.0mm	Flushed	Horizontal	VDC	
	LS-04P	PNP					
3.5. 17.5 11.0	SP-05N	NPN	5.0mm	Non-	Vertical	10 ~ 30	800HZ
30.5	SP-05P	PNP	3.011111	Flushed	Vertical	VDC	OUHZ
+21.0	BS-02N	NPN	2.0mm	Flushed			
30.0 72.0	BS-02P	PNP	2.011111	Tustieu	Vertical	10 ~ 30	2KHZ
4.0 22.0 1 0 0	BS-04N	NPN	4.0mm	Non-	Vertical	VDC	ZIXIIZ
	BS-04P	PNP		Flushed			
25.0	PP-05N	NPN	5.0mm	Flushed		10 ~ 30 VDC	800HZ
10.0 32.0 8.0	PP-05P	PNP	0.011111	ridoned	Vertical		
50.0 + 4.2# X 2	PP-08N	NPN	8.0mm	Non-	Vertical		
10.0	PP-08P	PNP	0.0	Flushed			
	PS-04N-V	NPN	4.0mm		Vertical		
6.0 Vertical type sensing face Horizontal type sensing face	PS-04P-V	PNP		Non-	101110011	10 ~ 30 VDC	2KHZ
60 12.0 LED	PS-04N	NPN	4.0mm	Flushed	Horizontal		
-15.0-1-15.0-1-15.0-1-1.0 -12.0-1-15.0-1-15.0-1-1.0 -30.0	PS-04P	PNP	-				
⊕ ⊕ 	PS-05N	NPN	5.0mm	Flushed	- Horizontal	10 ~ 30 VDC	800HZ
170 E	PS-05P	PNP					
	PS-08N	NPN	8.0mm	Non- Flushed			
25.5 3.4	PS-08P	PNP					
$5.0 \prod_{1} 11.0 R = 1.6$	PL-05N	NPN	5.0mm	Flushed		10 ~ 30 VDC 800H	800HZ
8.0_10.0	PL-05P	PNP			Horizontal		
17.0 27.0 3.0	PL-08N	NPN	8.0mm	Non-			
35.0 → 100 35.0 → 100	PL-08P	PNP		Flushed	Flushed		
	PS-05S	SCR	5.0mm	Flushed	Horizontal 90 ~ 250	20HZ	
- 17.0 - 29.0 - 33.0 -	PS-08S	SCR	8.0mm	Non- Flushed		VAC	
Fexed Holes 4.29X2	PS-10N	NPN	10.0mm	Flushed	- Horizontal	10 ~ 30 VDC	
	PS-10P	PNP		1.401104			500HZ
	PS-15N	NPN	15.0mm	Non-			300112
25.0	PS-15P	PNP	10.011111	Flushed			
	PS-10S	SCR	10.0mm	Flushed	n- Horizontal	90 ~ 250	20HZ
46.0	PS-15S	SCR	15.0mm	Non- Flushed		VAC	



■ M8/M12 Tubular Type

Outline Dimension	Model	Output Status	Output Method	Operating Voltage	Sensing Direction	Response Frequency	Mounting Method
14.8 M8 X 1.0 10.0 10.0 55.0	PM08-01N	NO	MDM				Flushed
	PM08-01NB	NC	NPN	10 ~ 30 VDC	1.0mm		
	PM08-01P	NO	DND			2.5KHZ	
	PM08-01PB	NC	PNP				
	PM08-02N	NO	NPN	10 ~ 30 VDC	2.0	0.51/117	Non- Flushed
14.8 1.0	PM08-02NB	NC	INFIN				
13.0 4.0 45.0 10.0	PM08-02P	NO	PNP		2.0mm	2.5KHZ	
	PM08-02PB	NC	PNP				
M12 X 1.0	PM12-02N-S	NO	NDN				
20.0	PM12-02NB-S	NC	NPN	10 ~ 30	2.0mm	2.5KHZ	Flushed
27.0 10.0	PM12-02P-S	NO	PNP	VDC		2.5KHZ	
37.0	PM12-02PB-S	NC	FINE				
M12 X 1.0	PM12-04N-S	NO	NPN		4.0mm	2.5KHZ	Non- Flushed
	PM12-04NB-S	NC	INFIN	10 ~ 30			
17.0 5.0 10.0	PM12-04P-S	NO	PNP	VDC	4.0111111		
42.0	PM12-04PB-S	NC	PNP				
M12 X 1.0	PM12-02N	NO	NPN	10 ~ 30 VDC	2.0mm	2.5KHZ	Flushed
20.0	PM12-02NB	NC					
42.0 10.0	PM12-02P	NO					
, ,	PM12-02PB	NC					
M12 X 1.0	PM12-04N	NO	NPN	10 ~ 30 VDC	4.0mm	2.5KHZ	Non- Flushed
	PM12-04NB	NC					
17.0 42.0 10.0	PM12-04P	NO	PNP				
	PM12-04PB	NC	1 101				
20.00 M12 X 1.0	PM12-02S	NO	SCR	90 ~ 250	2.0mm	20HZ	Flushed
17.0 - 42.0 - 10.0	PM12-02SB	NC	JOIN	VAC	2.0111111		
2000	PM12-04S	NO	SCR	90 ~ 250	4.0mm	20HZ	Non- Flushed
-17.0 - 5.0 - 42.0 - 10.0 - 57.0 - 10	PM12-04SB	NC	JUN	VAC	4.0111111	ZUNZ	
M12 X 1.0	PM12-02N-M12	NO	NPN	10 ~ 30 VDC	2.0mm	2.5KHZ	
	PM12-02NB-M12	NC					Flushed
	PM12-02P-M12	NO	DND				Flushed
	PM12-02PB-M12	NC	PNP				
M12 X 1.0 LED O O O O O O O O O O O O O O O O O O O	PM12-04N-M12	NO	NPN	10 ~ 30 VDC	4.0mm	2.5KHZ	Non- Flushed
	PM12-04NB-M12	NC					
	PM12-04P-M12	NO	PNP				
	PM12-04PB-M12	NC	INF				

M18 Tubular Type

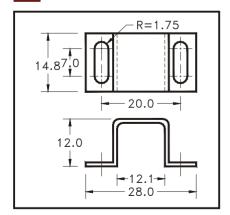
Outline Dimension	Model	Output Status	Output Method	Operating Voltage	Sensing Direction	Response Frequency	Mounting Method
M18 X 1.0	PM18-05N-S	NO	NPN				
	PM18-05NB-S	NC	NPN	10 ~ 30			Flushed
24.0 27.0 10.0	PM18-05P-S	NO		VDC	5.0mm	800HZ	
24.0 27.0 10.0	PM18-05PB-S	NC	PNP				
M18 X 1.0	PM18-08N-S	NO	NDN				
29.0	PM18-08NB-S	NC	NPN	10 ~ 30			Non- Flushed
2.0	PM18-08P-S	NO	DND	VDC	8.0mm	800HZ	
24.0 6.0 27.0 10.0 43.0	PM18-08PB-S	NC	PNP				
ПП м18 х 1.0	PM18-05N	NO	NDN				
% LED	PM18-05NB	NC	NPN	10 ~ 30	F 0	000117	Flushed
	PM18-05P	NO	DND	VDC	5.0mm	800HZ	Flushed
40.0 - 10.0 - 50.0	PM18-05PB	NC	PNP				
ПП М18 X 1.0	PM18-08N	NO	NDN	10 ~ 30 VDC	8.0mm	800HZ	Non- Flushed
N. C. LED	PM18-08NB	NC	NPN				
	PM18-08P	NO	DNID				
24.0 - 6.0 - 40.0 - 10.0 - 56.0	PM18-08PB	NC	PNP				
Polymid Housing	PM18-08N-P	NO	NDN	10 ~ 30		000117	Non-
	PM18-08NB-P	NC	NPN	VDC	8.0mm	800HZ	Flushed
LED LED	PM18-08P-P	NO	PNP	10 ~ 30 VDC	8.0mm	800HZ	Non- Flushed
	PM18-08PB-P	NC					
48.0	PM18-08S-P	NO	SCR	10 ~ 30	8.0mm	20HZ	Non-
	PM18-08SB-P	NC	SCK	VDC	0.0111111	20112	Flushed
M18 X 1.0	PM18-05S	NO	SCR	90 ~ 250 VAC	5.0mm	20HZ	Flushed
40.0 110.0	PM18-05SB	NC					
M18 X 1.0	PM18-08S	NO	SCR	90 ~ 250 VAC	8.0mm	20HZ	Non- Flushed
40.0 10.0 56.0	PM18-08SB	NC					
M18 X 1.0 LED M18 X 1.0 M18 X 1.0 M18 X 1.0	PM18-05N-M12	NO	NIDNI	10 ~ 30 VDC	5.0mm	800HZ	Flushed
	Pm18-05NB-M12	NC	NPN				
	PM18-05P-M12	NO	PNP				1 1431104
	PM18-05PB-M12	NC					
M18 X 1.0	PM18-08N-M12	NO	NPN	10 ~ 30 VDC	8.0mm	800HZ	Non- Flushed
6 HIS X 1	Pm18-08NB-M12	NC	NPN				
6.0 - 27.0 - 43.0 - 61.	PM18-08P-M12	NO	PNP				
	PM18-08PB-M12	NC					

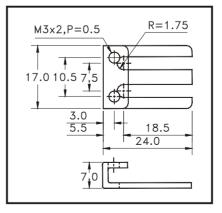


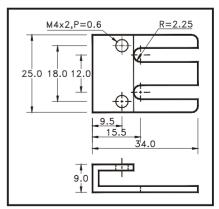
■ M30 Tubular Type

Outline Dimension	Model	Output Status	Output Method	Operating Voltage	Sensing Direction	Response Frequency	Mounting Method
ПП м30 x 1.5	PM30-10N-S	NO					
	PM30-10NB-S	NC	NPN	10 ~ 30 VDC		500HZ	Flushed
	PM30-10NB-S	NO			10.0mm		
36.0 25.0 10.0 3.0	PM30-10P-S	NC	PNP				
35.0 4 S S S S S S S S S S S S S S S S S S	PM30-15N-S	NO					
	PM30-15NB-S	NC	NPN				Non- Flushed
		NO		10 ~ 30 VDC	15.0mm	500HZ	
36.0 10.0 25.0 10.0 3.0	PM30-15P-S		PNP	VDC			
1 45.0 H30 X 1.5	PM30-15PB-S	NC					
	PM30-10N	NO	NPN	10 ~ 30 VDC	10.0mm	500HZ	Flushed
	PM30-10NB	NC	PNP				
38.0 40.0 10.0 3.0	PM30-10P	NO					
	PM30-10 PB	NC					
M30 X 1.5	PM30-15N	NO	NPN	10 ~ 30 VDC	15.0mm	500HZ	Non- Flushed
	PM30-15NB	NC					
36.0 10.0 40.0 10.0 5.0	PM30-15P	NO					
	PM30-15PB	NC					
41.5 40.5 10.0 50.0 10.0 50.0	PM30-10S	NO	SCR	90 ~ 250 VAC	10.0mm	20HZ	Flushed
	PM30-10SB	NO					
413 453 100 453 100 50	PM30-15S	NO	SCR	90 ~ 250 VAC	15.0mm	20HZ	Non-
	PM30-15SB	NO					Flushed

Fixed Bracket

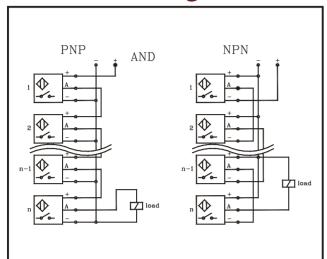


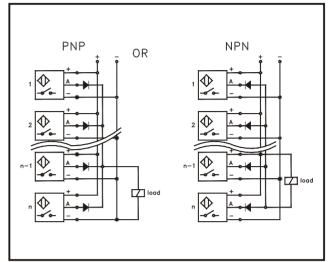






Connecting Method of AND & OR





■ Basic Definition of Inductive Proximity Sensor

Target

Which is steel, 1 mm thick ness, square form with width lengths 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 Factors.

Accuracy < Repetition >

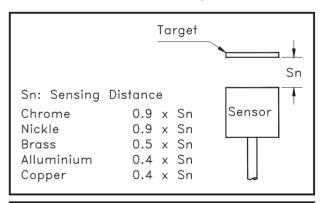
Tolerance of operating position that sensor is certainly operated under the same conditions .

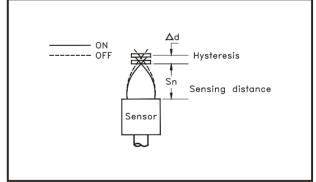
Hysteresis

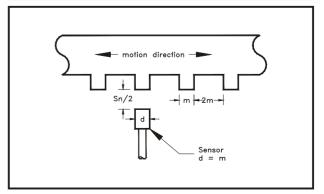
Hysteresis is the different distance between the operating points that the target is approaching and leaving the sensing area of the sensor , The value is expressed as a percentage of the sensing distance , < \triangle d/Sn% > .

Switch frequency

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





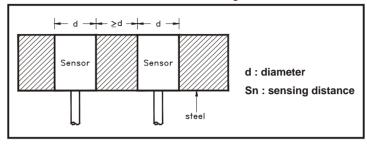




■How To Install Induction Proximity Sensor

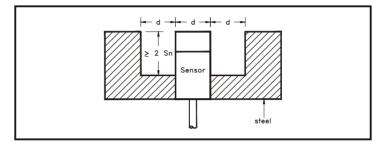
Flushed type

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



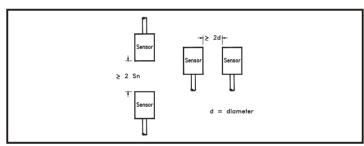
Non-flushed

A proximity sensor cannot be flushed in metal, a clear zone of 3 time of the diameter of the sensing surface must be keeped.



Mutual Interference

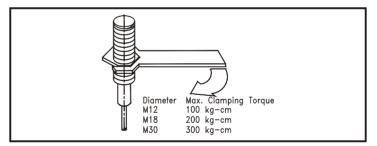
Installing inductive proximity sensors of the same model face to face or side by side , please set the minimum distance between the sensors larger than the diameter of sensor , to avoid the malfunction .



Clampling torque

Be sure to set a spring washer when fixing the sensor .

Don't tighten the sensor's mounting screw of PM series , with a clamping torque higher the right values .



Wiring

To avoid being influenced by noised . Try best to separate the cable of the sensor from power lines and high

If extend the sensor cable , use a cable which diameter as same as that .