

Датчики приближения PS, PM, TW, CP, EX, M12&M18, PSA Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48

Россия +7(495)268-04-70

Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73

Киргизия +996(312)-96-26-47

Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Саранск (8342)22-96-24
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35

Казахстан +7(7172)727-132

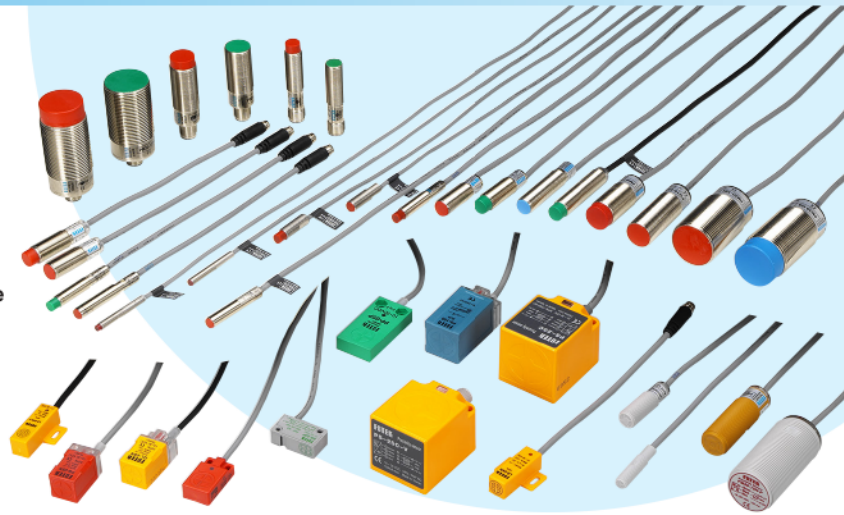
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Inductive Proximity sensor

PS / PM series

電感式 近接感應器

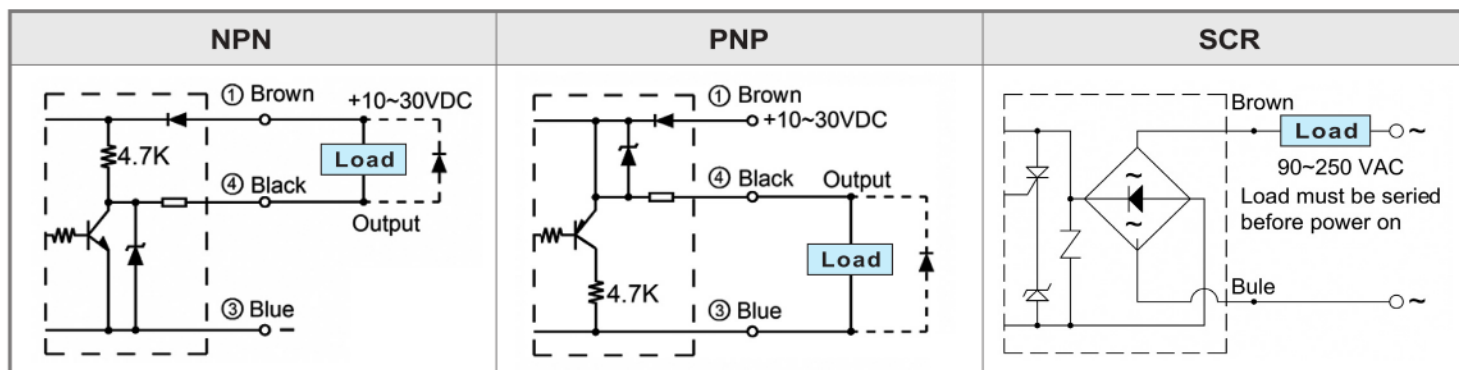
- All DC type with 「Short-circuit」 & 「Polarity reversed」 protection.
直流型都附「短路保護」及「極性保護」回路
- All AC type with 「surge absorbing circuit」 to avoid surge damage.
交流型都附「突波吸收回路」可有效防止突波破壞
- High solid compact structure 「IP-67」 suited to applied in any poor circumstance.
堅固結構「IP-67」適用各種惡劣環境
- All models with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



● Guiding of model / 型號索引

Tubular type Ex. PM 12 - 04 N B S - M12 1 2 3 4 5 6 7	Square type Ex. LS - 04 N B - V - PG 1 2 3 4 5 6
1 > Type / 型式 PM = Screw type / 螺絲型 PT = Tubular type / 圓管型	1 > Type / 型式 SP = Plate type / 扁型 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 > Outline diameter / 外徑 05 = M5 x 0.5 08 = M8 x 1.0 12 = M12 x 1.0 18 = M18 x 1.0 30 = M30 x 1.5	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 20 = 20.0 mm 25 = 25.0 mm
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	3 > Output method / 輸出方式 N = NPN P = PNP S = SCR
4 > 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 > 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 > 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	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
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	

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



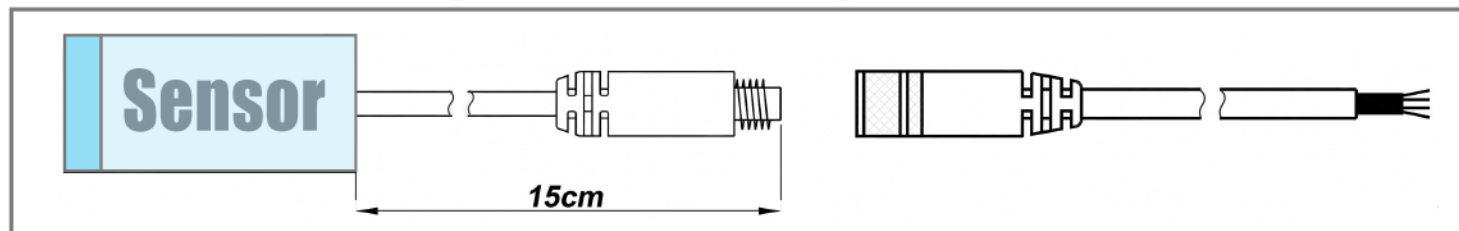
● General data / 共同規格

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 μ m/°C	
Voltage drift	電壓漂移	< 1 μ m/V	
Protection circuit	保護回路	Short-circuit & Polarity reversed	surge absorbing circuit
Operating Temperature	工作溫度	- 25°C ~ +80°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.

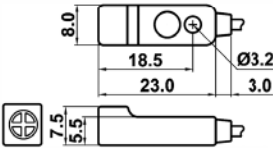
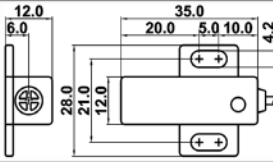
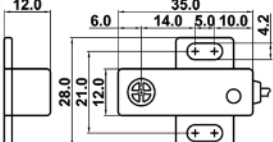
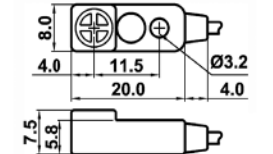
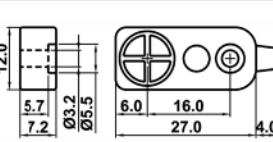
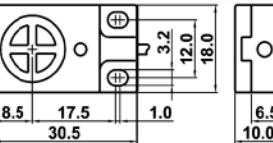
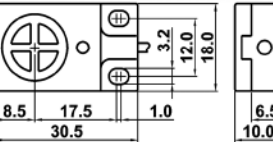
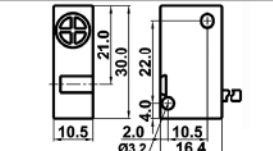
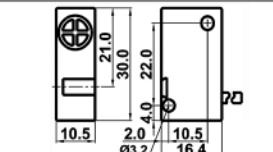
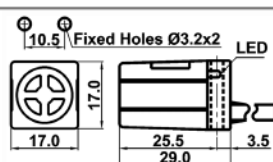
● M8 lead wire connection [Available for all sensor]



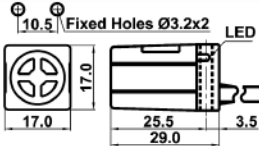
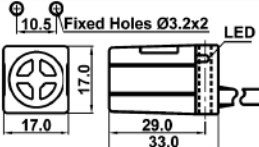
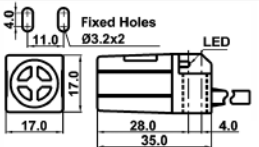
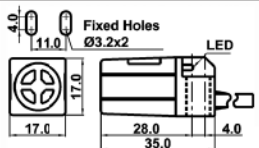
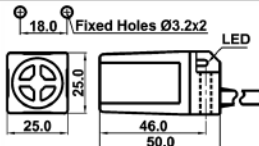
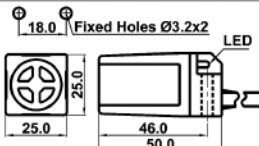
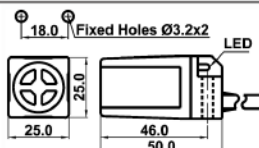
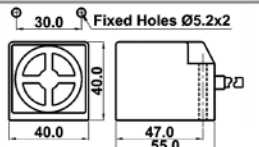
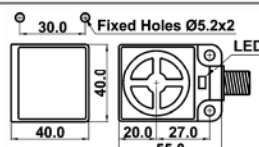
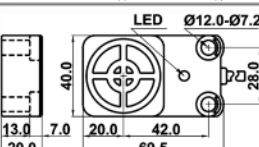
Inductive Proximity sensor

PS series 電感式 近接感應器

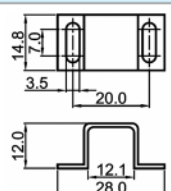
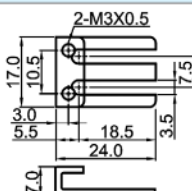
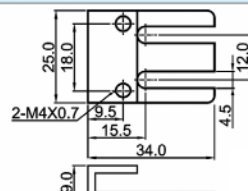
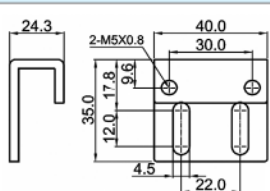
● Square type [Plastic housing]

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

● Square type [Plastic housing]

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Sensing direction	Operating voltage	Response frequency
 ⑩ 10.5 Fixed Holes Ø3.2x2 LED	PS-08N	NO	NPN	8.0 mm	Non-flushed	Horizontal	10~30 VDC	800Hz
	PS-08NB	NC						
	PS-08P	NO	PNP					
	PS-08PB	NC						
 ⑩ 10.5 Fixed Holes Ø3.2x2 LED	PS-05S	NO	SCR	5.0 mm	Flushed	Horizontal	90-250 VAC	20Hz
	PS-05SB	NC	SCR	8.0 mm	Non-flushed			
	PS-08S	NO						
	PS-08SB	NC						
 ⑩ 11.0 Fixed Holes Ø3.2x2 LED	PL-05N	NO	NPN	5.0 mm	Flushed	Horizontal	10~30 VDC	800Hz
	PL-05NB	NC						
	PL-05P	NO	PNP					
	PL-05PB	NC						
 ⑩ 11.0 Fixed Holes Ø3.2x2 LED	PL-08N	NO	NPN	8.0 mm	Non-flushed	Horizontal	10~30 VDC	800Hz
	PL-08NB	NC						
	PL-08P	NO	PNP					
	PL-08PB	NC						
 ⑩ 18.0 Fixed Holes Ø3.2x2 LED	PS-10N	NO	NPN	10.0 mm	Non-flushed	Horizontal	10~30 VDC	500Hz
	PS-10NB	NC						
	PS-10P	NO	PNP					
	PS-10PB	NC						
 ⑩ 18.0 Fixed Holes Ø3.2x2 LED	PS-15N	NO	NPN	15.0 mm	Non-flushed	Horizontal	10~30 VDC	500Hz
	PS-15NB	NC						
	PS-15P	NO	PNP					
	PS-15PB	NC						
 ⑩ 18.0 Fixed Holes Ø3.2x2 LED	PS-10S	NO	SCR	10.0 mm	Non-flushed	Horizontal	90-250 VAC	20Hz
	PS-10SB	NC		15.0 mm				
	PS-15S	NO	SCR					
	PS-15SB	NC						
 ⑩ 30.0 Fixed Holes Ø5.2x2 LED	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						
 ⑩ 30.0 Fixed Holes Ø5.2x2 LED	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						
 LED Ø12.0-Ø7.2	SP-25C	NO	NPN + PNP	25.0 mm	Non-flushed	Vertical	10~30 VDC	250Hz
	SP-25CB	NC						

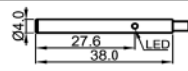
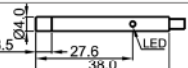
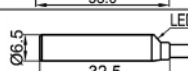
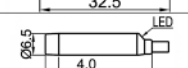
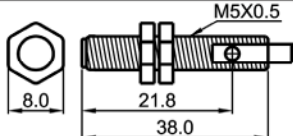
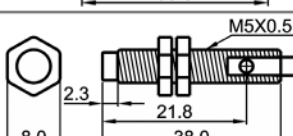
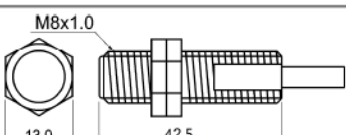
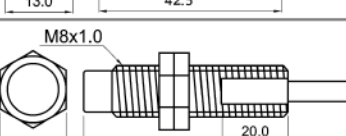
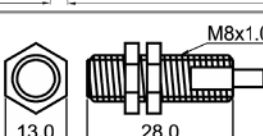
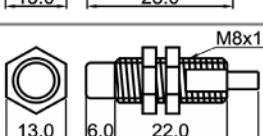
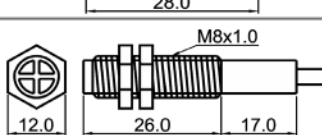
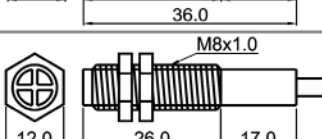
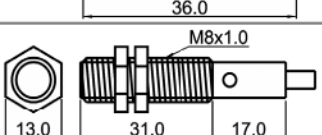
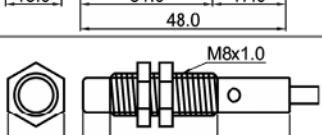
● Fixed bracket

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

Inductive Proximity sensor

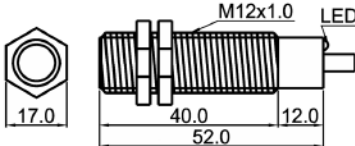
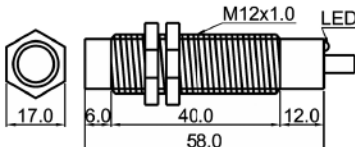
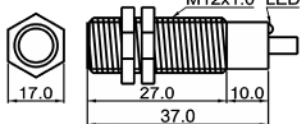
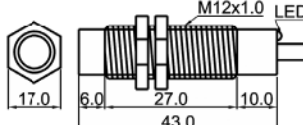
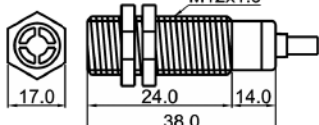
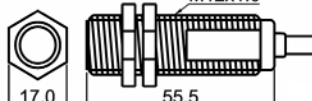
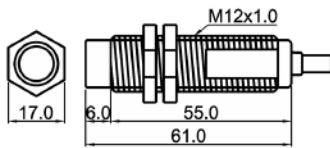
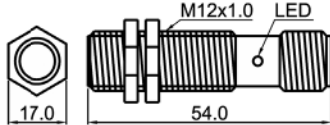
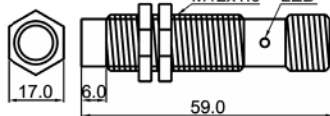
PM05/08 series 電感式 近接感應器

● PT04 / M5 / M8 Tubular type

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material			
	PT04-01N	NO	NPN	1.2 mm	Flushed	2.5KHz	10~30 VDC	SUS 304			
	PT04-01P	NO	PNP								
	PT04-02N	NO	NPN	2.0 mm	Non-flushed				2.5KHz	10~30 VDC	SUS 304
	PT04-02P	NO	PNP								
	PT06-01N	NO	NPN	2.0 mm	Flushed	2.5KHz	10~30 VDC	SUS 304			
	PT06-01P	NO	PNP								
	PT06-02N	NO	NPN	3.0 mm	Non-flushed				2.5KHz	10~30 VDC	SUS 304
	PT06-02P	NO	PNP								
	PM05-01N	NO	NPN	1.2 mm	Flushed	2.5KHz	10~30 VDC	SUS 304			
	PM05-01NB	NC									
	PM05-01P	NO	PNP								
	PM05-01PB	NC									
	PM05-02N	NO	NPN	2.0 mm	Non-flushed	2.5KHz	10~30 VDC	SUS 304			
	PM05-02NB	NC									
	PM05-02P	NO	PNP								
	PM05-02PB	NC									
	PM08-01NE	NO	NPN	1.0 mm	Flushed	2.5KHz	10~30 VDC	Cu plated Ni			
	PM08-01NBE	NC									
	PM08-01PE	NO	PNP								
	PM08-01PBE	NC									
	PM08-02NE	NO	NPN	2.0 mm	Non-flushed	2.5KHz	10~30 VDC	Cu plated Ni			
	PM08-02NBE	NC									
	PM08-02PE	NO	PNP								
	PM08-02PBE	NC									
	PM08-01NSE	NO	NPN	1.0 mm	Flushed	2.5KHz	10~30 VDC	SUS 304			
	PM08-01NSBE	NC									
	PM08-01PSE	NO	PNP								
	PM08-01PSBE	NC									
	PM08-02NSE	NO	NPN	2.0 mm	Non-flushed	2.5KHz	10~30 VDC	SUS 304			
	PM08-02NBSE	NC									
	PM08-02PSE	NO	PNP								
	PM08-02PBSE	NC									
	PM08-01N-P	NO	NPN	1.0 mm	Flushed	2.5KHz	10~30 VDC	PP			
	PM08-01NB-P	NC									
	PM08-01P-P	NO	PNP								
	PM08-01PB-P	NC									
	PM08-02N-P	NO	NPN	2.0 mm	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	1.0 mm	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	2.0 mm	Non-flushed	2.5KHz	10~30 VDC	SUS 304			
	PM08-02NB-K	NC									
	PM08-02P-K	NO	PNP								
	PM08-02PB-K	NC									

PM12 series

● M12 Tubular type

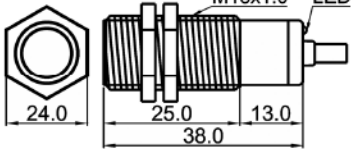
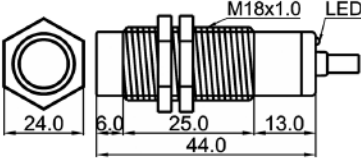
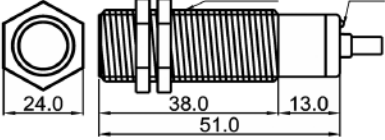
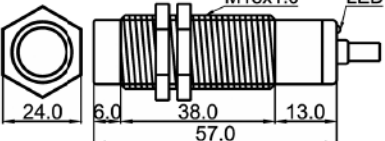
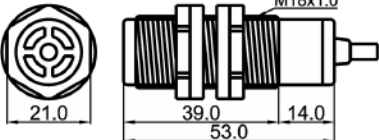
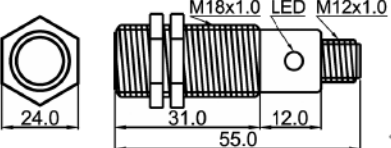
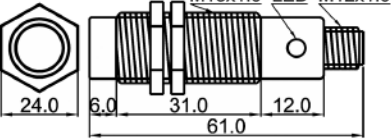
Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material	
	PM12-02N	NO	NPN	2.0 mm	Flushed	2.5KHz	10-30 VDC	Cu plated Ni	
	PM12-02NB	NC							
	PM12-02P	NO	PNP	5.0 mm	Flushed	1.2KHz			
	PM12-02PB	NC							
	PM12E-05N	NO	NPN	5.0 mm	Flushed	1.2KHz			
	PM12E-05NB	NC							
	PM12-02S	NO	SCR	2.0 mm	Flushed	20Hz	90-250 VAC		
	PM12-02SB	NC							
	PM12-04N	NO	NPN	4.0 mm	Non-flushed	2.5KHz	10-30 VDC	Cu plated Ni	
	PM12-04NB	NC							
	PM12-04P	NO	PNP	8.0 mm	Non-flushed	1.2KHz			
	PM12-04PB	NC							
	PM12E-08N	NO	NPN	8.0 mm	Non-flushed	1.2KHz			
	PM12E-08NB	NC							
	PM12-04S	NO	SCR	4.0 mm	Non-flushed	20Hz	90-250 VAC		
	PM12-04SB	NC							
	PM12-02NS	NO	NPN	2.0 mm	Flushed	2.5KHz	10-30 VDC	Cu plated Ni	
	PM12-02NBS	NC							
	PM12-02PS	NO	PNP						
	PM12-02PBS	NC							
	PM12-04NS	NO	NPN	4.0 mm	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	4.0 mm	Non-flushed	2.5KHz	10-30 VDC	PP	
	PM12-04NB-P	NC							
	PM12-04P-P	NO	PNP			20Hz	90-250 VAC		
	PM12-04PB-P	NC							
	PM12-04S-P	NO	SCR	4.0 mm	Non-flushed	20Hz	90-250 VAC		
	PM12-04SB-P	NC							
	PM12-02N-E	NO	NPN	2.0 mm	Flushed	2.5KHz	10-30 VDC	Cu plated Ni	
	PM12-02NB-E	NC							
	PM12-02P-E	NO	PNP			1.2KHz			
	PM12-02PB-E	NC							
	PM12E-05N-E	NO	NPN	5.0 mm					
	PM12E-05NB-E	NC							
	PM12-04N-E	NO	NPN	4.0 mm	Non-flushed	2.5KHz	10-30 VDC	Cu plated Ni	
	PM12-04NB-E	NC							
	PM12-04P-E	NO	PNP			1.2KHz			
	PM12-04PB-E	NC							
	PM12E-08N-E	NO	NPN	8.0 mm					
	PM12E-08NB-E	NC							
	PM12-02N-M12	NO	NPN	2.0 mm	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	4.0 mm	Non-flushed	2.5KHz	10-30 VDC	Cu plated Ni	
	PM12-04NB-M12	NC							
	PM12-04P-M12	NO	PNP						
	PM12-04PB-M12	NC							

Inductive Proximity sensor

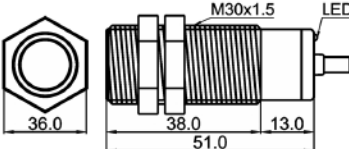
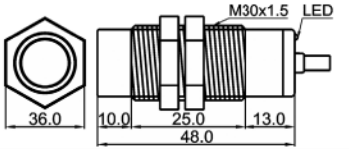
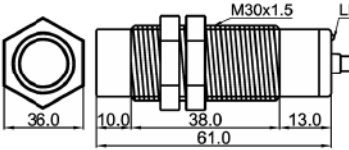
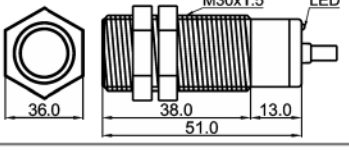
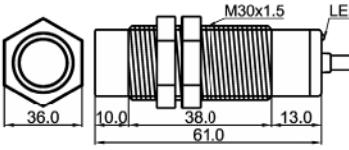
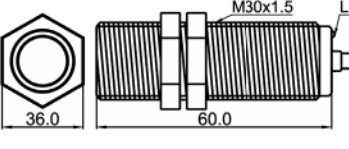
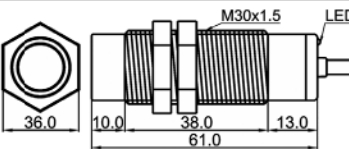
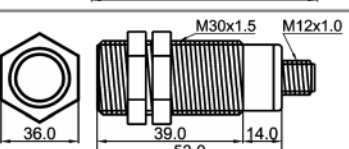
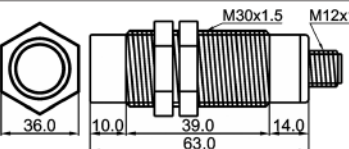
PM18 series

電感式 近接感應器

● M18 Tubular type

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material
	PM18-05NS	NO	NPN	5.0 mm	Flushed	800Hz	10~30 VDC	Cu plated Ni
	PM18-05NBS	NC						
	PM18-05PS	NO	PNP					
	PM18-05PBS	NC						
	PM18-08NS	NO	NPN	8.0 mm	Non-flushed	800Hz	10~30 VDC	Cu plated Ni
	PM18-08NBS	NC						
	PM18-08PS	NO	PNP					
	PM18-08PBS	NC						
	PM18-05N	NO	NPN	5.0 mm	Flushed	800Hz	10~30 VDC	Cu plated Ni
	PM18-05NB	NC						
	PM18-05P	NO	PNP					
	PM18-05PB	NC						
	PM18E-10N	NO	NPN	10.0 mm	Flushed	500Hz		
	PM18E-10NB	NC						
	PM18-05S	NO	SCR	5.0 mm	Flushed	20Hz	90~250 VAC	
	PM18-05SB	NC						
	PM18-08N	NO	NPN	8.0 mm	Non-flushed	800Hz	10~30 VDC	Cu plated Ni
	PM18-08NB	NC						
	PM18-08P	NO	PNP					
	PM18-08PB	NC						
	PM18E-16N	NO	NPN	16.0 mm	Non-flushed	500Hz		
	PM18E-16NB	NC						
	PM18-08S	NO	SCR	8.0 mm	Non-flushed	20Hz	90~250 VAC	
	PM18-08SB	NC						
	PM18-08N-P	NO	NPN	8.0 mm	Non-flushed	800Hz	10~30 VDC	PP
	PM18-08NB-P	NC						
	PM18-08P-P	NO	PNP					
	PM18-08PB-P	NC						
	PM18-08S-P	NO	SCR	8.0 mm	Non-flushed	20Hz	90~250 VAC	
	PM18-08SB-P	NC						
	PM18-05N-M12	NO	NPN	5.0 mm	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	8.0 mm	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

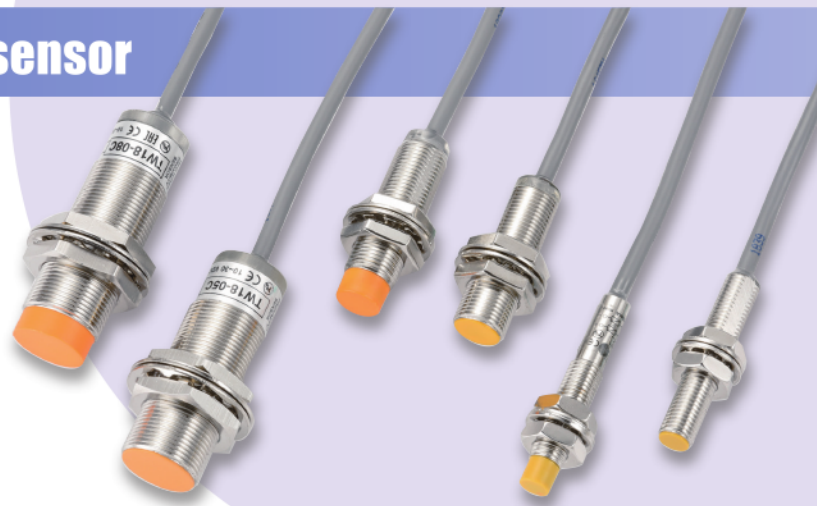
Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material	
	PM30-10N	NO	NPN	10.0 mm	Flushed	500Hz	10~30 VDC	Cu plated Ni	
	PM30-10NB	NC							
	PM30-10P	NO	PNP						
	PM30-10PB	NC							
	PM30E-20N	NO	NPN	20.0 mm					
	PM30E-20NB	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							
	PM30E-30N	NO	NPN	30.0 mm					
	PM30E-30NB	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	PP	
	PM30-15NB-P	NC							
	PM30-15P-P	NO	PNP						
	PM30-15PB-P	NC							
	PM30E-30N-P	NO	NPN	30.0 mm	Non-flushed	200Hz	10~30 VDC		
	PM30E-30NB-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							

Two wires Inductive Proximity sensor

TW series

兩線式 近接感應器

- 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



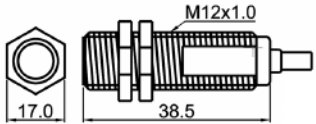
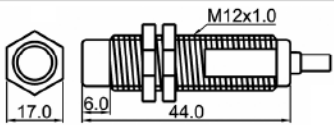
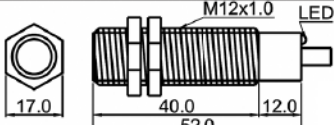
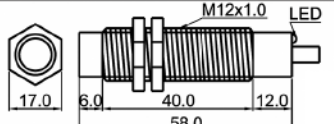
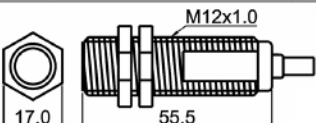
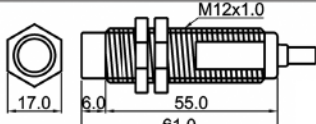
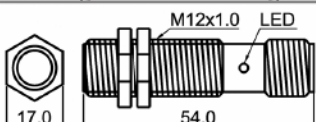
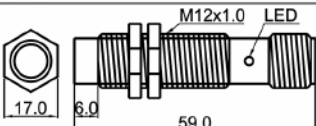
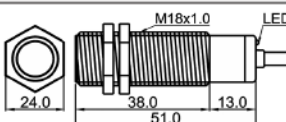
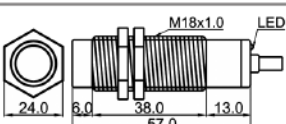
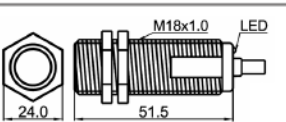
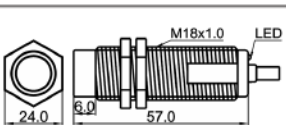
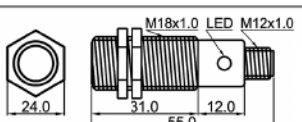
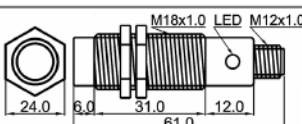
General data / 共同規格

Specification	規格	Data	Connection diagram / 接線圖
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 or M12 connector or M8 lead wire	
Housing material	外殼材質	Cu plated Ni or PBT or SUS-304	
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	

Specification / 規格

Outline	Model	Output status	Sensing distance	Mounting method	Response frequency	Operating voltage	Connection method	Housing material
	TW08-01C	NO	1.0 mm	Flushed	2.0kHz	10 ~ 30 VDC	Lead wire	Cu plated Ni
	TW08-01CB	NC						
	TW08-02C	NO	2.0 mm	Non flushed	2.0kHz	10 ~ 30 VDC	Lead wire	Cu plated Ni
	TW08-02CB	NC						
	TW08-01CE	NO	1.0 mm	Flushed	2.0kHz	10 ~ 30 VDC	Lead wire	Cu plated Ni
	TW08-01CBE	NC						
	TW08-02CE	NO	2.0 mm	Non flushed	2.0kHz	10 ~ 30 VDC	Lead wire	Cu plated Ni
	TW08-02CBE	NC						

● Specification / 規格

Outline	Model	Output status	Sensing distance	Mounting method	Response frequency	Operating voltage	Connection method	Housing material			
	TW12-02CSE	NO	2.0 mm	Flushed	1.0KHz	10~30 VDC	Lead wire	Cu plated Ni			
	TW12-02CBSE	NC									
	TW12-04CSE	NO	4.0 mm	Non flushed	800Hz	10~30 VDC	Lead wire	Cu plated Ni			
	TW12-04CBSE	NC									
	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									
	TW12-02CE	NO	2.0 mm	Flushed	1.0KHz	10~30 VDC	Lead wire	Cu plated Ni			
	TW12-02CBE	NC	2.0 mm		500Hz						
	TW12E-05CE	NO	5.00 mm	Non flushed	800Hz						
	TW12E-05CBE	NC	5.00 mm								
	TW12-04CE	NO	4.0 mm	Non flushed	800Hz	10~30 VDC	Lead wire	Cu plated Ni			
	TW12-04CBE	NC	4.0 mm		500Hz						
	TW12E-08CE	NO	8.00 mm	Non flushed	500Hz						
	TW12E-08CBE	NC	8.00 mm								
	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	5.0 mm		250Hz						
	TW18E-10C	NO	10.0 mm	Non flushed	400Hz						
	TW18E-10CB	NC	10.0 mm						200Hz		
	TW18-08C	NO	8.0 mm	Non flushed	400Hz	10~30 VDC	Lead wire	Cu plated Ni			
	TW18-08CB	NC	8.0 mm		200Hz						
	TW18E-16C	NO	16.0 mm	Non flushed	400Hz						
	TW18E-16CB	NC	16.0 mm						200Hz		
	TW18-05CE	NO	5.0 mm	Flushed	500Hz	10~30 VDC	Lead wire	Cu plated Ni			
	TW18-05CBE	NC	5.0 mm		250Hz						
	TW18E-10CE	NO	10.0 mm	Non flushed	400Hz						
	TW18E-10CBE	NC	10.0 mm						200Hz		
	TW18-08CE	NO	8.0 mm	Non flushed	400Hz	10~30 VDC	Lead wire	Cu plated Ni			
	TW18-08CBE	NC	8.0 mm		200Hz						
	TW18E-16CE	NO	16.0 mm	Non flushed	400Hz						
	TW18E-16CBE	NC	16.0 mm						200Hz		
	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									

Capacitive Proximity sensor

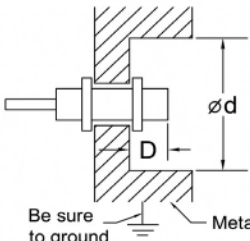
CP series

靜電容式 近接感應器

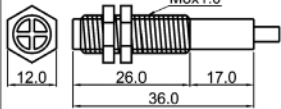
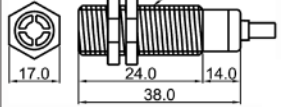
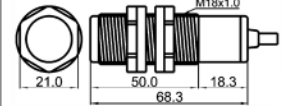
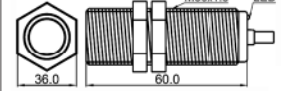
- Sensitivity adjuster : 14 turns trimmer
- High stability with thermal compensated
- Metallic & Non-metallic objects are sensible
Including Glass, Lumber, oil, water and plastic objects etc.

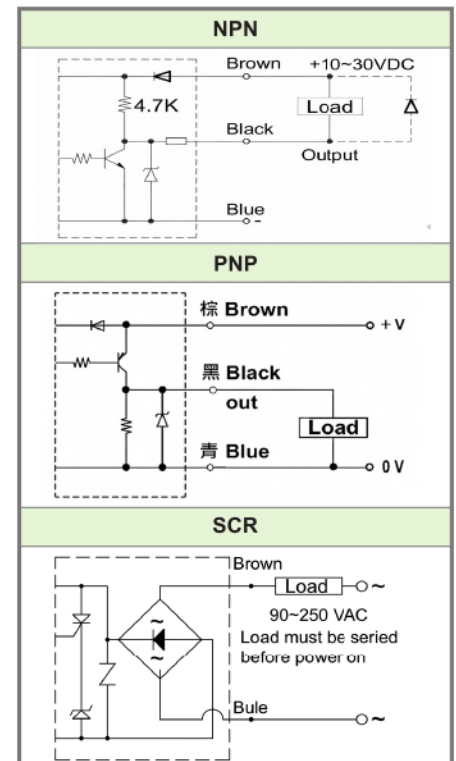


General data / 共同規格

Type	型式	DC type	AC type	Precaution / 注意事項			
Operating voltage	工作電壓	10-30 VDC	90-250 VAC		Model	D	d ϕ
Current consumption	耗電流	20 mA max.	1.5 VA max.		CP08	12	24
Response freq	響應頻率	100 Hz	15 Hz		CP12	12	36
Output current	輸出電流	150 mA max.	100 mA max.		CP18	24	48
Leakage current	洩漏電流	0.8 mA max.	2.0 mA max.		CP30	24	60
Residual voltage	洩漏電壓	0.8 V max.		* 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，淨空範圍請參考上圖。			
Protection circuit	保護迴路	Short circuit & Polarity reversed	Surge absorbing				
Target	標準檢測物	Gsgrounded metal plate (50*50*1 mm)					
Operating circum	工作環境	-25°C ~+80°C ; 35% ~ 95% RH					
Protection class	保護等級	IP-67					
Approval	認證	CE & Roh					

Specification / 規格

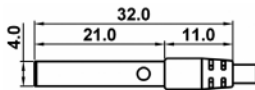
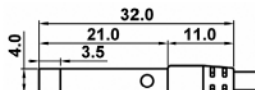
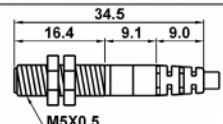
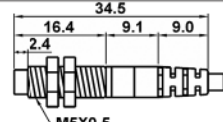
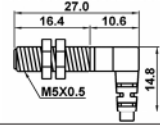
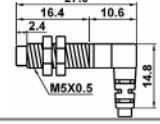
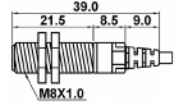
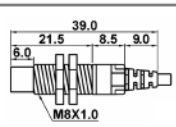
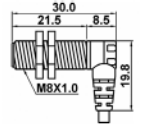
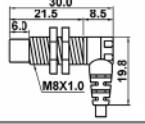
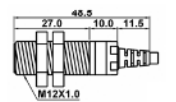
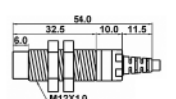
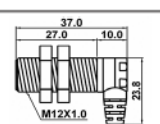
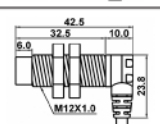
Outline	Model	Output status	Output method	Sensing distance	Operating voltage	Sensitivity adjuster	Housing material
	CP08-06N	NO	NPN	6.0 mm	10 ~ 30 VDC	Non	PP
	CP08-06NB	NC					
	CP08-06P	NO	PNP				
	CP08-06PB	NC					
	CP12-10N	NO	NPN	10.0 mm	10 ~ 30 VDC	Non	PP
	CP12-10NB	NC					
	CP12-10P	NO	PNP				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



High compact Proximity sensor

強固型 近接傳感器

● Specification / 規格

Outline	Model	Output status	Output method	Sensing distance	Mounting method	Response frequency	Operating voltage	Housing material
	EX04-01N	NO	NPN	0.8 mm	Flushed	2.5KHz	10~30 VDC	SUS 304
	EX04-01NB	NC						
	EX04-01P	NO	PNP					
	EX04-01PB	NC						
	EX04-02N	NO	NPN	1.5 mm	Non-flushed	2.5KHz	10~30 VDC	SUS 304
	EX04-02NB	NC						
	EX04-02P	NO	PNP					
	EX04-02PB	NC						
	EX05-01N	NO	NPN	0.8 mm	Flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX05-01NB	NC						
	EX05-01P	NO	PNP					
	EX05-01PB	NC						
	EX05-02N	NO	NPN	1.5 mm	Non-flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX05-02NB	NC						
	EX05-02P	NO	PNP					
	EX05-02PB	NC						
	EX05-01N-V	NO	NPN	0.8 mm	Flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX05-01NB-V	NC						
	EX05-01P-V	NO	PNP					
	EX05-01PB-V	NC						
	EX05-02N-V	NO	NPN	1.5 mm	Non-flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX05-02NB-V	NC						
	EX05-02P-V	NO	PNP					
	EX05-02PB-V	NC						
	EX08-02N	NO	NPN	2.0 mm	Flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX08-02NB	NC						
	EX08-02P	NO	PNP					
	EX08-02PB	NC						
	EX08-03N	NO	NPN	3.0 mm	Non-flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX08-03NB	NC						
	EX08-03P	NO	PNP					
	EX08-03PB	NC						
	EX08-02N-V	NO	NPN	2.0 mm	Flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX08-02NB-V	NC						
	EX08-02P-V	NO	PNP					
	EX08-02PB-V	NC						
	EX08-03N-V	NO	NPN	3.0 mm	Non-flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX08-03NB-V	NC						
	EX08-03P-V	NO	PNP					
	EX08-03PB-V	NC						
	EX12-03N	NO	NPN	3.0 mm	Flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX12-03NB	NC						
	EX12-03P	NO	PNP					
	EX12-03PB	NC						
	EX12-05N	NO	NPN	5.0 mm	Non-flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX12-05NB	NC						
	EX12-05P	NO	PNP					
	EX12-05PB	NC						
	EX12-03N-V	NO	NPN	3.0 mm	Flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX12-03NB-V	NC						
	EX12-03P-V	NO	PNP					
	EX12-03PB-V	NC						
	EX12-05N-V	NO	NPN	5.0 mm	Non-flushed	2.5KHz	10~30 VDC	Cu Plated Ni
	EX12-05NB-V	NC						
	EX12-05P-V	NO	PNP					
	EX12-05PB-V	NC						

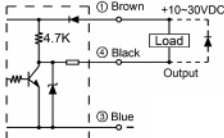
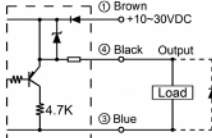
線性輸出 近接傳感器

[illegible]

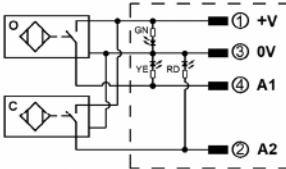
電焊設備用 近接傳感器

-

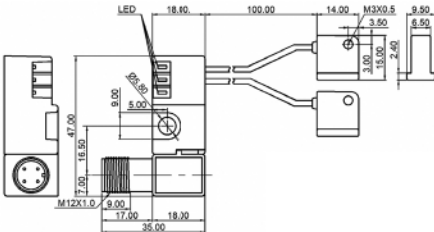
Model	型號	PSA-02N	PSA-02P
Output method	輸出方式	NPN	PNP
Voltage	工作電壓	10 ~ 30 VDC	
Current consumption	消耗電流	15 mA max.	
Output current	輸出電流	150mA max.	
Voltage drop	輸出壓降	0.8V	
Leakage current	洩漏電	0.1mA	
Sensing distance	感應距離	2.2 mm ± 10%	
Effective sensing distance	動作距離	80% of sensing distance min.	
Hysteresis	動作應差	10% of sensing distance max.	
Thermal drift	溫度飄移	10 μm / °C max.	
Accuracy	重複精度	2% of sensing distance max.	
Pilot	指示燈	Power : Green LED : Open ; Yellow LED : Close ; Red LED	
Frequency	響應頻率	100 Hz max.	
Protection circuit	保護回路	Short-circuit & Polarity reversed protection circuit.	
Housing material	外殼材質	ABS (UL 94V0)	
Protection class	保護等級	IP-67 (IEC-60529)	
Vibration resistance	耐震動	300m/ S² / (55 ~ 2000 Hz) (IEC-60068-2-6)	
Shock resistance	耐衝擊	300m/ S² with 11ms (IEC-60068-2-27)	
EMC Interference	電磁相容	IEC 61000-6-4	
Dielectric strength	電介強度	2.5kv / 1 minute min.	
Insulation strength	絕緣強度	100 MΩ / 500vdc	
Operation circumstance	工作環境	-25℃ ~ +85℃ ; 100%RH max.	

M12 Connection



Outline / 外形尺寸



Inductive Proximity sensor

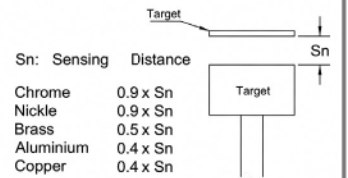
PS / PM series 電感式 近接感應器

● 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.

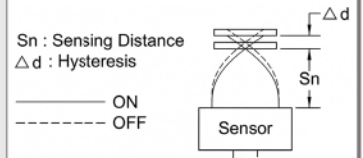
標準檢測物是方型鐵片，厚度1mm，長寬等於感測器的感應面直徑。如果標準檢測物的材質不是鐵則感測距離須依右圖的修正係數修正。



※ 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 ($\Delta d / Sn\%$)

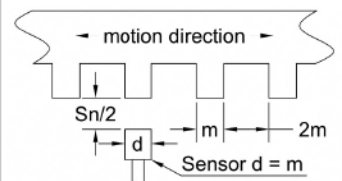
應差是感測器的動作點與復歸點的距離，一般是以動作點與復歸點的距離除以感應距離後以百分比表示。



※ 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

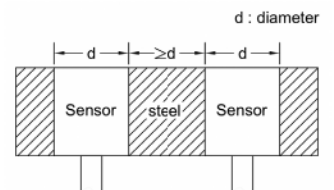
Tolerance of operating position that sensor is certainly operated under the same condition.

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。

※ 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.

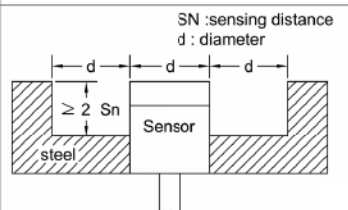
近接感測器可完全埋入金屬物即感應面四周可受金屬物包圍。



※ 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.

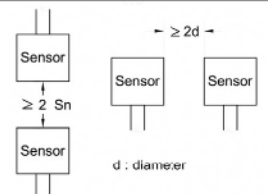
近接感測器感應面四周不可受金屬物包圍，淨空範圍必須是近接感測器感應面直徑的三倍距離以上。



※ 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.

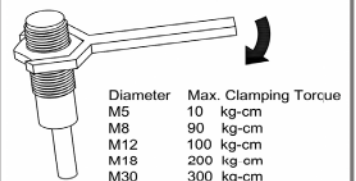
近接感測器不可以面對面或並排方式安裝，如果要以上述方式安裝務必保持近接感測器感應面直徑的一倍距離以上。



※ 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。



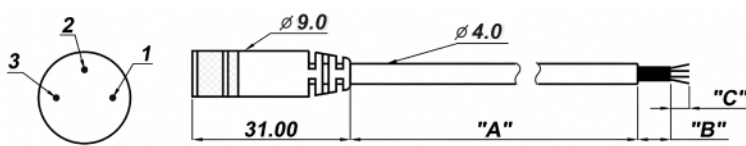
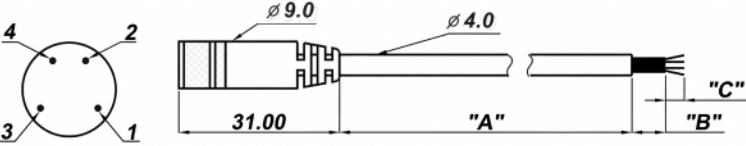
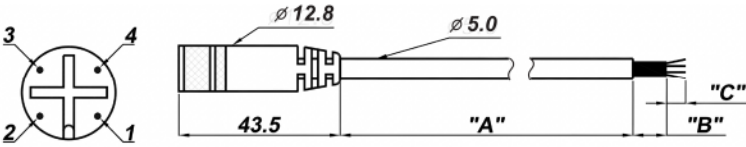
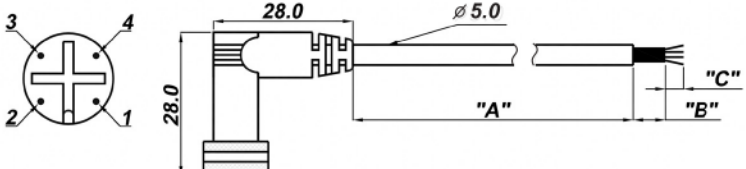
※ Notice of Wiring / 配線注意事項

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，請儘量將感測器的電線與動力線或高壓線分離，不要綁在一起。

如果要延長感測器的電線請儘量使用和感測器的電線相同規格的電線。

● M8 & M12 lead wire cable/ M8 & M12 接頭線

Model	Outline														
M8-3C-□m	<table><tr><th>4P PLUG</th><th>COLOR</th></tr><tr><td>1</td><td>BROWN</td></tr><tr><td>2</td><td>BLACK</td></tr><tr><td>3</td><td>BLUE</td></tr></table>	4P PLUG	COLOR	1	BROWN	2	BLACK	3	BLUE						
	4P PLUG	COLOR													
	1	BROWN													
	2	BLACK													
3	BLUE														
<table><tr><th>規格</th><th>"A"</th><th>"B"</th><th>"C"</th></tr><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></table>	規格	"A"	"B"	"C"	M8-3m	3m	50+3mm	5+1mm	M8-5m	5m	50+3mm	5+1mm			
規格	"A"	"B"	"C"												
M8-3m	3m	50+3mm	5+1mm												
M8-5m	5m	50+3mm	5+1mm												
M8-4C-□m	<table><tr><th>4P PLUG</th><th>COLOR</th></tr><tr><td>1</td><td>BROWN</td></tr><tr><td>2</td><td>WHITE</td></tr><tr><td>3</td><td>BLUE</td></tr><tr><td>4</td><td>BLACK</td></tr></table>	4P PLUG	COLOR	1	BROWN	2	WHITE	3	BLUE	4	BLACK				
	4P PLUG	COLOR													
	1	BROWN													
	2	WHITE													
3	BLUE														
4	BLACK														
<table><tr><th>規格</th><th>"A"</th><th>"B"</th><th>"C"</th></tr><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></table>	規格	"A"	"B"	"C"	M8-3m	3m	50+3mm	5+1mm	M8-5m	5m	50+3mm	5+1mm			
規格	"A"	"B"	"C"												
M8-3m	3m	50+3mm	5+1mm												
M8-5m	5m	50+3mm	5+1mm												
M12-4C-□m	<table><tr><th>4P PLUG</th><th>COLOR</th></tr><tr><td>1</td><td>BROWN</td></tr><tr><td>2</td><td>WHITE</td></tr><tr><td>3</td><td>BLUE</td></tr><tr><td>4</td><td>BLACK</td></tr></table>	4P PLUG	COLOR	1	BROWN	2	WHITE	3	BLUE	4	BLACK				
	4P PLUG	COLOR													
	1	BROWN													
	2	WHITE													
3	BLUE														
4	BLACK														
<table><tr><th>規格</th><th>"A"</th><th>"B"</th><th>"C"</th></tr><tr><td>M12-3m</td><td>3m</td><td>50+3mm</td><td>5+1mm</td></tr><tr><td>M12-5m</td><td>5m</td><td>50+3mm</td><td>5+1mm</td></tr></table>	規格	"A"	"B"	"C"	M12-3m	3m	50+3mm	5+1mm	M12-5m	5m	50+3mm	5+1mm			
規格	"A"	"B"	"C"												
M12-3m	3m	50+3mm	5+1mm												
M12-5m	5m	50+3mm	5+1mm												
M12-4C- L-□m	<table><tr><th>4P PLUG</th><th>COLOR</th></tr><tr><td>1</td><td>BROWN</td></tr><tr><td>2</td><td>WHITE</td></tr><tr><td>3</td><td>BLUE</td></tr><tr><td>4</td><td>BLACK</td></tr></table>	4P PLUG	COLOR	1	BROWN	2	WHITE	3	BLUE	4	BLACK				
	4P PLUG	COLOR													
	1	BROWN													
	2	WHITE													
3	BLUE														
4	BLACK														
<table><tr><th>規格</th><th>"A"</th><th>"B"</th><th>"C"</th></tr><tr><td>M12-L3m</td><td>3m</td><td>50+3mm</td><td>5+1mm</td></tr><tr><td>M12-L5m</td><td>5m</td><td>50+3mm</td><td>5+1mm</td></tr></table>	規格	"A"	"B"	"C"	M12-L3m	3m	50+3mm	5+1mm	M12-L5m	5m	50+3mm	5+1mm			
規格	"A"	"B"	"C"												
M12-L3m	3m	50+3mm	5+1mm												
M12-L5m	5m	50+3mm	5+1mm												

To manufacture the world standard controls
 By mass producing & standardizing
 To offer the excellent quality assurance
 By advance technology & strict total quality control

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231	Калининград (4012)72-03-81	Омск (3812)21-46-40	Сыктывкар (8212)25-95-17
Ангарск (3955)60-70-56	Калуга (4842)92-23-67	Орел (4862)44-53-42	Тамбов (4752)50-40-97
Архангельск (8182)63-90-72	Кемерово (3842)65-04-62	Оренбург (3532)37-68-04	Тверь (4822)63-31-35
Астрахань (8512)99-46-04	Киров (8332)68-02-04	Пенза (8412)22-31-16	Тольятти (8482)63-91-07
Барнаул (3852)73-04-60	Коломна (4966)23-41-49	Петрозаводск (8142)55-98-37	Томск (3822)98-41-53
Белгород (4722)40-23-64	Кострома (4942)77-07-48	Псков (8112)59-10-37	Тула (4872)33-79-87
Благовещенск (4162)22-76-07	Краснодар (861)203-40-90	Пермь (342)205-81-47	Тюмень (3452)66-21-18
Брянск (4832)59-03-52	Красноярск (391)204-63-61	Ростов-на-Дону (863)308-18-15	Ульяновск (8422)24-23-59
Владивосток (423)249-28-31	Курск (4712)77-13-04	Рязань (4912)46-61-64	Улан-Удэ (3012)59-97-51
Владикавказ (8672)28-90-48	Курган (3522)50-90-47	Самара (846)206-03-16	Уфа (347)229-48-12
Владимир (4922)49-43-18	Липецк (4742)52-20-81	Саранск (8342)22-96-24	Хабаровск (4212)92-98-04
Волгоград (844)278-03-48	Магнитогорск (3519)55-03-13	Санкт-Петербург (812)309-46-40	Чебоксары (8352)28-53-07
Вологда (8172)26-41-59	Москва (495)268-04-70	Саратов (845)249-38-78	Челябинск (351)202-03-61
Воронеж (473)204-51-73	Мурманск (8152)59-64-93	Севастополь (8692)22-31-93	Череповец (8202)49-02-64
Екатеринбург (343)384-55-89	Набережные Челны (8552)20-53-41	Симферополь (3652)67-13-56	Чита (3022)38-34-83
Иваново (4932)77-34-06	Нижний Новгород (831)429-08-12	Смоленск (4812)29-41-54	Якутск (4112)23-90-97
Ижевск (3412)26-03-58	Новокузнецк (3843)20-46-81	Сочи (862)225-72-31	Ярославль (4852)69-52-93
Иркутск (395)279-98-46	Ноябрьск (3496)41-32-12	Ставрополь (8652)20-65-13	
Казань (843)206-01-48	Новосибирск (383)227-86-73	Сургут (3462)77-98-35	
Россия +7(495)268-04-70	Киргизия +996(312)-96-26-47	Казахстан +7(7172)727-132	