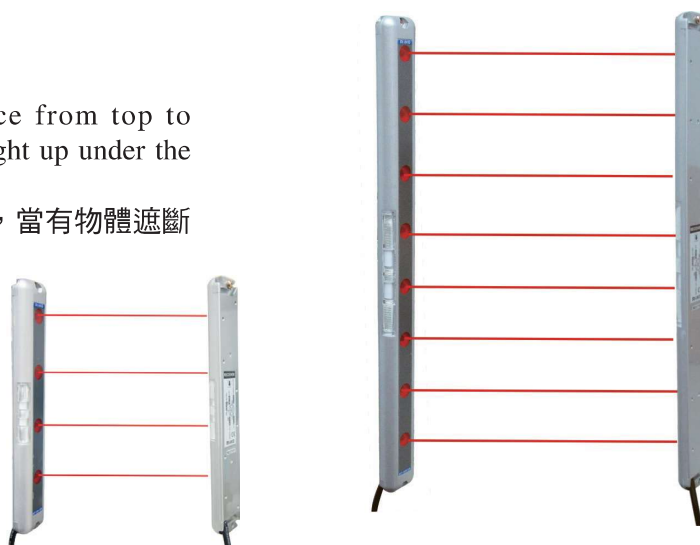
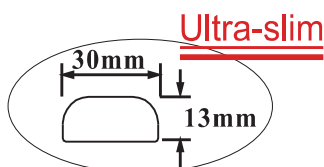


◆ Characteristic / 特點：

- Ultra slim body, 13mm thickness only.
/ 13mm超薄型，寬度僅有30mm。
- Min. Detectable Object Ø60mm.
/ 最小檢測物Ø60mm。
- Green and red LED blink in sequence from top to bottom under normal emission. All LED light up under the emitting circuit failure.
/ 未感應時，綠色與紅色LED依序閃爍，當有物體遮斷時，LED則全部一起亮。



◆ Specifications / 規格表：

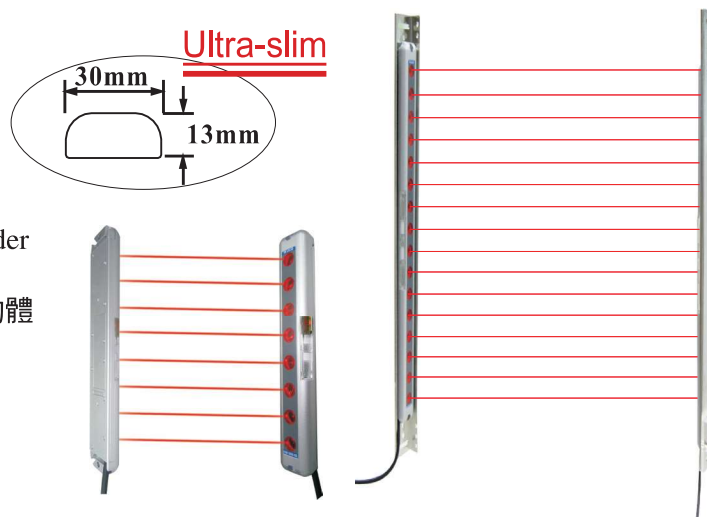
Model / 型號	NPN D.on	OAP-4004-NK	OAP-4004S-NK	OAP-4008-NK	OAP-4008S-NK
	PNP D.on	OAP-4004-PK	OAP-4004S-PK	OAP-4008-PK	OAP-4008S-PK
No.of Beams/光軸數	4			8	
Sensing Height / 檢測高度	120 mm			280 mm	
Beam pitch / 光軸間距	40 mm				
Sensing type / 檢出方式	Through beam / 對照式				
Resolution / 分辨率	60 mm opaque object 不透明物體				
Sensing distance / 檢出距離	0.1 M ～ 5 M	0.1 M ～ 2 M		0.2 M ～ 5 M	0.2 M ～ 2 M
Emitting light / 發光源	Infrared LED(紅外線發光LED)：850 nm				
Indicating LED / LED指示燈	5 LEDs each on emitter and receiver.			7LEDs each on emitter and receiver.	
	LEDs blink from top to bottom under the normal emission.				
	All LEDs light up under the emitting circuit failure and will become blinking until the normal emission.				
Running type / 運轉方式	More than a beam is covered ON（Dark On） 任意一個光束被遮斷即輸出				
Operating voltage / 工作電壓	DC12 ～ 24 V±10% (ripple P-P：10% Max.)				
Current Consumption / 消耗電流	Transmitter：30 mA Max.			Transmitter：60 mA Max.	
	Receiver：15 mA Max.			Receiver：30 mA Max.	
Load current / 負載電流	100 mA Max at DC 24V				
Protection circuit / 保護電路	Reversed Supply circuit protection, Short circuit protection output 電源反接保護及輸出短路保護				
Response time / 反應時間	Off to On：15 ms Max.				
	On to Off：20 ms Max.				
Insulation resistance / 隔離阻抗	20MΩ min. (DC500V)				
Voltage withstandabiligy / 絕緣耐壓	AC1000V 60Hz for 60 Sec.				
Operating temperature/工作溫度	- 10℃ ～ + 45℃（No freezing allowed不可結霜、結冰）				
Ambient humidity / 工作溼度	35% ～ 85% RH 相對溼度				
Storage temperature / 儲存時溫度	- 10℃ ～ + 45℃（No freezing allowed不可結霜、結冰）				
Storage humidity / 儲存時溼度	35% ～ 95% RH 相對溼度				
Protection degree / 防水等級	IP62				
Material / 外觀材質	ABS				
Wiring method / 出線方式	Transmitter：M12 pigtailed type(5P) / M12接頭15cm電線式				
	Receiver：M12 pigtailed type(5P) / M12接頭15cm電線式				
Option / 選購配件 (Page 252 / Page 256)	OAP-M008 Mounting Bracket / OAP-M008固定架			OAP-M016 Mounting Bracket / OAP-M016固定架	
	Connectors / 線材：M125R-PUR-2M / M125R-PUR-5M				
Weight / 重量	Approx.200g			Approx.253g	

OAP

RU18

◆ Characteristic / 特點：

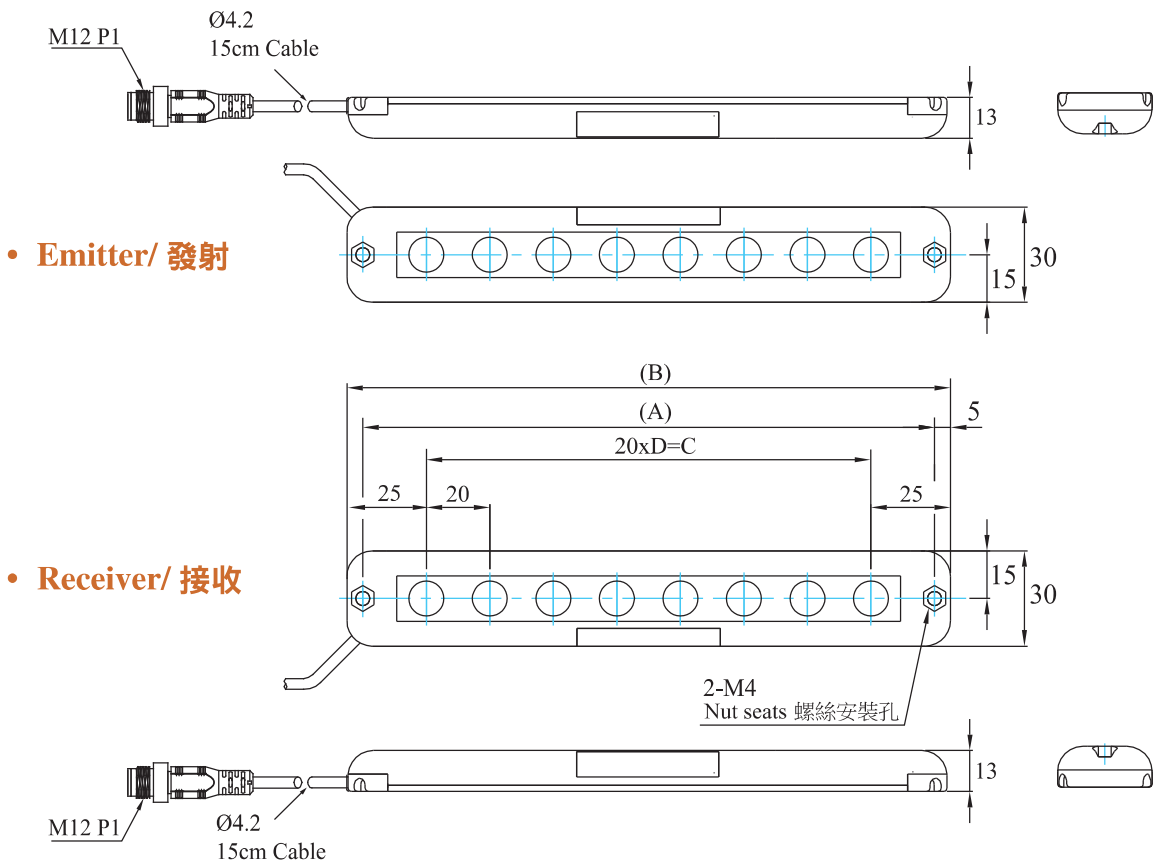
- Ultra slim body, 13mm thickness only.
/ 13mm超薄型，厚度僅有30mm。
- Min. Detectable Object Ø30mm.
/ 最小檢測物Ø30mm。
- Green and red LED blink in sequence from top to bottom under normal emission. All LED light up under the emitting circuit failure.
/ 未感應時，綠色與紅色LED依序閃爍，當有物體遮斷時，LED則全部一起亮。



◆ Specifications / 規格表：

Model / 型號	NPN D.on	OAP-2008-NK	OAP-2008S-NK	OAP-2016-NK	OAP-2016S-NK
	PNP D.on	OAP-2008-PK	OAP-2008S-PK	OAP-2016-PK	OAP-2016S-PK
Sensing type / 檢出方式	Through beam / 對照式				
Resolution / 分辨率	30 mm opaque object 不透明物體				
Sensing distance / 檢出距離	0.6 M ～ 5 M		0.3 M ～ 2 M	0.9 M ～ 5 M	0.5 M ～ 2 M
Sensing Height / 檢測高度	140 mm			300 mm	
Emitting light / 發光源	Infrared LED(紅外線發光LED)：850 nm				
No.of Beams/光軸數	8			16	
Beam pitch / 光軸間距	20 mm				
Indicating LED / LED指示燈	5 LEDs each on emitter and receiver.			7LEDs each on emitter and receiver.	
	LEDs blink from top to bottom under the normal emission. All LEDs light up under the emitting circuit failure and will become blinking until the normal emission.				
	More than a beam is covered ON（Dark On） 任意一個光束被遮斷即輸出				
Running type / 運轉方式					
Operating voltage / 工作電壓	DC12 ～ 24 V±10% (ripple P-P：10% Max.)				
Current Consumption / 消耗電流	Transmitter：90 mA Max.			Transmitter：135 mA Max.	
	Receiver：35 mA Max.			Receiver：70 mA Max.	
Load current / 負載電流	100 mA Max at DC 24V				
Protection circuit / 保護電路	Reversed Supply circuit protection, Short circuit protection output 電源反接保護及輸出短路保護				
Response time / 反應時間	Off to On：15 ms Max.				
	On to Off：20 ms Max.				
Insulation resistance / 隔離阻抗	20MΩ min. (DC500V)				
Voltage withstandability / 絕緣耐壓	AC1000V 60Hz for 60 Sec.				
Operating temperature/工作溫度	- 10℃ ～ + 45℃（No freezing allowed不可結霜,結冰）				
Ambient humidity / 工作溼度	35% ～ 85% RH 相對溼度				
Storage temperature / 儲存時溫度	- 10℃ ～ + 45℃（No freezing allowed不可結霜,結冰）				
Storage humidity / 儲存時溼度	35% ～ 95% RH 相對溼度				
Protection degree / 防水等級	IP62				
Material / 外觀材質	ABS				
Wiring method / 出線方式	Transmitter：M12 pigtailed type(5P) / M12接頭15cm電線式				
	Receiver：M12 pigtailed type(5P) / M12接頭15cm電線式				
Option / 選購配件 (Page 252 / Page 256)	OAP-M008 Mounting Bracket / OAP-M008固定架			OAP-M016 Mounting Bracket / OAP-M016固定架	
	Connectors / 線材：M125R-PUR-2M / M125R-PUR-5M				
Weight / 重量	Approx.200g			Approx.253g	

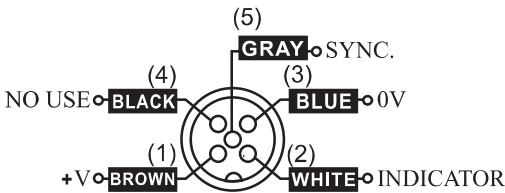
◆ Dimensions / 尺寸圖 : (unit:mm)



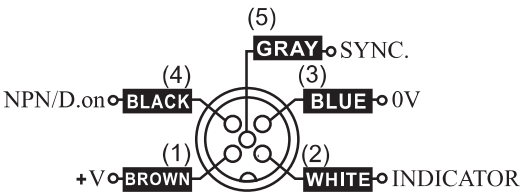
Model	(A)	(B)	(C)	(D)
OAP-2008(S)-□K	180mm	190mm	140mm	7
OAP-2016(S)-□K	340mm	350mm	300mm	15

◆ Wiring diagrams / 接線圖

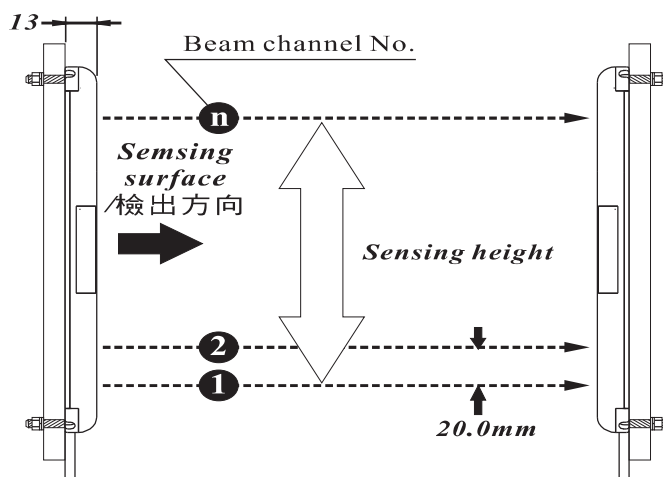
• Emitter/ 發射



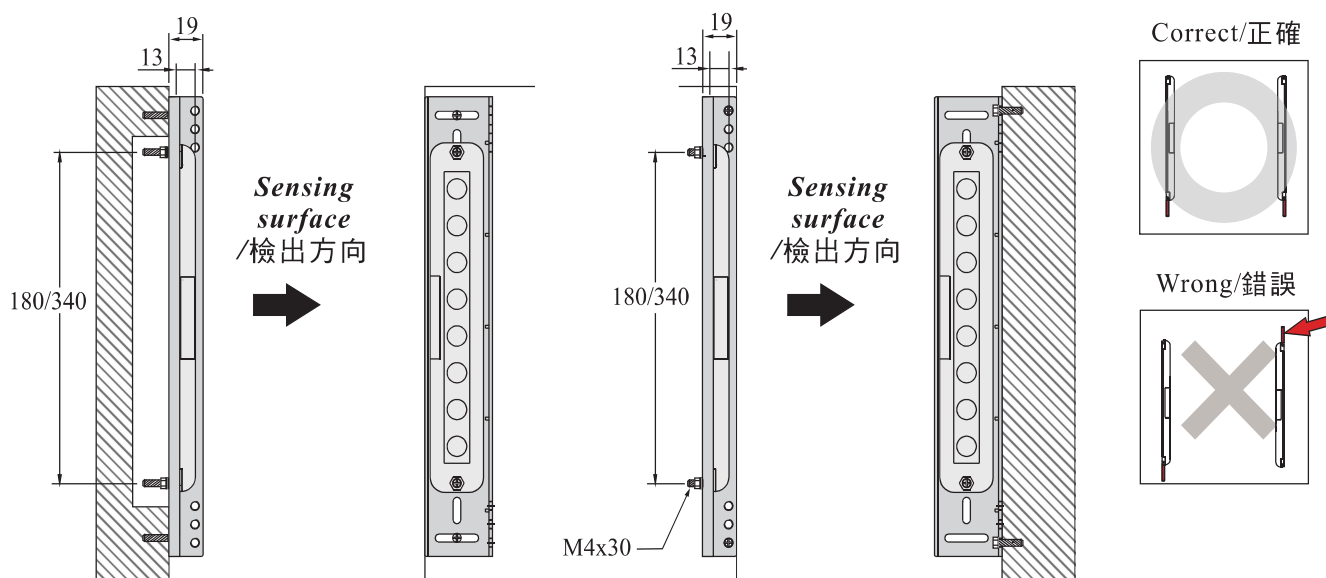
• Receiver/ 接收



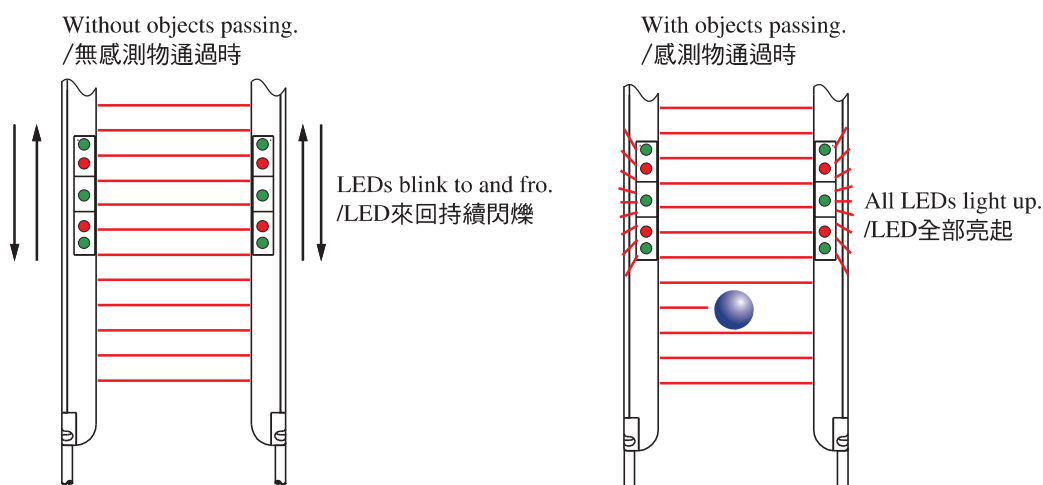
◆ Mounting / 安裝方式：



◆ OAP-Bracket Mounting / OAP固定架安裝方式：

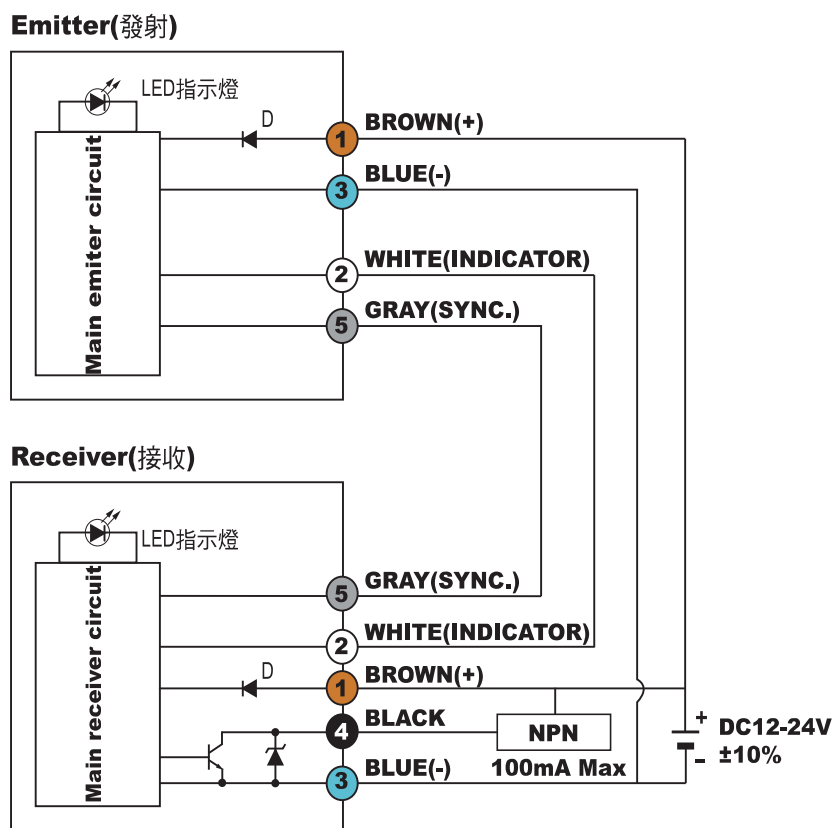


◆ Indicator / 指示燈：



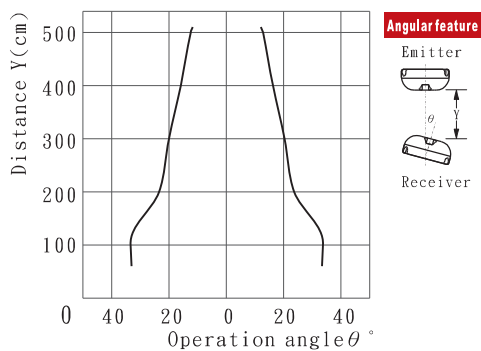
Model	Without objects passing.	With objects passing.
OAP-2008	5 LEDs blink to and fro (from top to bottom). (Green,Red,Green,Red,Green)	All 5 LEDs light up. (Green,Red,Green,Red,Green)
OAP-2016	7 LEDs blink to and fro (from top to bottom). (Green,Red,Green,Red,Green,Red,Green)	All 7 LEDs light up. (Green,Red,Green,Red,Green,Red,Green)

◆ I/O Circuit Diagram / 接線圖：

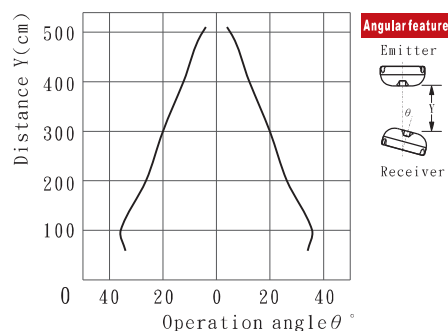


◆ Engineering data / 工程數據：

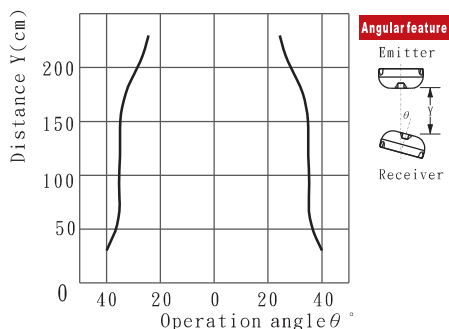
OAP-2008-□ Angular deviation



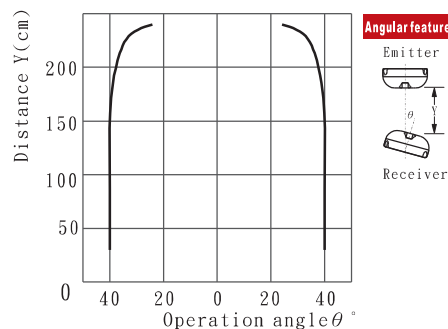
OAP-2016-□ Angular deviation



OAP-2008S-□ Angular deviation

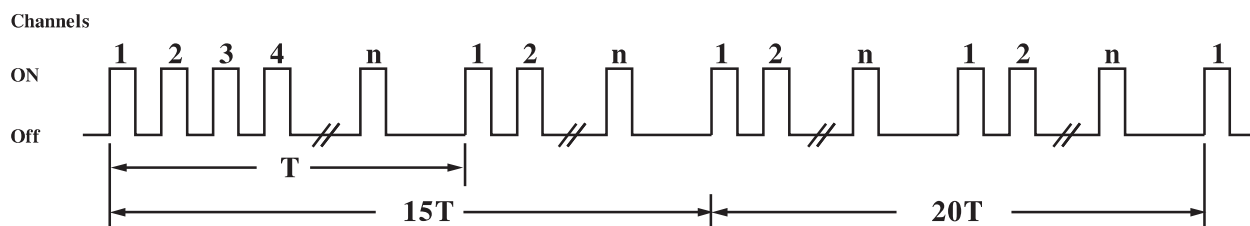
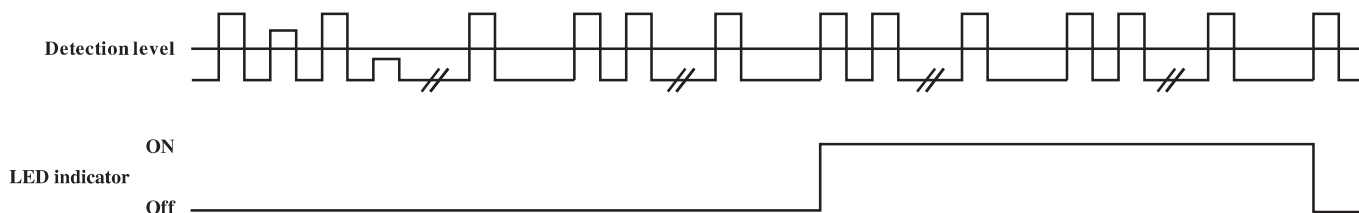


OAP-2016S-□ Angular deviation

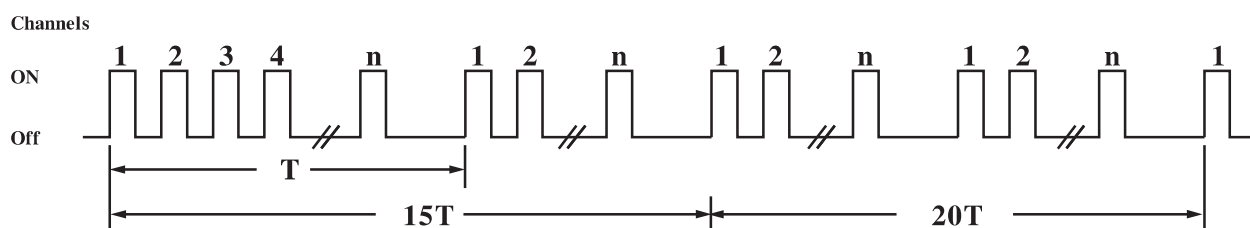
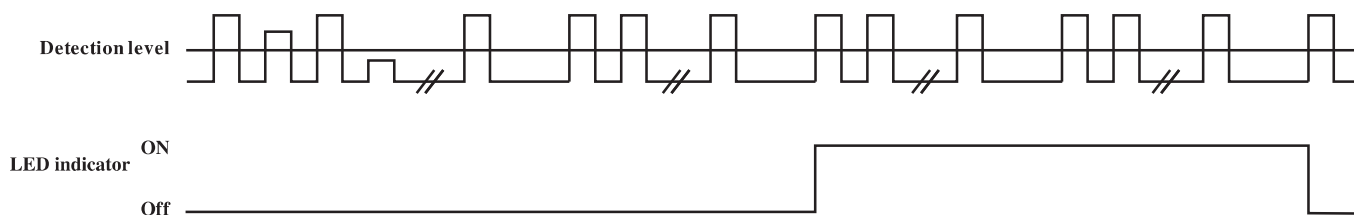


◆ Timer chart / 時序圖：

• OAP-2008-□

EmitterReceiver

• OAP-2016-□

EmitterReceiver

◆ Attention / 注意事項：

⚠ Warning1 / 警告1

This product is not permitted to use with the machines which are not stopped electronically by electronic control. /不可使用於無立即停止電子控制式的機器。

⚠ Warning2 / 警告2

Be sure to set some amount of safe distance between the sensor and dangerous point.
/在感應器及危險區域間，必須保持安全距離。

- Safe distance (D) formula. Min distance is 150mm.
/安全距離(D)公式。最短距離150mm。

$$D = 2000 \times T + \alpha \quad (D \leq 500\text{mm})$$

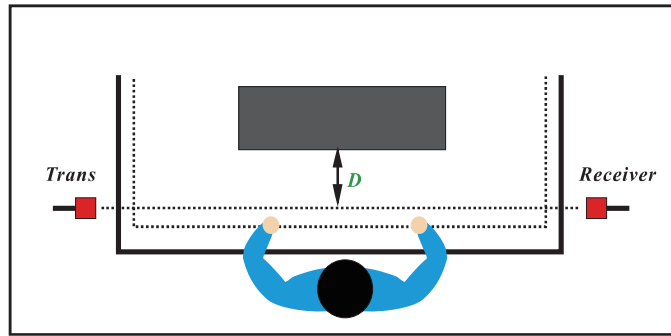
$$D = 1600 \times T + \alpha \quad (D > 500\text{mm})$$

$$D = \text{safe distance (mm)}$$

$$T = \text{response time (machine+sensor)}$$

$$\text{反應時間} = (\text{機器的反應時間} + \text{感應器的反應時間})$$

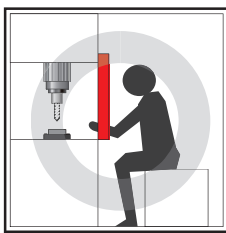
$$\alpha = 90\text{mm}$$



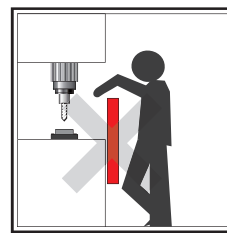
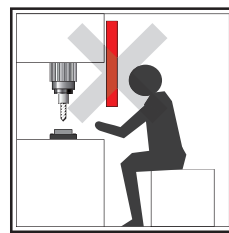
⚠ Warning3 / 警告3

Let work keep working through the detecting range.
/在感測範圍內進行工作。

◆ Correct/正確

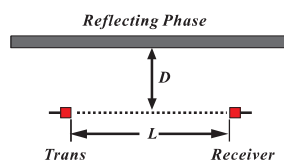
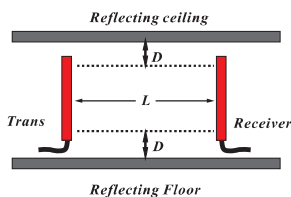


◆ Wrong/錯誤



⚠ Warning4 / 警告4

When installing, please think of other reflecting object which may cause malfunction.
/安裝時，考慮是否有其它會導致機能故障的反射物。



Acceptable installation distance

/可接受的安裝範圍

$$D \geq 150\text{mm}$$

$$L = 0.3 \sim 5\text{M}$$

◆ Characteristic / 特點：

- Light pitch 10mm. Detecting different shaped targets.

/ 光軸間距10mm，可檢知不規則物品。

- Light bar output indicators.

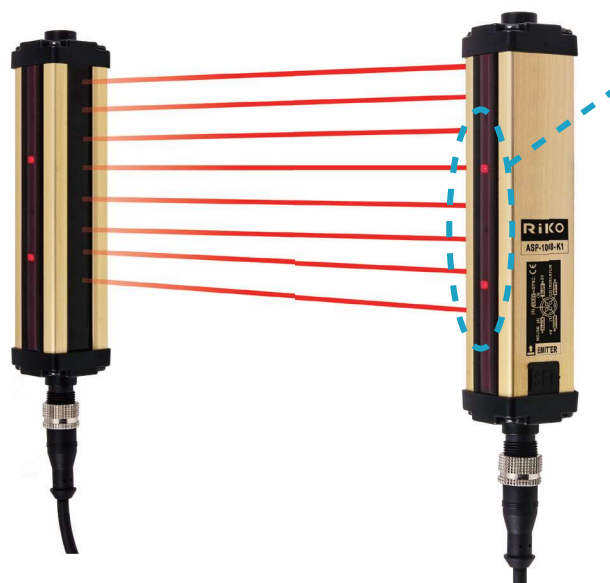
/ 專利Light-bar動作指示燈。

- Durable aluminum extrusion structure.

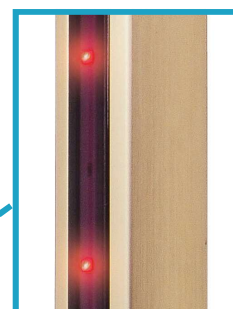
/ 鋁擠型結構，堅固耐用。

- NP model：NPN or PNP, L.on or D.on selectable.

/ 新型NP電路：NPN或PNP，L.on或D.on可選擇。



LED Indicator

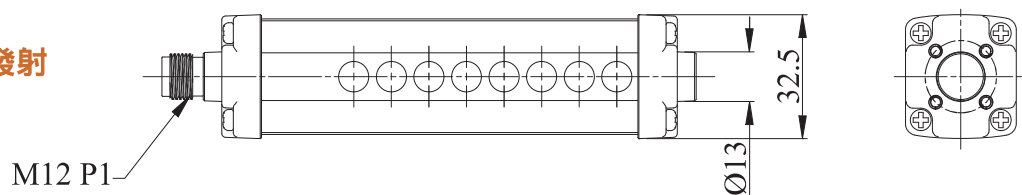


◆ Specifications / 規格表：

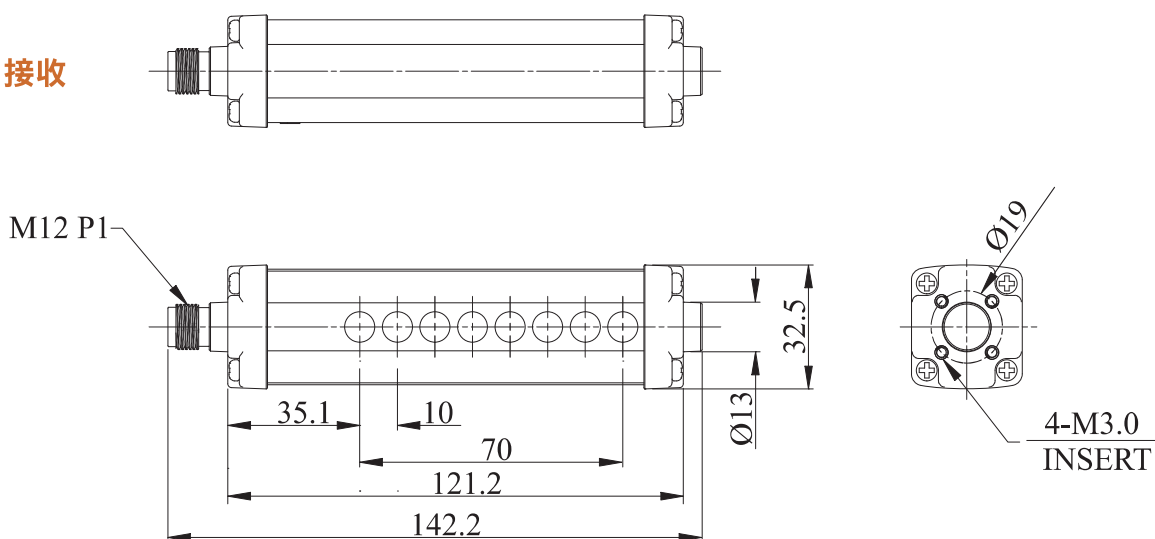
Model / 型號	NPN or PNP L.on/D.on	ASP-1008-K1
No.of Beams/光軸數		8
Sensing Height / 檢測高度		70 mm
Beam pitch / 光軸間距		10 mm
Sensing type / 檢出方式		Through beam / 對照式
Resolution / 分辨率		15 mm opaque object 不透明物體
Sensing distance / 檢出距離		0.3 M ~ 2 M
Emitting light / 發光源		Infrared LED(紅外線發光LED)：850 nm
Indicating LED / LED指示燈		Blinking or shining output indicators. / 動作指示燈有閃爍式、恆亮式
Running type / 運轉方式		More than one beam is covered ON (Dark On) / 任意一個光束被遮斷即輸出
Operating voltage / 工作電壓		DC12 ~ 24 V±10% (ripple P-P：10% Max.)
Current Consumption / 消耗電流		Transmitter：45 mA Max. Receiver：35 mA Max.
Load current / 負載電流		100 mA Max. at DC 24V
Protection circuit / 保護電路		Reversed Supply circuit protection, Short circuit protection output / 電源反接保護及輸出短路保護
Response time / 反應時間		Off to On：5 ms Max. On to Off：5 ms Max.
Insulation resistance / 隔離阻抗		20MΩ min. (DC500V)
Voltage withstandability / 絕緣耐壓		AC1000V 60Hz for 60 Sec.
Operating temperature/工作溫度		- 10℃ ~ + 45℃ (No freezing allowed / 不可結霜,結冰)
Ambient humidity / 工作溼度		35% ~ 85% RH 相對溼度
Storage temperature / 儲存時溫度		- 10℃ ~ + 45℃ (No freezing allowed / 不可結霜,結冰)
Storage humidity / 儲存時溼度		35% ~ 95% RH 相對溼度
Protection degree / 防水等級		IP62
Material / 外觀材質		Aluminum+ABS / 鋁+ABS
Wiring method / 出線方式		Transmitter：M12 pigtailed type(5P) Receiver：M12 pigtailed type(5P)
Option / 選購配件 (Page 256)		Connectors / 線材：M125R-PUR-2M / M125R-PUR-5M
Weight / 重量		Approx.220g

◆ Dimensions / 尺寸圖 : (unit:mm)

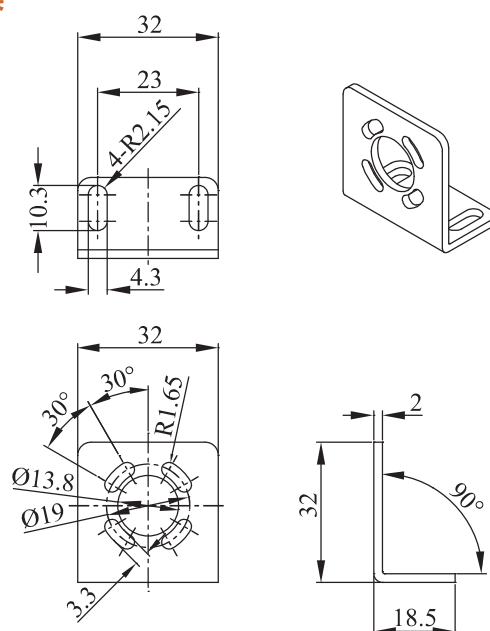
• Emitter/ 發射



• Receiver/ 接收

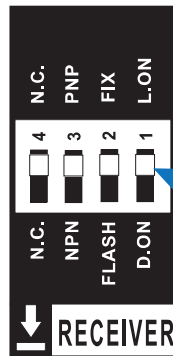


• ASP-Bracket / ASP固定架

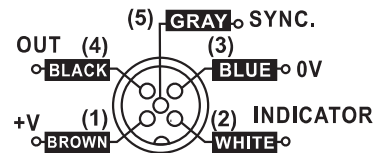


◆ ASP-1008-K1 DIP Switch / ASP-1008-K1指撥開關：

• Receiver/ 接收

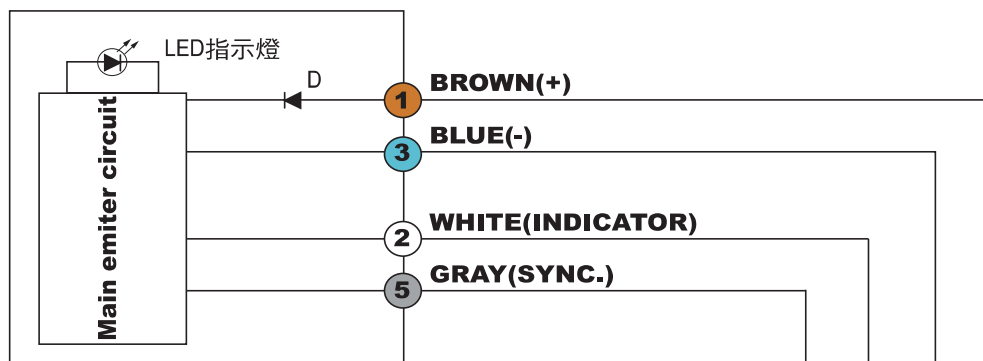


- 4.N.C./N.C.(無功能)
- 3.NPN/PNP OUTPUT
- 2.FLASH/FIX(閃爍/不閃爍)
- 1.D.ON/L.ON(遮光/入光動作)

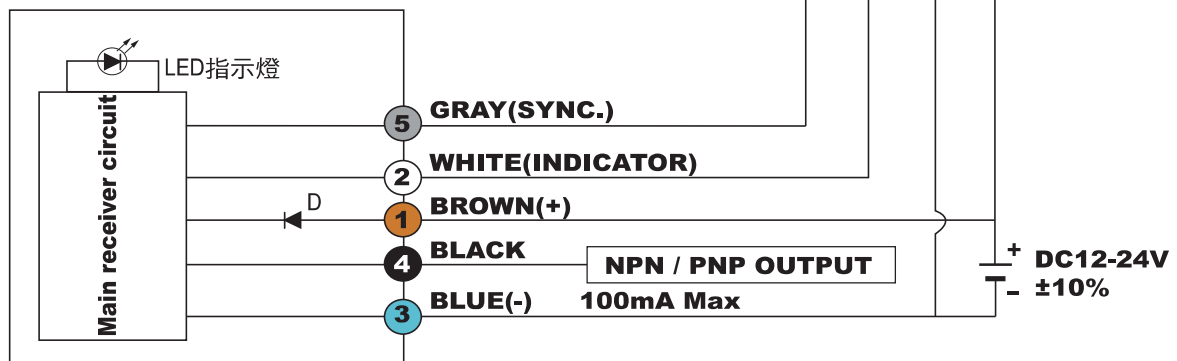


◆ Circuit Diagram / 接線圖：

Emitter(發射)



Receiver(接收)

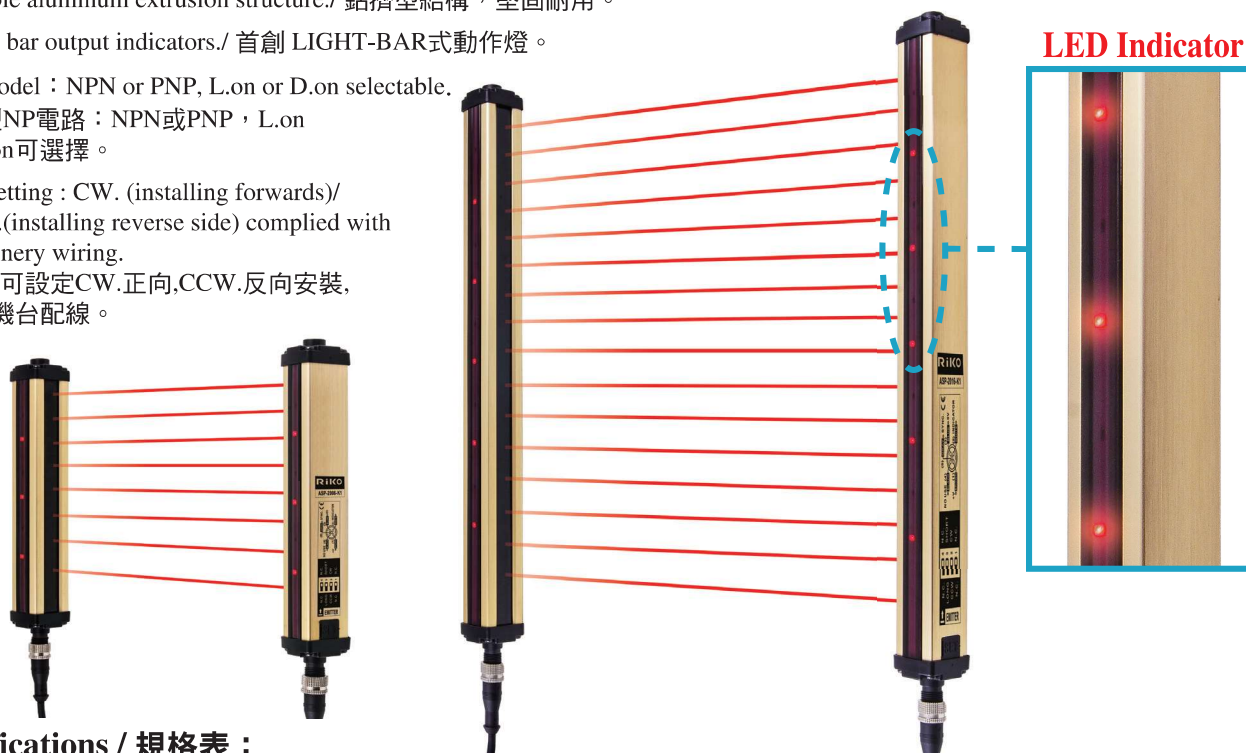


General Purpose Compacted Area Sensor

ASP

◆ Characteristic / 特點：

- Durable aluminum extrusion structure./ 鋁擠型結構，堅固耐用。
- Light bar output indicators./ 首創 LIGHT-BAR式動作燈。
- NP model：NPN or PNP, L.on or D.on selectable.
/ 新型NP電路：NPN或PNP，L.on或D.on可選擇。
- DIP setting：CW. (installing forwards)/
CCW.(installing reverse side) complied with
machinery wiring.
/ DIP 可設定CW.正向,CCW.反向安裝,
配合機台配線。



◆ Specifications / 規格表：

Model / 型號	NPN or PNP L.on/D.on	ASP-2008-K1	ASP-2016-K1	ASP-2024-K1	ASP-2032-K1
		ASP-2008S-K1	ASP-2016S-K1	ASP-2024S-K1	ASP-2032S-K1
No.of Beams/光軸數		8	16	24	32
Sensing Height / 檢測高度		140 mm	300 mm	460 mm	620 mm
Beam pitch / 光軸間距		20 mm			
Sensing type / 檢出方式		Through beam / 對照式			
Resolution / 分辨率		30 mm opaque object 不透明物體			
Sensing distance / 檢出距離		0.6 M ~ 5 M 0.3 M ~ 2 M	0.6 M ~ 5 M 0.3 M ~ 2 M	0.6 M ~ 5 M 0.3 M ~ 2 M	0.6 M ~ 5 M 0.3 M ~ 2 M
Emitting light / 發光源		Infrared LED(紅外線發光LED)：850 nm			
Indicating LED / LED指示燈		Blinking or shining output indicators. 動作指示燈有閃爍式、恆亮式			
Running type / 運轉方式		More than one beam is covered ON (Dark On) 任意一個光束被遮斷即輸出			
Operating voltage / 工作電壓		DC12 ~ 24 V±10% (ripple P-P：10% Max.)			
Current Consumption / 消耗電流		Transmitter：45 mA Max. Receiver：35 mA Max.	Transmitter：60 mA Max. Receiver：40 mA Max.	Transmitter：70 mA Max. Receiver：45 mA Max.	Transmitter：90 mA Max. Receiver：50 mA Max.
Load current / 負載電流		100 mA Max. at DC 24V			
Protection circuit / 保護電路		Reversed Supply circuit protection, Short circuit protection output 電源反接保護及輸出短路保護			
Response time / 反應時間		Off to On：15 ms Max. On to Off：20 ms Max.			
Insulation resistance / 隔離阻抗		20MΩ min. (DC500V)			
Voltage withstandability / 絕緣耐壓		AC1000V 60Hz for 60 Sec.			
Operating temperature/工作溫度		- 10℃ ~ + 45℃ (No freezing allowed不可結霜,結冰)			
Ambient humidity / 工作溼度		35% ~ 85% RH 相對溼度			
Storage temperature / 儲存時溫度		- 10℃ ~ + 45℃ (No freezing allowed不可結霜,結冰)			
Storage humidity / 儲存時溼度		35% ~ 95% RH 相對溼度			
Protection degree / 防水等級		IP62			
Material / 外觀材質		Aluminum+ABS / 鋁+ABS			
Wiring method / 出線方式		Transmitter：M12 pigtailed type(5P) Receiver：M12 pigtailed type(5P)			
Option / 選購配件 (Page 256)		Connectors / 線材：M125R-PUR-2M / M125R-PUR-5M			
Weight / 重量		Approx.320g	Approx.590g	Approx.890g	Approx.1180g

Photo / Area Photo / Ultrasonic Sensor

R5JM
/R3JK

PTQ18

PMF
/RMF
/MMF

PK3
/PK5
/PM6

SU
/SU15
/SU07
/SU30

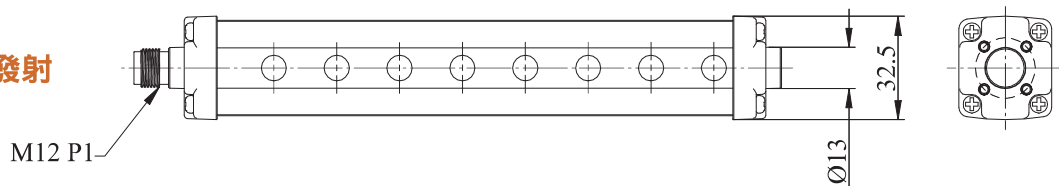
SPR
/RX

OAP
/ASP

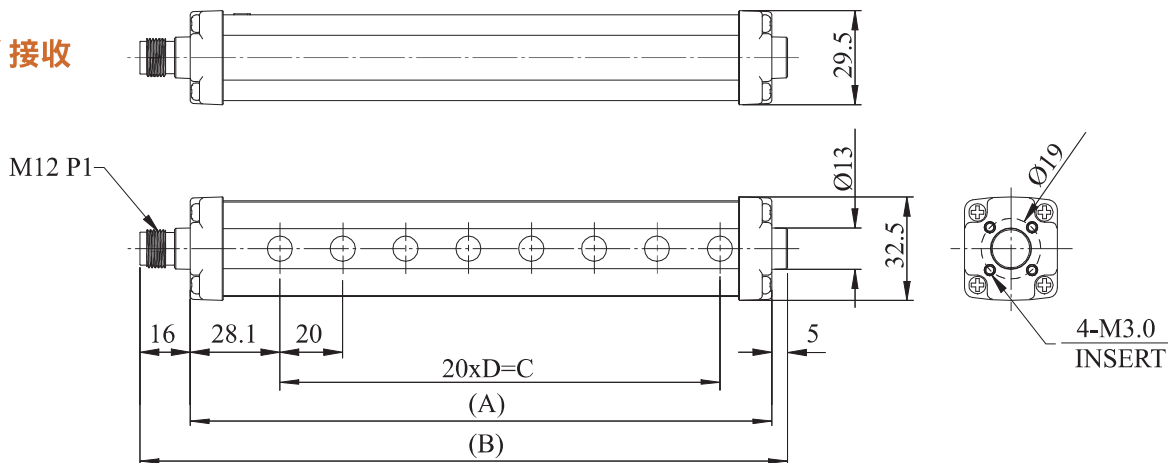
RU18

◆ Dimensions / 尺寸圖 : (unit:mm)

• Emitter/ 發射

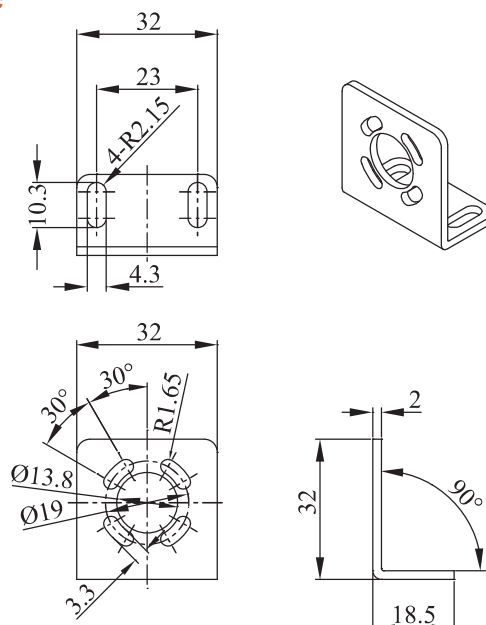


• Receiver/ 接收



Model	(A)	(B)	(C)	(D)
ASP-2008(S)-K1	184.2mm	205.2mm	140mm	7
ASP-2016(S)-K1	344.2mm	365.2mm	300mm	15
ASP-2024(S)-K1	504.2mm	525.2mm	460mm	23
ASP-2032(S)-K1	664.2mm	685.2mm	620mm	31

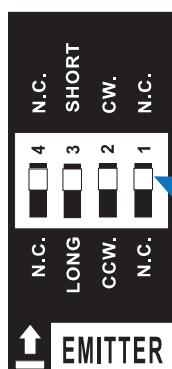
• ASP-Bracket / ASP固定架



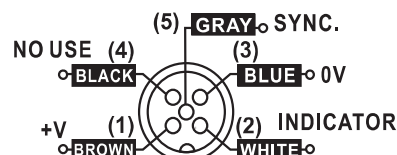
◆ DIP Switch / 指撥開關：

ASP-2008(S)-K1/ ASP-2016(S)-K1 / ASP-2024(S)-K1 / ASP-2032(S)-K1

• Emitter/ 發射



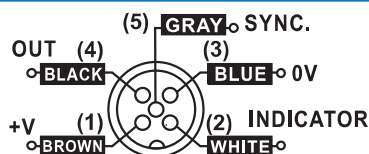
- 4.N.C./N.C.(無功能)
- 3.LONG/SHORT(長/短距)
- 2.CCW./CW.(反/正向掃描)
- 1.N.C./N.C.(無功能)



• Receiver/ 接收

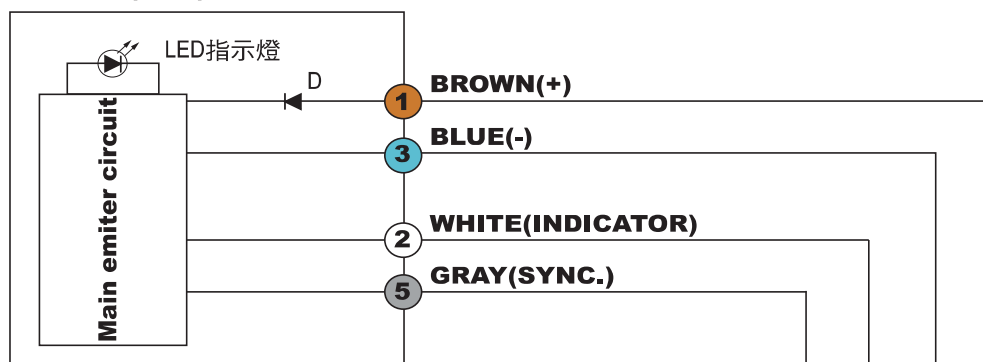


- 4.NPN/PNP OUTPUT
- 3.CCW./CW.(反/正向掃描)
- 2.FLASH/FIX(閃爍/不閃爍)
- 1.D.ON/L.ON(遮光/入光動作)

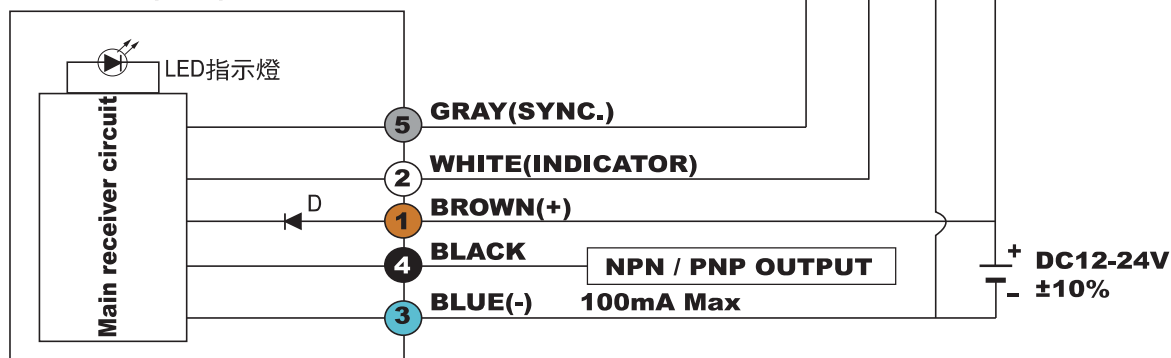


◆ Circuit Diagram / 接線圖：

Emitter(發射)

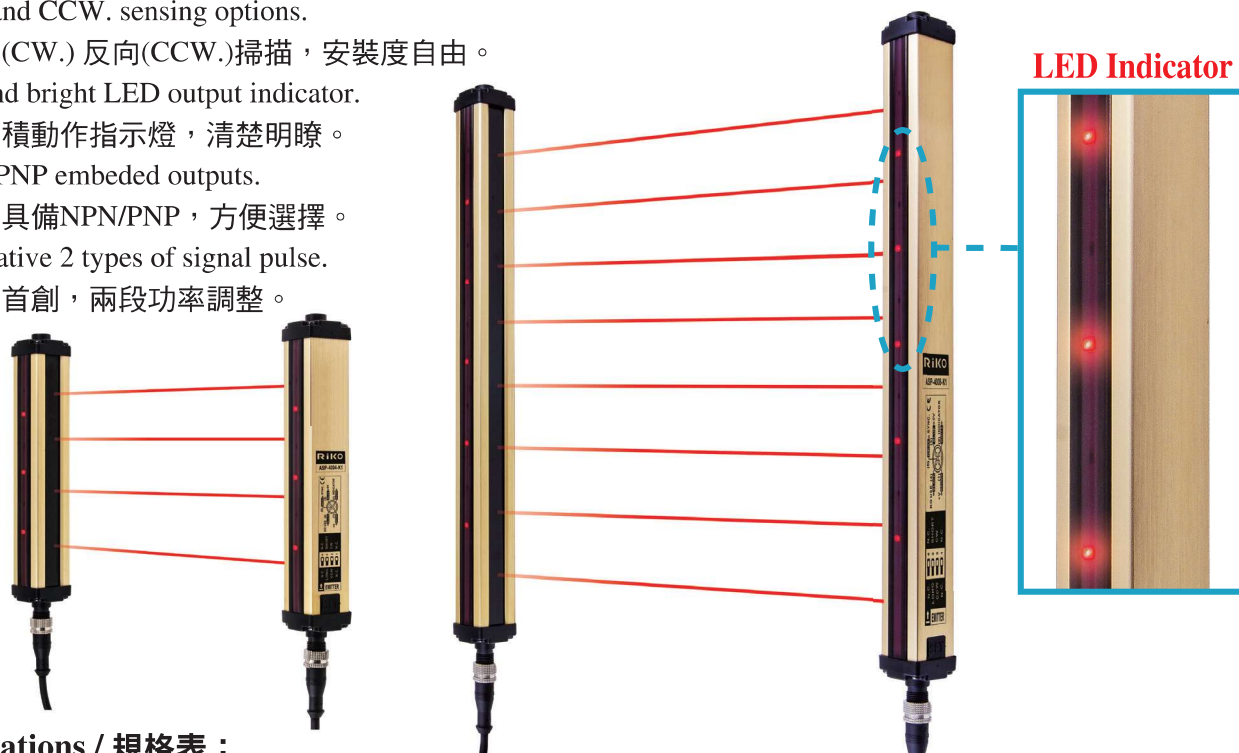


Receiver(接收)



◆ Characteristic / 特點：

- CW. and CCW. sensing options.
/ 正向(CW.) 反向(CCW.)掃描，安裝度自由。
- Big and bright LED output indicator.
/ 大面積動作指示燈，清楚明瞭。
- NPN/PNP embedded outputs.
/ 同時具備NPN/PNP，方便選擇。
- Innovative 2 types of signal pulse.
/ 業界首創，兩段功率調整。

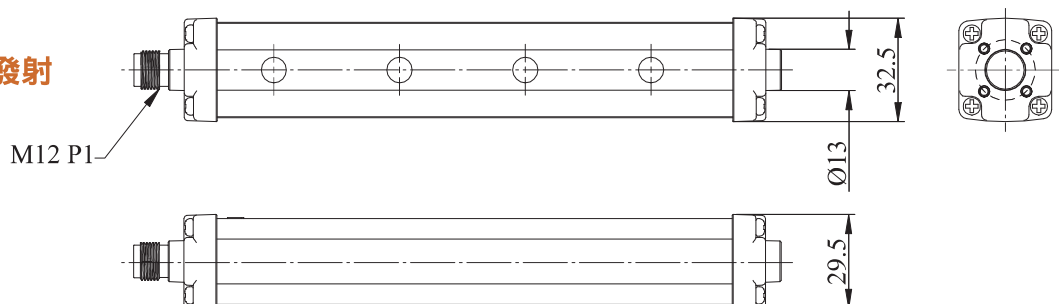


◆ Specifications / 規格表：

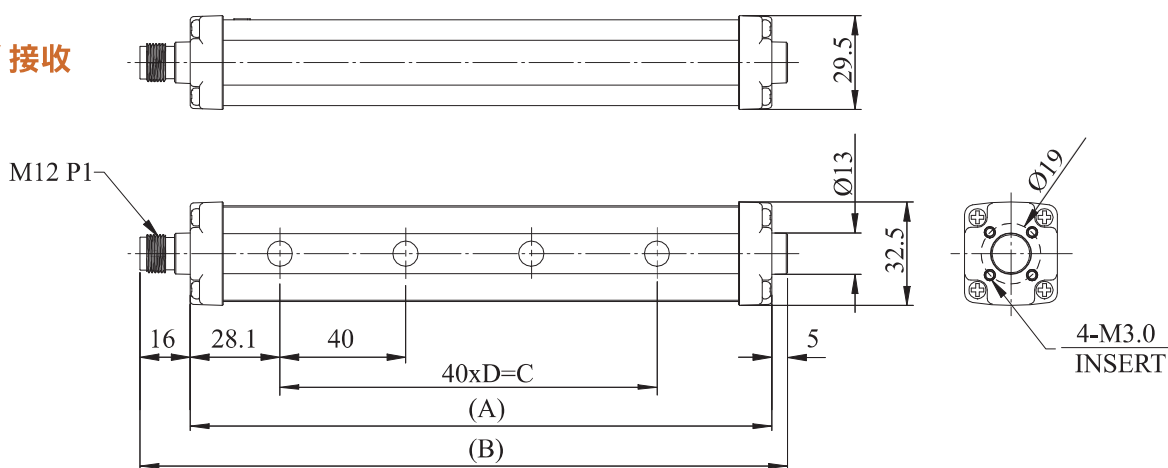
Model / 型號	NPN or PNP L.on/D.on	ASP-4004-K1	ASP-4008-K1	ASP-4012-K1	ASP-4016-K1
		ASP-4004S-K1	ASP-4008S-K1	ASP-4012S-K1	ASP-4016S-K1
No.of Beams/光軸數		4	8	12	16
Sensing Height / 檢測高度		120 mm	280 mm	440 mm	600 mm
Beam pitch / 光軸間距		40 mm			
Sensing type / 檢出方式		Through beam / 對照式			
Resolution / 分辨率		60 mm opaque object 不透明物體			
Sensing distance / 檢出距離		0.6 M ~ 5 M 0.3 M ~ 2 M	0.6 M ~ 5 M 0.3 M ~ 2 M	0.6 M ~ 5 M 0.3 M ~ 2 M	0.6 M ~ 5 M 0.3 M ~ 2 M
Emitting light / 發光源		Infrared LED(紅外線發光LED) : 850 nm			
Indicating LED / LED指示燈		Blinking or shining output indicators. 動作指示燈有閃爍式、恆亮式			
Running type / 運轉方式		More than one beam is covered ON (Dark On) 任意一個光束被遮斷即輸出			
Operating voltage / 工作電壓		DC12 ~ 24 V±10% (ripple P-P : 10% Max.)			
Current Consumption / 消耗電流		Transmitter : 35 mA Max. Receiver : 30 mA Max.	Transmitter : 45 mA Max. Receiver : 35 mA Max.	Transmitter : 55 mA Max. Receiver : 40 mA Max.	Transmitter : 60 mA Max. Receiver : 40 mA Max.
Load current / 負載電流		100 mA Max. at DC 24V			
Protection circuit / 保護電路		Reversed Supply circuit protection, Short circuit protection output 電源反接保護及輸出短路保護			
Response time / 反應時間		Off to On : 15 ms Max. On to Off : 20 ms Max.			
Insulation resistance / 隔離阻抗		20MΩ min. (DC500V)			
Voltage withstandability / 絕緣耐壓		AC1000V 60Hz for 60 Sec.			
Operating temperature/工作溫度		- 10 °C ~ + 45°C (No freezing allowed不可結霜,結冰)			
Ambient humidity / 工作溼度		35% ~ 85% RH 相對溼度			
Storage temperature / 儲存時溫度		- 10 °C ~ + 45°C (No freezing allowed不可結霜,結冰)			
Storage humidity / 儲存時溼度		35% ~ 95% RH 相對溼度			
Protection degree / 防水等級		IP62			
Material / 外觀材質		Aluminum+ABS / 鋁+ABS			
Wiring method / 出線方式		Transmitter : M12 pigtailed type(5P) Receiver : M12 pigtailed type(5P)			
Option / 選購配件 (Page 256)		Connectors / 線材 : M125R-PUR-2M / M125R-PUR-5M			
Weight / 重量		Approx.315g	Approx.580g	Approx.875g	Approx.1160g

◆ Dimensions / 尺寸圖 : (unit:mm)

• Emitter/ 發射

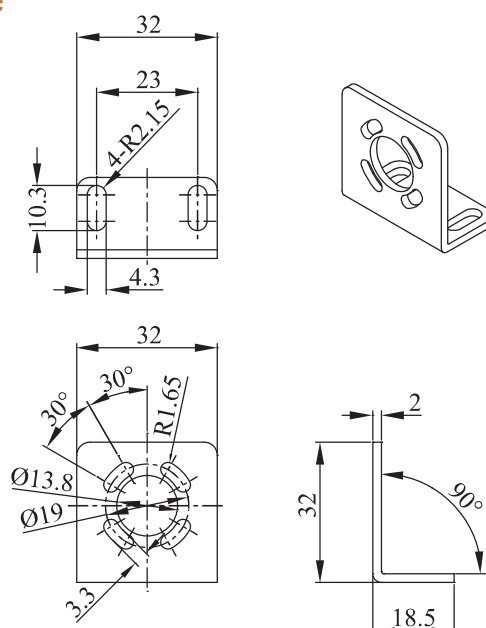


• Receiver/ 接收



Model	(A)	(B)	(C)	(D)
ASP-4004(S)-K1	184.2mm	205.2mm	120mm	3
ASP-4008(S)-K1	344.2mm	365.2mm	280mm	7
ASP-4012(S)-K1	504.2mm	525.2mm	440mm	11
ASP-4016(S)-K1	664.2mm	685.2mm	600mm	15

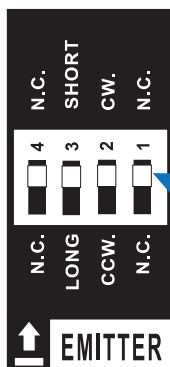
• ASP-Bracket / ASP固定架



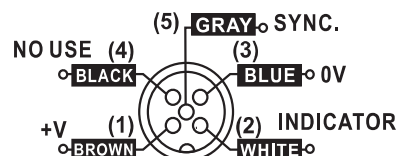
◆ DIP Switch / 指撥開關：

ASP-4004(S)-K1 / ASP-4008(S)-K1 / ASP-4012(S)-K1 / ASP-4016(S)-K1

• Emitter/ 發射



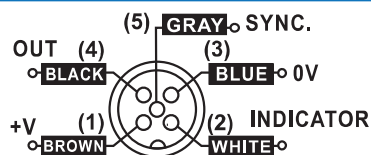
- 4.N.C./N.C.(無功能)
- 3.LONG/SHORT(長/短距)
- 2.CCW./CW.(反/正向掃描)
- 1.N.C./N.C.(無功能)



• Receiver/ 接收

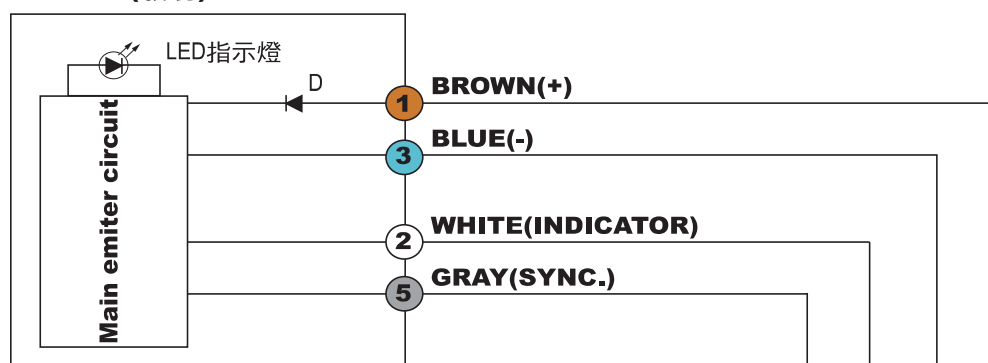


- 4.NPN/PNP OUTPUT
- 3.CCW./CW.(反/正向掃描)
- 2.FLASH/FIX(閃爍/不閃爍)
- 1.D.ON/L.ON(遮光/入光動作)



◆ Circuit Diagram / 接線圖：

Emitter(發射)



Receiver(接收)

