
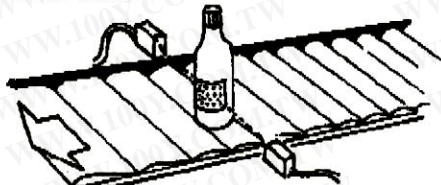

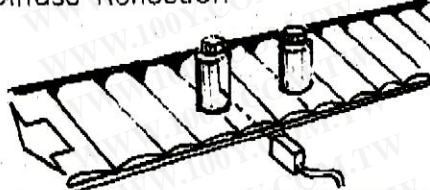
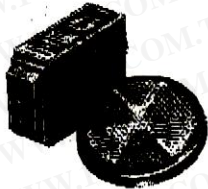
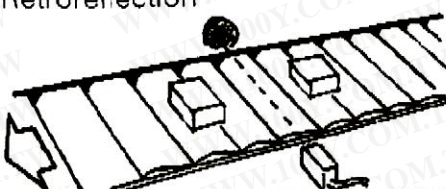


Photoelectric Switch Model Introduction


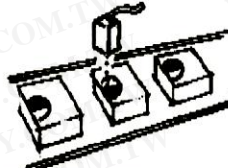
KONTEC

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)


AMPLIFIER BUILT-IN TYPES

Appearance	Detection Method	Models	Operational Range
	Thru-beam 	KS-T2, 3, 4	5m (16ft)
		KA-T 51, 52 (AC Two Wire)	3m (9ft)
	Diffuse Reflection 	KS-R2, 3, 4	70cm (27in)
		KA-R 51, 52 (AC Two Wire)	50cm (20in)
	Retroreflection 	KS-M2, 3, 4	2m (7ft)
		KA-M 51, 52 (AC Two Wire)	

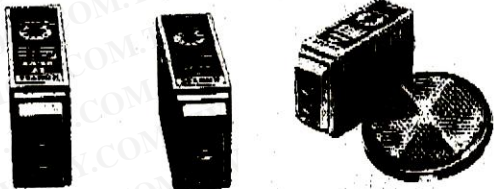
MARK SENSORS

Appearance	Detection Method	Models	Operational Range	Light-beam
		KS-C2	12mm (0.5in)	Red/Green
		KS-C2G		Green
		KS-C2GA	8mm (0.3in)	Green

FIBER TYPES

Appearance	Detection Method	Models	Operational Range
	Thru-beam or Diffuse Reflection	KS-F2, 3, 4	Depending on fiber unit.

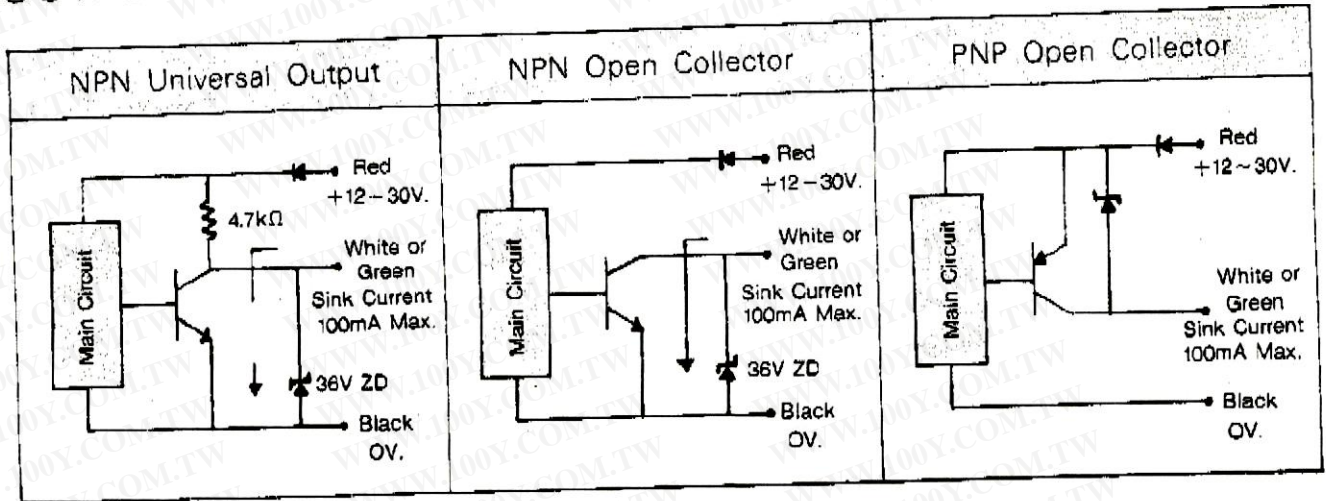
FEATURES

1	<p>■ Rapid Response Following up function to the high-speed process line at the response time of 1 millisecond.</p>	
2	<p>■ Excellent Resistance to Disturbing Light A unique disturbing lights eliminating circuit realizes the KONTEC resistant to 100,000 lux sunlight and 10,000 lux lamp light.</p>	
3	<p>■ Water-proof Types The switch of Amplifier Built-in Types complies with the water-proof standard of IP-66.</p>	
4	<p>■ Low Cost but Reliable Detection Improved assembling processes realizes low-cost sensor but the KONTEC designed circuit is used for reliable detection.</p>	

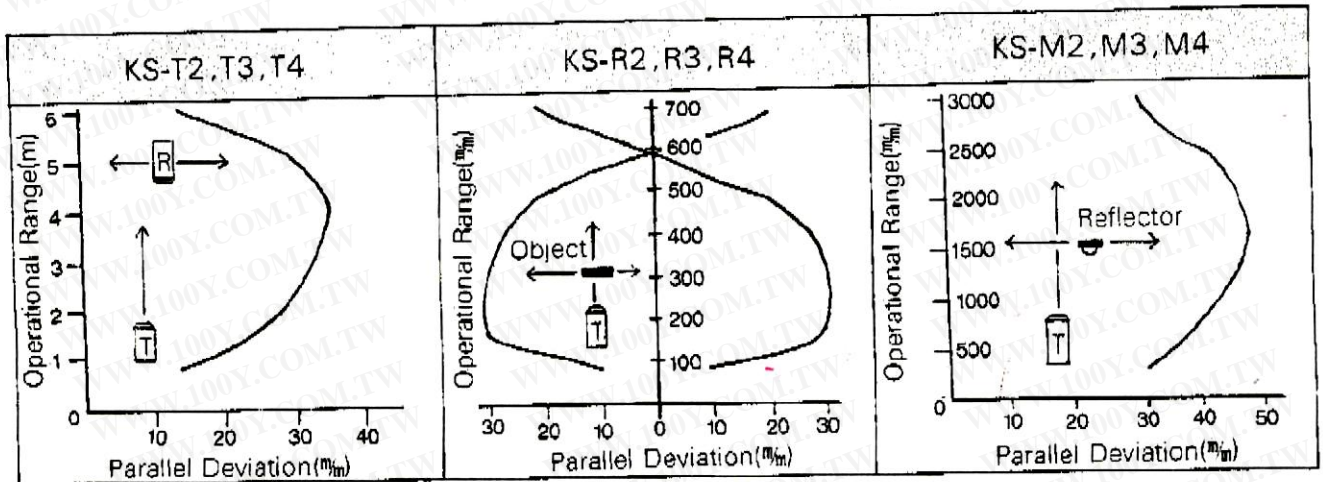
SPECIFICATIONS

Model Item	Series KS-T			Series KS-R			Series KS-M		
	KS-T2	KS-T3	KS-T4	KS-R2	KS-R3	KS-R4	KS-M2	KS-M3	KS-M4
Output Circuit	NPN Uni. Output	NPN Open Coll.	PNP Open Coll.	NPN Uni. Output	NPN Open Coll.	PNP Open Coll.	NPN Uni. Output	NPN Open Coll.	PNP Open Coll.
Detection Method	Thru-beam			Diffuse Reflection			Retroreflection		
Operational Range	5m (>16ft)			70cm (>27in)			0.1--2m (>7ft)		
Detectable Object	Opaque to Translucent			Opaque to Transparent			Opaque to Transparent		
Power Input Voltage	12V~30V±10%DC			Ripple: within 10% peak to peak voltage					
Current Consumption	50mA			40mA			40mA		
Response Time	1 millisecond								
Output Circuit Operation Phase	Light-on/Dark-on incorporated, Sink Current: 100mA (max.)								
Light Source	Infrared (940nm.)								
Operating Indicator	Red beam LED, light-on on beam receiving condition								
Sensitivity Adjustment	Continuously variable								
Extraneous Light Immunity	100,000 Lux.								
	Lamp light 10,000 Lux.								
Protection Structure	Conforming to IP66 (IEC), water-proof type (JIS C0920)								
Operating Temperature	-20°~+70°C (-4°~158°F)								
Storage Temperature	-25°~+80°C (-13°~176°F)								
Vibrating Resistance	10~55Hz, Double Amplitude 1.5mm, each 2 hrs. in direction of X, Y, Z								
Shock Resistance	500m/Sec ² (≒50G), each 3 times in direction of X, Y, Z								
Cable Extension	2m length attached as standard								
Housing Material	Green PBT Tempered Glassfiber								

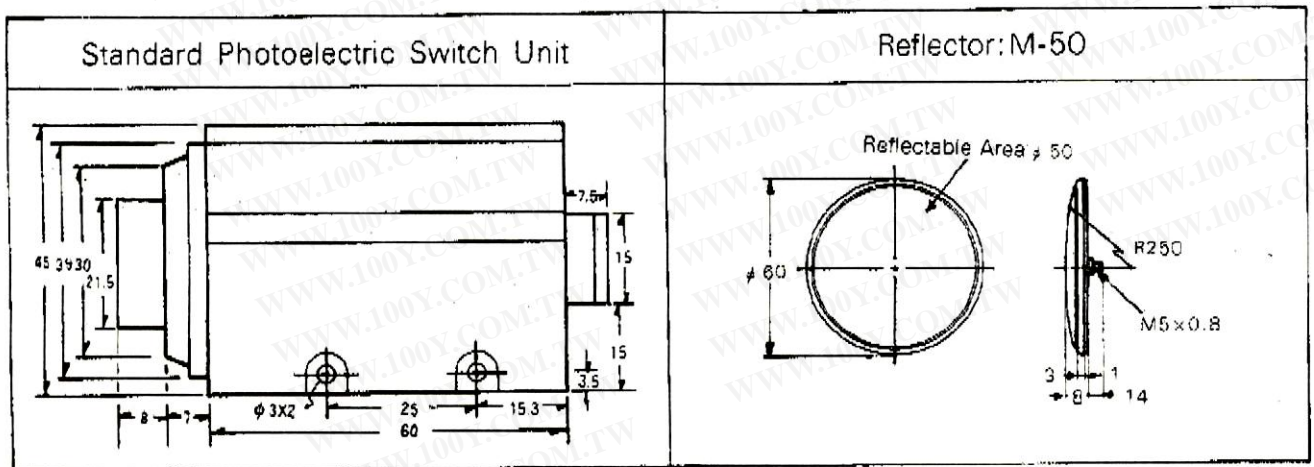
OUTPUT CIRCUIT



SENSING PERFORMANCE

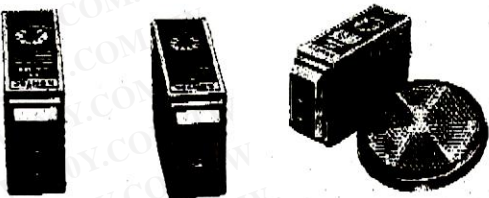


DIMENSIONS (in millimeter)



KONTEC Series KA-T/R/M AC Two Wire Types

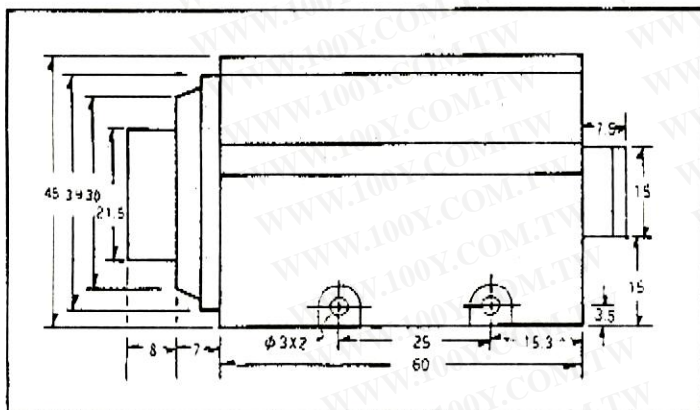
FEATURES

1	<ul style="list-style-type: none"> ■ Easy to wire Only two-wire connection minimizes wiring work and its cost. 		
2	<ul style="list-style-type: none"> ■ Wide Power Input Voltage Range Required input power 100 Volts to 240 Volts in AC. 		
3	<ul style="list-style-type: none"> ■ Firm & Compact Unit Enclosure All sensing function in one PBT water-proof case conforming to IP66. 	4	<ul style="list-style-type: none"> ■ Highly Reliable Detection The high quality KONTEC's sensor realizes the reliable detection that highly immune to extraneous lights and noise.

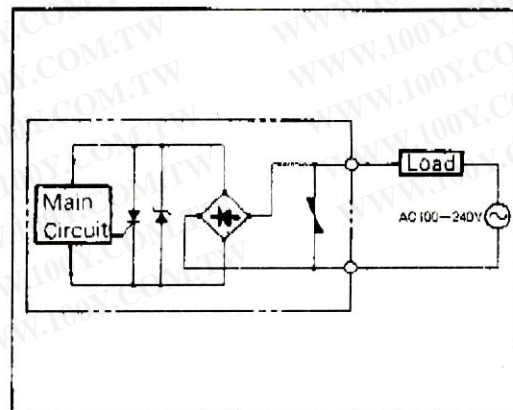
SPECIFICATIONS

Item \ Model	KA-T51	KA-T52	KA-R51	KA-R52	KA-M51	KA-M52
Detection Method	Thru-beam		Diffuse Reflection		Retroreflection	
Operation Phase	Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on
Operational Range	3m(9ft)		50cm(20in)		2m(7ft)	
Power Input Voltage	90--240V AC					
Light Source	Infrared (940nm.)					
Response Time	30 milliseconds					
Leakage Current	≤ 1.8mA					
Output Current	5~200mA					
Operating Indicator	Red LED used, light-on at output circuit energized					
Sensitivity Adjustment	Continuously variable					
Housing Material	Green PBT Tempered Glassfiber					

DIMENSIONS

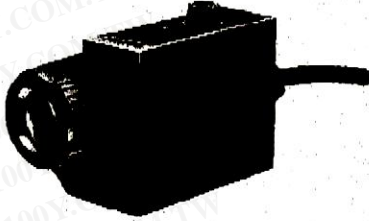


OUTPUT CIRCUIT



Series **KS-C2** Mark Sensors **KONTEC**

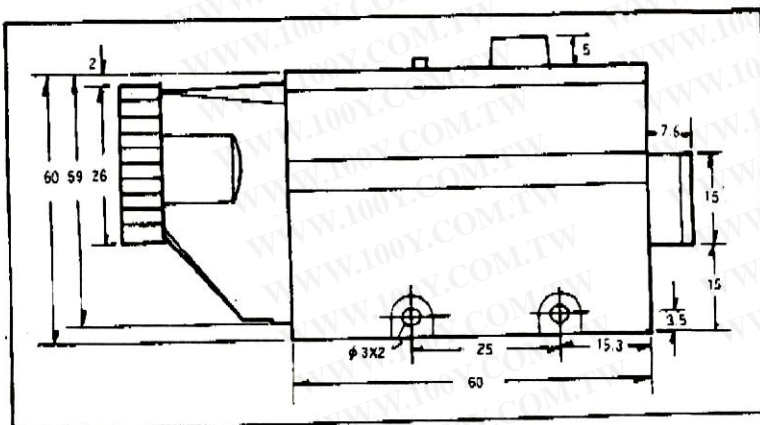
FEATURES

1	<p>■ Dual Light Sources Almost all colors desirminatable for any marks on printing processes.</p>	
2	<p>■ Easy Adjustment Optical sensitivity adjustment mechanism may be easily adjust the sensitivity to properly response.</p>	
3	<p>■ Fine Spot Special designed lens system makes fine marking detection possible.</p>	4
		<p>■ Rapid Response The KONTEC'S Mark Sensor can descriminate a whole visible with a response time as high-speed as 1 millisecond.</p>

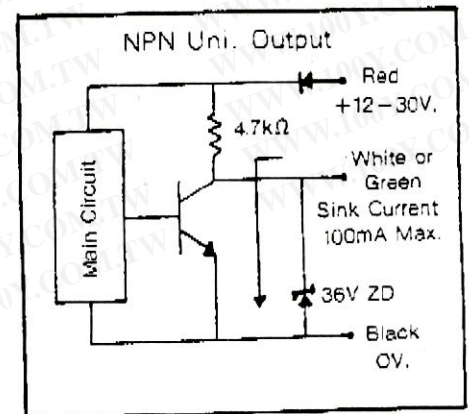
SPECIFICATIONS

Item	Model	KS-C2	KS-C2G	KS-C2GA
Detection Method		Coaxial Reflection		
Power Input Voltage		12V~30V±10%DC Ripple: within 10% peak to peak voltage		
Current Consumption		≤40mA		
Operational Range		12m/m±10%	12m/m±10%	8m/m±10%
Light Source		Red/Green LED selectable	Green LED	Green LED
Response Time		1 millisecond		
Output Circuit		Two output terminals selectable for Light-on and Dark-on		
Operating Indicator		Red beam LED, light-on on beam receiving condition		
Extraneous Light Immunity	Sunlight	30,000 Lux	30,000 Lux	100,000 Lux
	Lamp Light	3,000 Lux	3,000 Lux	10,000 Lux
Housing Material		Gray PBT Tempered Glassfiber		

DIMENSIONS




OUTPUT CIRCUIT



KONTEC Series KS-F Fiber Types

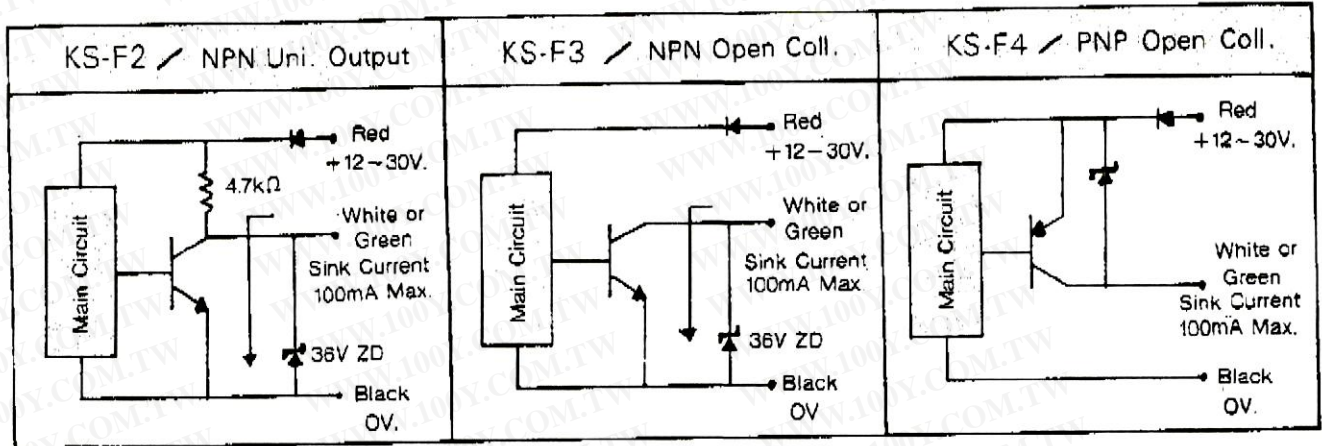
FEATURES

1	<p>■ Variety 21 of Fiber Units Versatile types of fiber units such as thru-beam, reflective, fine, standard, coaxial, sleeve, etc. are available.</p>		
2	<p>■ Rapid Response Following up function to the high-speed process line at the response time of 1 millisecond.</p>		
3	<p>■ Longer Range Detection Thru-beam Types (≠ 1) with lens attachment extends the detection range to 10 times of the normal.</p>	4	<p>■ Water-proof Types The KONTEC's switches comply with the water-proof standard of IP-66 (IEC)</p>

SPECIFICATIONS

Item	Model	KS-F2	KS-F3	KS-F4
Detection Method		NPN Uni. Output	NPN Open Coll.	PNP Open Coll.
Power Input Voltage		12-30V ±10%DC Ripple: within 10% peak to peak voltage		
Current Consumption		≤40mA		
Response Time		1 millisecond		
Output Circuit Operation Phase		Two output terminals selectable for Light-on and Dark-on		
Light Source		Red beam LED, λp (660 nm)		
Operating Indicator		Red beam LED, light-on on beam receiving condition		
Sensitivity Adjustment		Continuously variable		
Extraneous Light Immunity	Sunlight	100,000 lux		
	Lamp Light	10,000 lux		
Protection Structure		Conforming to IP66 (IEC), water-proof type (JIS CO920)		
Operating Temperature		-20° ~ +70°C (-4° ~ 158°F)		
Storage Temperature		-25° ~ +80°C (-13° ~ 176°F)		
Vibrating Resistance		10~55Hz Double amplitude 1.5mm, each 2hrs in the direction of x, y, z		
Shock Resistance		500m/sec ² (±50G), each 3 times in the direction of X, Y, Z,		
Cable Extension		2m length attached as standard		
Housing Material		Green PBT Tempered glassfiber		

OUTPUT CIRCUIT



SPECIFICATIONS/FIBER UNIT

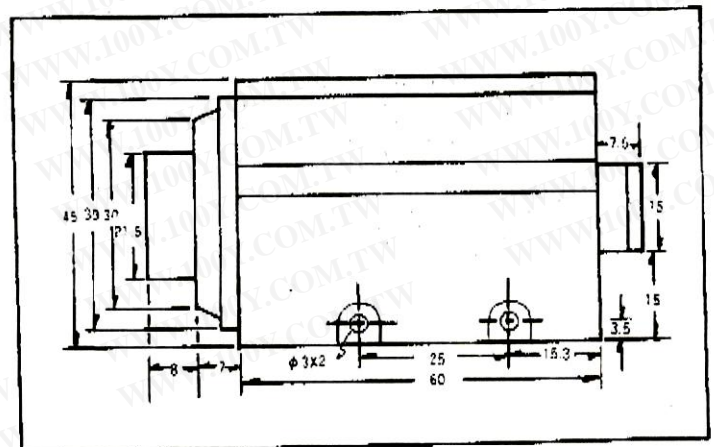
Thru-beam Type	Model	F-5T	F-5T4	F-5T9	F-1T	F-1T	F-1T4	F-1T9	F-3T	F-3T	F-3T4	F-3T9
	Operational Range	40mm			120mm	1m	120mm		100mm	600mm	100mm	
	Fiber	φ 0.5, D1.0mm			φ 1, D2.2mm				φ 1, Multicore			
	Accessories	Standard	w/4cm sleeve	w/9cm sleeve	Standard	w/lense	w/4cm sleeve	w/9cm sleeve	Standard	w/lense	w/4cm sleeve	w/9cm sleeve

Diffuse Reflective Type	Model	F-5R	F-5R4	F-5R9	F-1R	F-1R4	F-1R9	F-2R	F-2R4	F-2R9	F-3R	F-3R4	F-3R9	
	Operational Range	15mm			50mm					15mm				
	Fiber	φ 0.5, D1.0mm			φ 1, D2.2mm			Coaxial			φ 1, Multicore			
	Accessories	Standard	w/4cm sleeve	w/9cm sleeve	Standard	w/4cm sleeve	w/9cm sleeve	Standard	w/4cm sleeve	w/9cm sleeve	Standard	w/4cm sleeve	w/9cm sleeve	

OPTIONS

Item	Lens Attachment	Sideview Attachment
Model	F-LT	F-LS
Form		
Model	F-1T, F-3T	
Application	• For long range detection.	• For Parallel installation.

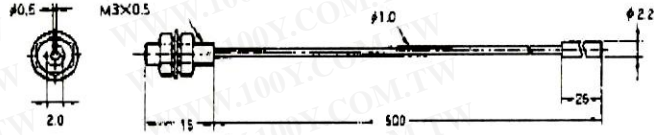
DIMENSIONS



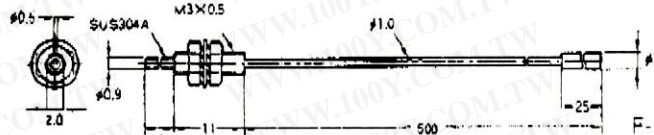
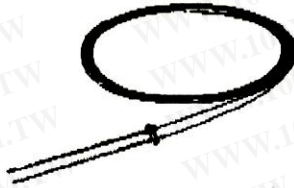
KONTEC Series KS-F

DIMENSIONS (in millimeter)

F-5T: ϕ 0.5

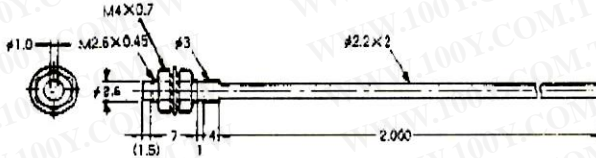


F-5T4, 5T9/with sleeve: ϕ 0.5

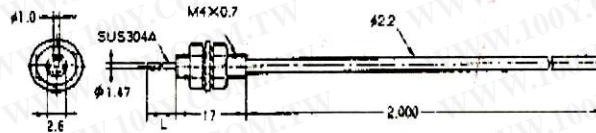


F-5T4 L=40
F-5T9 L=90

F-1T: ϕ 1



F-1T4, 1T9/with sleeve: ϕ 1

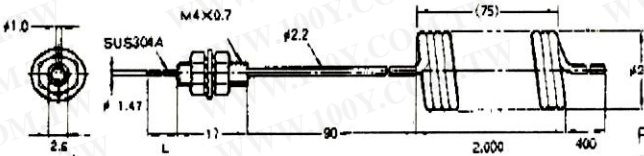


F-1T4 L=40
F-1T9 L=90

F-3T: ϕ 1



F-3T4, 3T9/with sleeve: ϕ 1



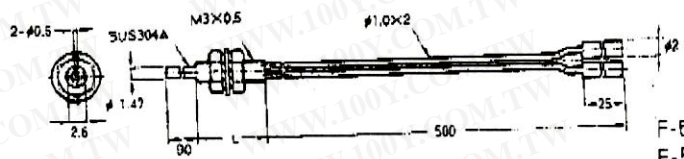
F-3T4 L=40
F-3T9 L=90

DIMENSIONS (in millimeter)

F-5R: ϕ 0.5

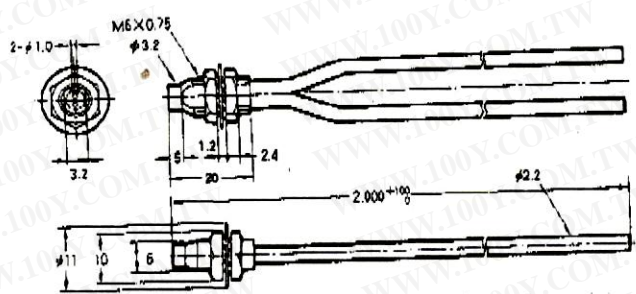


F-5R4, 5R9/with sleeve: ϕ 0.5

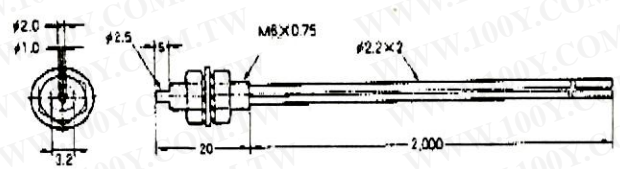


F-5R4 L=40
F-5R9 L=90

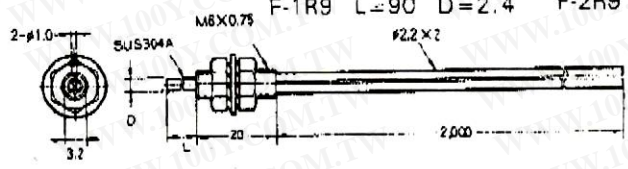
F-1R: ϕ 1



F-2R /Coaxil Reflective

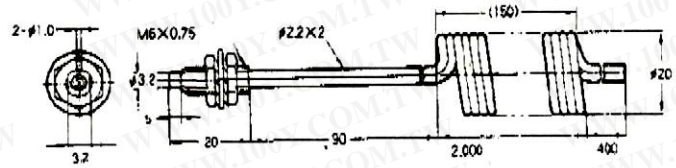


F-1R4, 1R9, 2R4, 2R9/with sleeve: ϕ 1

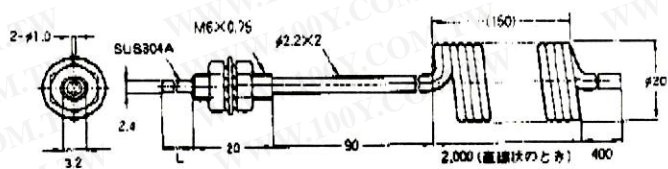


F-1R9 L=40 D=2.4 F-2R4 L=40 D=2.0
F-1R9 L=90 D=2.4 F-2R9 L=90 D=2.0

F-3R: ϕ 1




F-3R4, 3R9/with sleeve: ϕ 1



KONTEC Series P-100 Sensor Controller

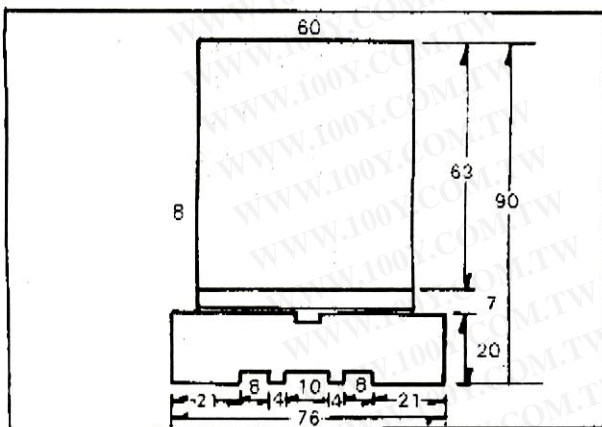
FEATURES

1	■ Broad Power Input Voltage Range Broad power input Voltage ranging from 100V to 240V AC/DC.		
2	■ Easy Use One touch switching to change output phase.		
3	■ Protection Circuit Built-in short-circuit protection circuit for 12V DC output.	4	■ Timer Function available Selectable time functions include: On-delay, Off-delay, and One-shot switch are available for P-100D Type.

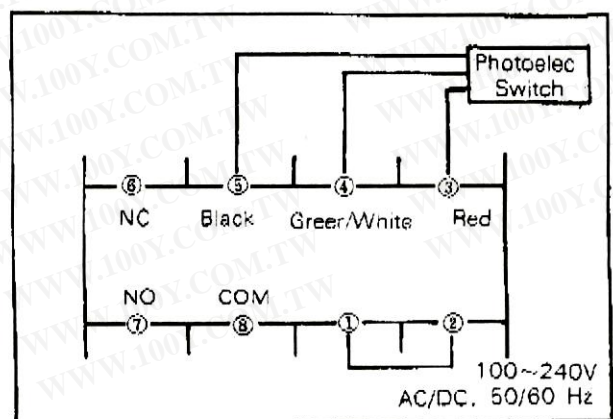
SPECIFICATIONS

Item	Model	General type P-100	Timer Built-in Type P-100D
Power Input Voltage		100-240V, AC/DC, 50/60Hz	
Power Consumption		<3VA	
DC Power Output		12V±10%DC, 100mA max. with short-circuit protective circuit	
Output Capacity		Each controller for one photoelectric switch	
Control Output		One set output relay • Response time: 20milliseconds • Spot contacts Rate: 250V 3A, AC (resistive Load)	
Delay Time Function		None	On-delay, Off-delay & One-shot
Power Indicator		Red LED used	
Operating Indicator		Red LED used, light on at output relay energized	
Housing Material		Gray ABS w/8 pin terminal block	

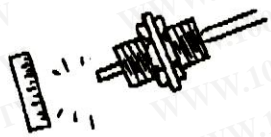

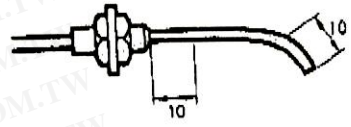
DIMENSIONS (in millimeter)



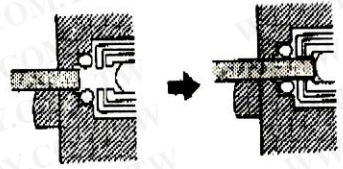
WIRING



PRECAUTION

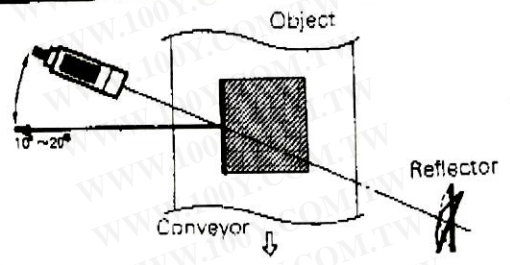
Handling of Fiber Units		
		
The surface of fiber unit should not be polished by coarse materials.	It is recommended that the torsion do not exceed 8 kg-cm.	The minimum radius of curvature is 10 mm.

Assembling of Fiber Units



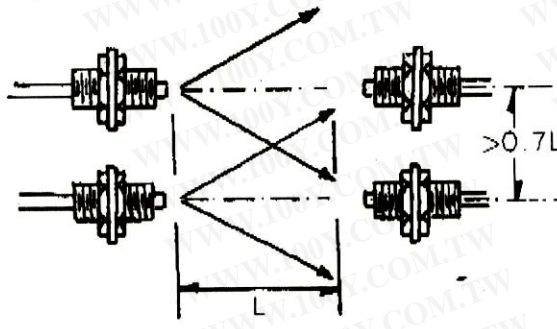
Fiber unit should be inserted into the amplifier unit until it has passed the O-ring and the E-O devices.

Installation of Retroreflective Type



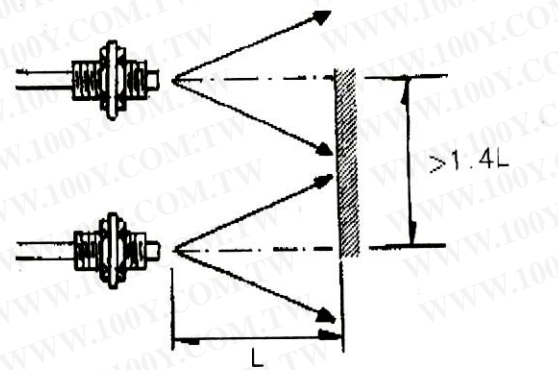
To avoid the interference from the detected object, keeping the angle of 10°~20° between the Sensor and detected object is recommended.

Installation of Fiber Units / Thru-beam Type



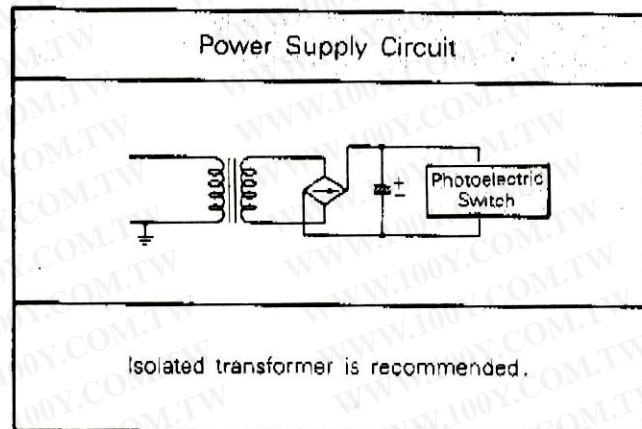
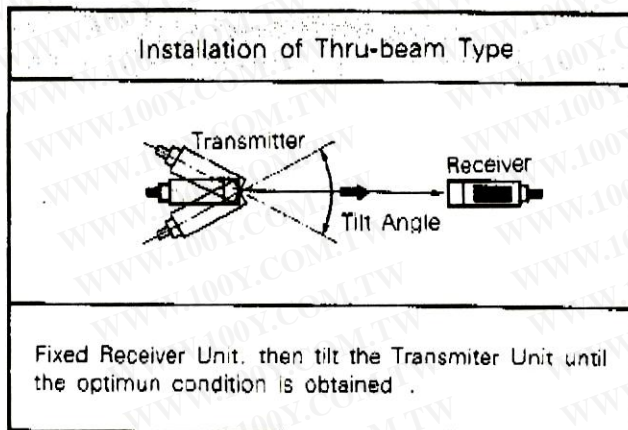
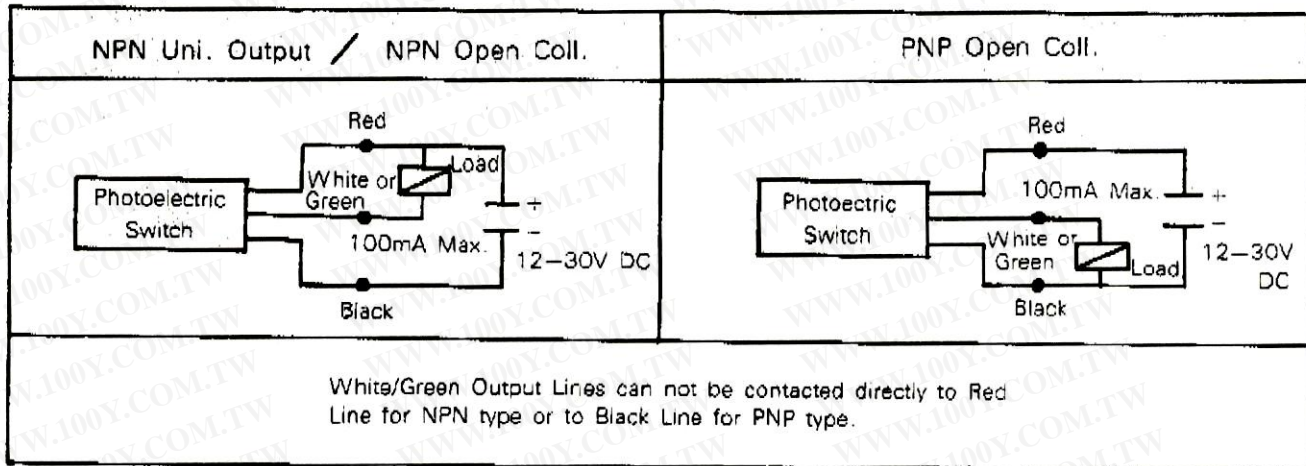
To avoid the interference from each other, the distance between them should be kept longer than 0.7 L.

Installation of Fiber Units / Reflective Type



To avoid the interference from each other, the distance between them should be kept longer than 1.4 L.

OPERATION



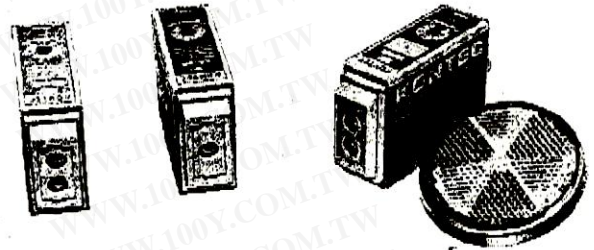
Note: Owing to our policy of continuous improvement, KONTEC reserve the right to change this information without prior notice.

KS | KS-R | KS-M

放大器內藏型光電開關

KONTEC

- 全機種規格，性能皆標準化與歐美日產品有共容性。
- PBT工程塑膠外壳，內部電氣隔離，在有高週波的場合，不受其干擾。
- IP-66耐水型保護結構。



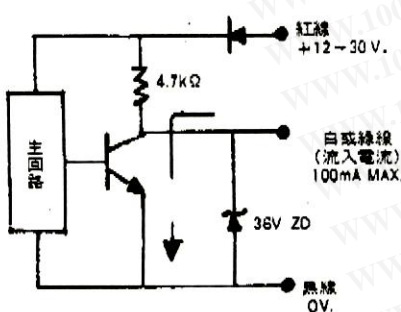
- 1ms 高速應答，使用容易。
- 採用大量生產方式製造—低價格。
- 優異回路設計，抗雜音及抗外光性能良好，操作穩定，無誤動作。

種類

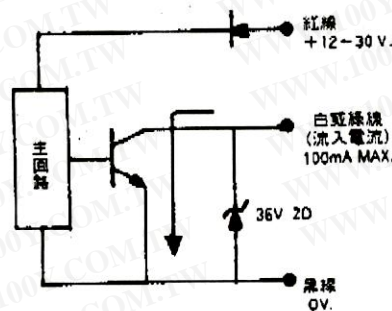
檢出方式	檢出距離	型號	輸出回路
透過型	5m	KS-2R	NPN Universal Output
		KS-3R	NPN Open Collector
		KS-4R	PNP Open Collector
擴散反射型	70cm	KS-R2	NPN Universal Output
		KS-R3	NPN Open Collector
		KS-R4	PNP Open Collector
鏡片反射型	2.5m	KS-M2	NPN Universal Output
		KS-M3	NPN Open collector
		KS-M4	PNP Open Collector

輸出回路

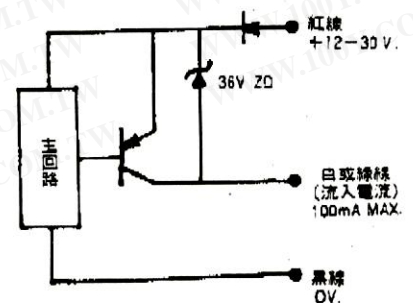
● NPN Universal Output



● NPN Open Collector



● PNP Open Collector



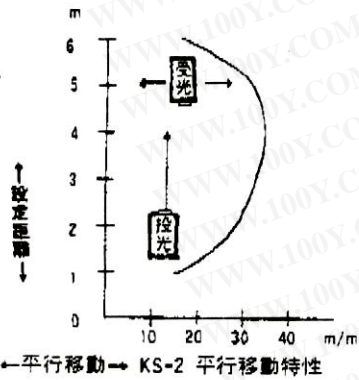
ONTEC KS | KS-R | KS-M

規格

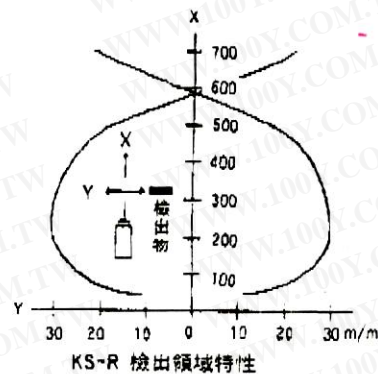
型號	集光 KS-2R, KS-3R, KS-4R 投光 KS-2T	KS-R2, RS-R3, KS-R4	KS-M2, KS-M3, KS-M4
檢出方式	透過型	擴散反射型	鏡片反射型
電源電壓	12~30VDC±10% 漣波10%以下(P-P)		
消耗電流	50mA以下	40mA以下	
檢出距離	5 M	70CM (依20CM X 20CM 白色無光澤紙為標準)	0.1~2.5M
檢出物體	不透明・半透明體	透明・不透明或半透明體	不透明・半透明體
應答時間	1ms以下		
輸出	DARK ON/LIGHT ON 2出力 負荷電流 100mA MAX.		
光源	紅外線LED, 入p940nm		
動作指示	紅色LED・入光點燈		
感度調整	連續可變感度調整器裝備		
抗外光	燈泡	10,000 LUX.	
	太陽光	100,000 LUX.	
保護結構	IEC規格 IP66 (耐水型 JIS C0920)		
運用溫度	動作時: -20~+70℃ 保存時: -25~+80℃		
耐振動	10~55Hz 振幅1.5mm XYZ三方向各2小時		
耐衝擊	500M/S ² (約50G) XYZ三方向各3次		
電線	PVC絕緣電線(φ5.5・12/0.2・4芯)標準長度2m		
外殼	綠色色系・PBT 工程塑膠+玻璃纖維		

動作特性

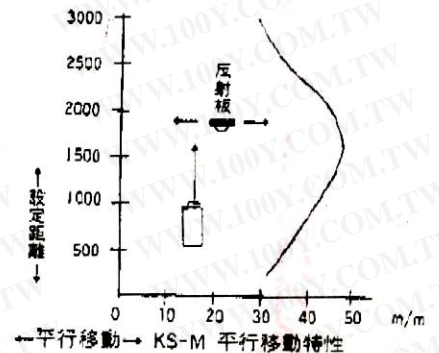
●KS-2R,3R,4R



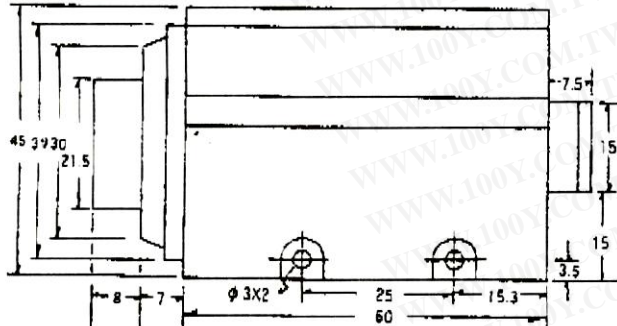
●KS-R2,R3,R4



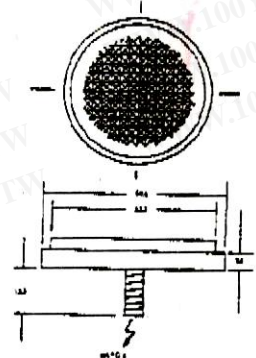
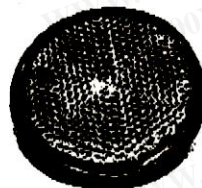
KS-M2,M3,M4

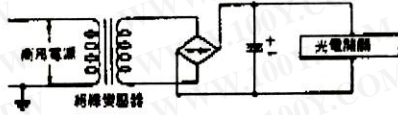


尺寸(單位: mm) ●光電開關(適用所有型號)

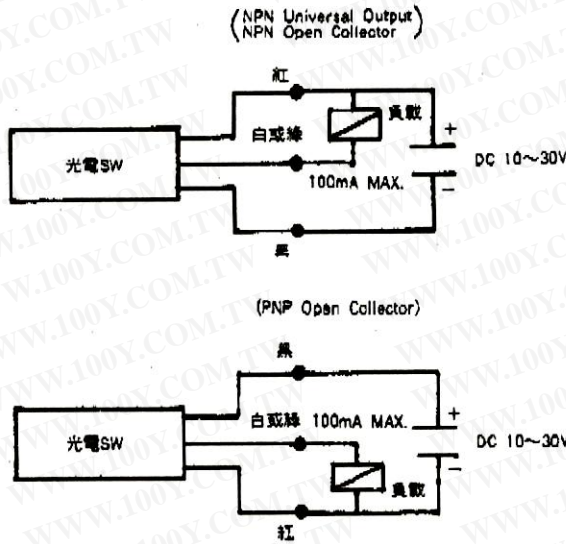


●反射板: M-50





- 電源**
- 如使用自製電源左圖為標準電源回路。
 - 電源須有充足之電流量，且務必加電容器，以便平滑電源。
 - 電容器之計算方式為每一個光電開關 $470\mu F$ 再加負載每增加 $0.1A$ 時須加 $100\mu F$ 。亦即 $(470\mu F + 100\mu F / 0.1A)$ 如此對地區性的電源不穩定，具很大之抵抗力。

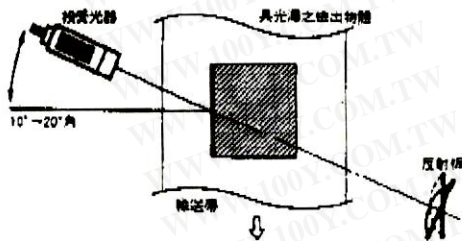


- 配線**
- 左圖為不同輸出回路的配線圖。
 - 白或綠線絕對不能與紅線(NPN型)或黑線(PNP型)短路。
 - 配線完成後請再確認，該配線是光電開關損壞之主要原因。
 - 光電開關電線請勿與高壓線，動力線並行配線。
 - 線須延長時，請用 $0.3mm^2$ 以上之良質線，可延長至 $100m$ 以下。



■調整

- 如左圖左右轉動投光器求指出向角之中心點固定之。
- 受光器亦比照上法求指出向角中心點並固定之。
- 此時之光軸為最準確的。
- 鏡片反射型一邊是投受光器另一邊為反射鏡，亦可比照透過型之方法調整光軸。



■其他

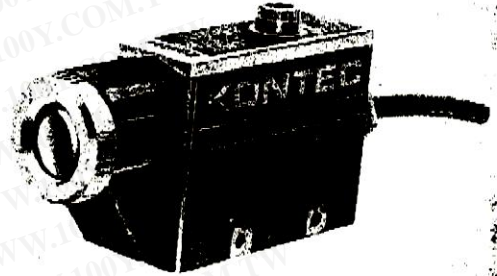
- 鏡片反射型在檢出如打光過之金屬等高反射物體時，請如左圖與被檢出物體呈 $10\sim 20^\circ$ 裝設，可以避兔由物體本身反射光線所導致之誤動作。

KS-C2 標誌檢出光電開關 (專利申請中)

KONTEC

- 投出光線有紅光及綠光可供切換，使用範圍廣泛。
- 特殊光學設計，對於高反射紙面（如電鍍紙，鋁箔紙等）亂反射引起之誤動作有抵抗性。
- 光點細小，易於小標誌之檢出。

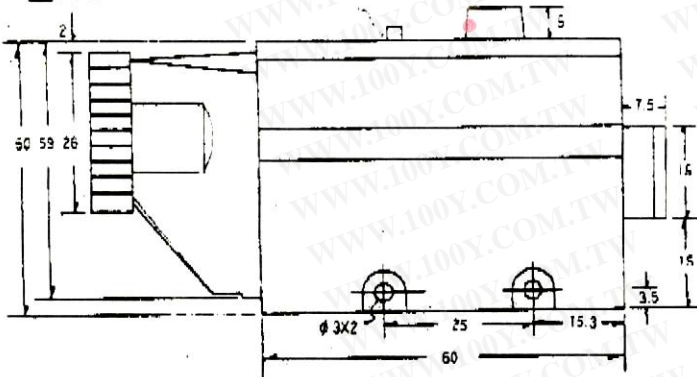
- 具備感度調整旋鈕，調整方便，不須使用工具。
- 調變光源電路結構，抗外亂光性能優異。
- 應答快速，使用容易。



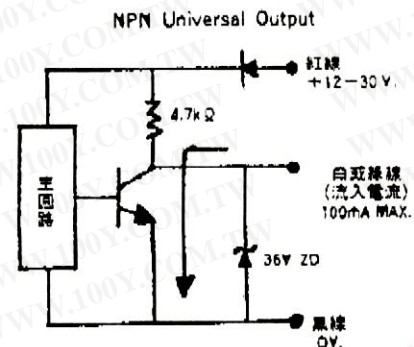
規格

型號	KS-C2	KS-C2G	KS-C2GA
檢出方式	同軸反射型		
電源電壓	12~30VDC ±10% 漣波 10%以下(P-P)		
消耗電流	40mA以下		
檢出距離		12m/m±10%	8m/m±10%
光源	紅光・綠光 LED	綠光 LED	綠光 LED
光點		φ0.5m/m以下	φ1.5m/m以下
應答時間	1ms以下	1ms以下	1ms以下
輸出	DARK ON/LIGHT ON 2出力 負荷電流100mA MAX.		
動作指示	紅色 LED 入光點燈		
感度調整	連續可變感度調整器裝備		
光源切換	付紅綠光切換開關	無	
抗外光	燈泡	3,000 Lux	10,000 Lux
	太陽光	30,000 Lux	100,000 Lux
保護結構	IEC規格 IP66 (耐水型 JIS C0920)		
使用溫度	動作時：-20~70℃ 保存時：-25~80℃		
耐振動	10~55Hz 振幅1.5mm XYZ三方向各2小時		
耐衝擊	100M/S ² (約10G) XYZ三方向各3次		
電線	PVC絕緣電纜 (φ5.5・12/0.2・4芯) 標準長度2M		
外殼	灰色色漆・PBT工程塑膠+玻璃纖維		

尺寸



輸出回路



(注意：配線注意事項請參照P3之說明)

如何選用光源

- KS-C2 系列主要為分辨對比二色之光電開關，適用於各種包裝或製袋機械。
- 右表所列非絕對性，僅供參考用。例如紅光部份，表列綠色與黑色不可檢出。事實上如果深綠色與黑色是無法檢出，但如是淺綠與黑色即可檢出。又綠光部份，綠色與黑色亦然。
- 包裝紙之印刷一般都是深淺兩色對比使用，因此使用KS-C2標誌檢出除白色與淡黃無法檢出外其他皆可。
- 如有疑問可將色樣寄本公司，本公司樂於提供技術諮詢。

紅光

	黑	綠	紅	橙	黃	綠	藍	靛	紫	白
黑	—	○	○	○	○	×	×	×	○	○
綠	○	—	×	×	×	○	○	○	×	×
紅	○	×	—	×	×	○	○	○	×	×
橙	○	×	×	—	×	○	○	○	×	×
黃	○	×	×	×	—	○	○	○	×	×
綠	×	○	○	○	○	—	×	○	○	○
藍	×	○	○	○	○	×	—	×	○	○
靛	×	○	○	○	○	×	×	—	○	○
紫	○	×	×	×	×	○	○	○	—	○
白	○	×	×	×	×	○	○	○	○	—

綠光

	黑	綠	紅	橙	黃	綠	藍	靛	紫	白
黑	—	○	○	○	○	×	×	×	○	○
綠	○	—	○	×	×	○	○	○	○	×
紅	○	○	—	×	×	×	×	×	×	○
橙	○	×	×	—	×	○	○	○	×	○
黃	○	×	×	×	—	○	○	○	×	×
綠	×	○	×	○	○	—	×	×	×	○
藍	×	○	×	○	○	×	—	×	×	○
靛	×	○	×	○	○	×	×	—	×	○
紫	○	○	×	×	×	×	×	×	—	○
白	○	×	○	○	×	○	○	○	○	—

○：容易檢出
 ×：困難檢出

(本表僅供參考用)

