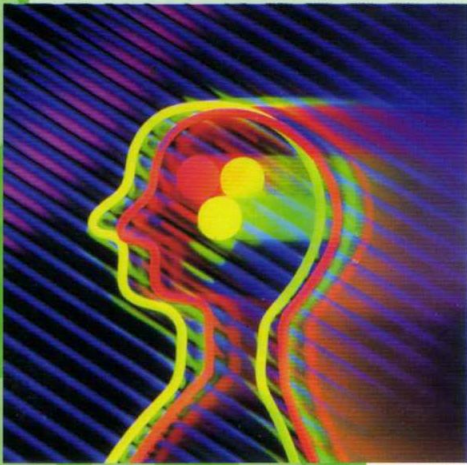


FOTEK

光電感測器

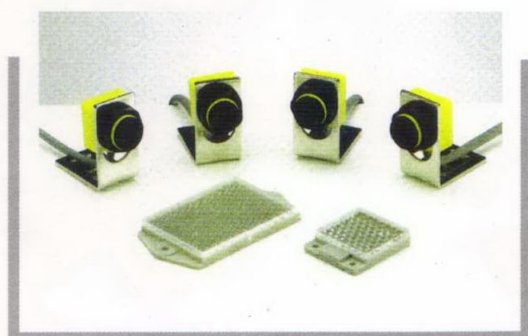
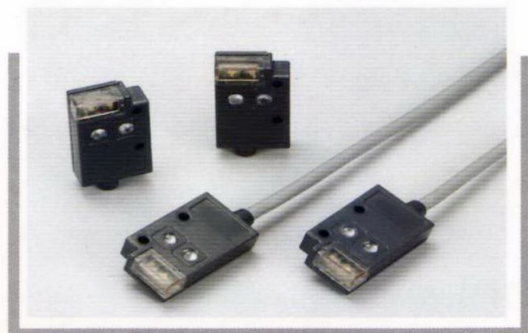
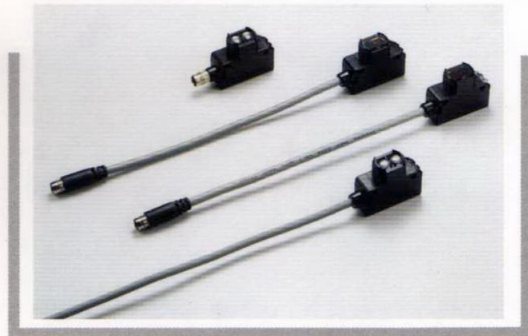
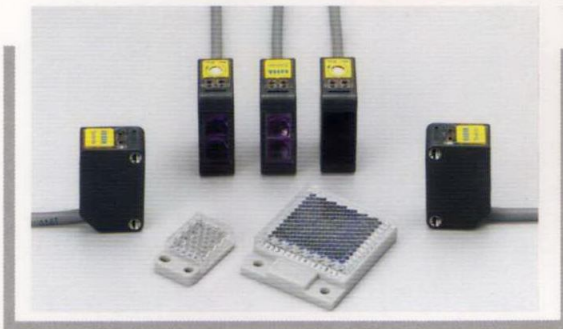
Photo-electric sensor



- * Compact standard type
- * M18 Uni-sensor
- * Mini Square type
- * Limited Reflex type
- * $\phi 7$ & M8 Tubular type
- * M18 Ultra Short tubular type



CE Rohs



陽明電機股份有限公司
FOTEK CONTROLS CO., LTD.

- Standard fixed method
- High solid compact construction : IP- 66
- Output status : Light ON / Dark ON changeable
- Connection method
 - Lead wire
 - Lead wire M8 connector

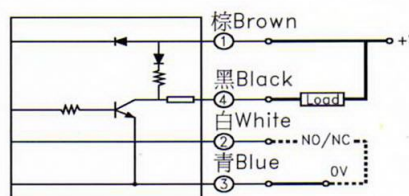


◆ General Specification

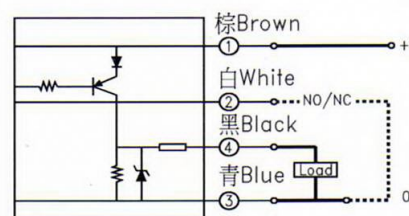
Specification	Data
Operating voltage	10 ~ 30VDC
Ripple of power	20% peak to peak
Output method	NPN or PNP
Output status	Light ON / Dark ON changeable
Output current	150mA max.
Residual voltage	0.1V max.
Leakage current	0.8mA max.
Protection circuit	Short circuit & polarity reversed protection
Housing material	Housing : Intensive PBT ; Lenz : PMMA
Illumination	Lamp light <10,000Lux ; Sunlight <20,000Lux
Noise resistance	2kv / 1μs
Dielectric strength	2.5kv / 1 minute min.
Insulation strength	100 MΩ / 500vdc
Operating circumstance	-20°C ~ +80°C ; 35% ~ 85% RH
Protection class	IP-66
Approval	CE / RoHS

Connection diagram

NPN



PNP



Output status

NO : White wire is opened
 NC : White wire is connected to "0V"

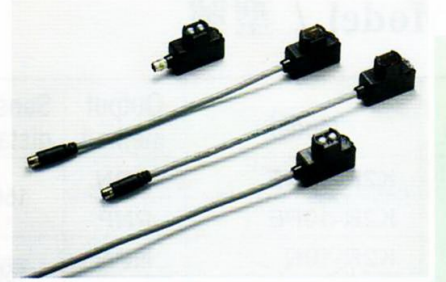
◆ Dimension / 外形尺寸圖

Lead wire & M8 Lead wire	Fixed bracket

◆ Model / 型號

Type	Model	Output method	Sensing distance	Connection method	Emitter LED	Sensing adjuster	Response time	Operating	
								Voltage	Current
Diffuse	K2R-10NE	NPN	150mm	Lead wire	Red LED	270° Trimmer	1ms	10~30Vdc	30mA Max.
	K2R-10PE	PNP							
	K2R-10N	NPN	150mm	Lead wire	Infrared LED				
	K2R-10P	PNP							
	K2R-30N	NPN	400mm	M8 Lead wire	Red LED				
	K2R-30P	PNP							
	K2R-10NE-PG	NPN	150mm	M8 Lead wire	Infrared LED				
	K2R-10PE-PG	PNP							
	K2R-10N-PG	NPN	150mm	M8 Lead wire	Infrared LED				
	K2R-10P-PG	PNP							
	K2R-30N-PG	NPN	400mm	M8 Lead wire	Infrared LED				
K2R-30P-PG	PNP								
Retro-reflective	K2G-2MNE *	NPN	2.0m	Lead wire	Red LED	Non	1ms	10~30Vdc	25mA Max.
	K2G-2MPE *	PNP							
	K2G-3MN	NPN	3.0m	Lead wire	Infrared LED				
	K2G-3MP	PNP							
	K2G-2MNE-PG *	NPN	2.0m	M8 Lead wire	Red LED				
	K2G-2MPE-PG *	PNP							
	K2G-3MN-PG	NPN	3.0m	M8 Lead wire	Infrared LED				
	K2G-3MP-PG	PNP							
Thru-beam	K2T-4MN	NPN	4.0m	Lead wire	Red LED	Non	2ms	10~30Vdc	Emitter <20mA Receiver <20mA.
	K2T-4MP	PNP							
	K2T-15MN	NPN	15.0m	Lead wire	Infrared LED				
	K2T-15MP	PNP							
	K2T-4MN-PG	NPN	4.0m	M8 Lead wire	Red LED				
	K2T-4MP-PG	PNP							
	K2T-15MN-PG	NPN	15.0m	M8 Lead wire	Infrared LED				
	K2T-15MP-PG	PNP							
Note	*With Polarized filter								

- Multi-fixed method
- Output status : Light ON / Dark ON changeable
- High solid compact construction : IP- 66
- Connection method
 - Lead wire
 - M8 connector
 - Lead wire M8 connector

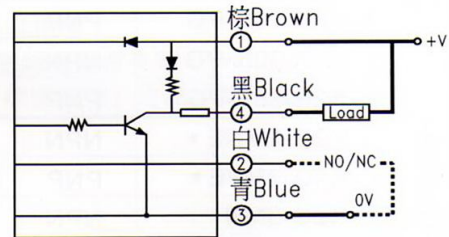


◆ General Specification

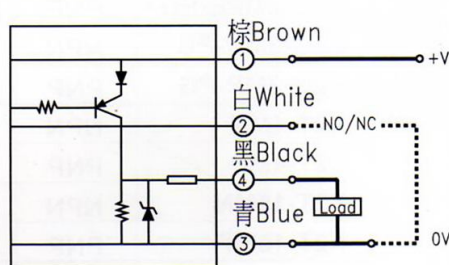
Specification	Data
Operating voltage	10 ~ 30VDC
Ripple of power	20% peak to peak
Output method	NPN or PNP
Output status	Light ON / Dark ON changeable
Output current	150mA max.
Residual voltage	0.1V max.
Leakage current	0.8mA max.
Protection circuit	Short circuit & polarity reversed protection
Housing material	Housing : Intensive PBT ; Lenz : PMMA
Illumination	Lamp light < 10,000Lux ; Sunlight < 20,000Lux
Noise resistance	2kv / 1μs
Dielectric strength	2.5kv / 1 minute min.
Insulation strength	100 MΩ / 500vdc
Operating circumstance	-25°C ~ +80°C ; 35% ~ 85% RH
Protection class	IP-66
Approval	CE / UL / RoHS

Connection diagram

NPN



PNP



Output status

NO : White wire is opened
 NC : White wire is connected to "0V"

◆ Dimension

Lead wire	M8 Lead wire	M8 Connector

M18 Uni-sensor



CE RoHS

US Series

Type	Model	Output method	Sensing distance	Connection method	Emitter LED	Sensing adjuster	Response time	Operating	
								Voltage	Current
Diffuse	UR-10N	NPN	100mm	Lead wire	Infrared LED	270° Trimmer	1ms	10~30Vdc	30mA Max.
	UR-10P	PNP							
	UR-30N	NPN	300mm						
	UR-30P	PNP							
	UR-10N-M8	NPN	100mm	M8 Connector					
	UR-10P-M8	PNP							
	UR-30N-M8	NPN	300mm						
	UR-30P-M8	PNP							
	UR-10N-PG	NPN	100mm	M8 Lead wire					
	UR-10P-PG	PNP							
	UR-30N-PG	NPN	300mm						
	UR-30P-PG	PNP							
Retro-reflective	UG-3MNE *	NPN	3.0m	Lead wire	Red LED	Non	1ms	10~30Vdc	25mA Max.
	UG-3MPE *	PNP							
	UG-6MN	NPN	6.0m						
	UG-6MP	PNP							
	UG-3MNE-M8 *	NPN	3.0m	M8 Connector					
	UG-3MPE-M8 *	PNP							
	UG-6MN-M8	NPN	6.0m						
	UG-6MP-M8	PNP							
	UG-6MN-PG	NPN	6.0m	M8 Lead wire					
	UG-6MP-PG	PNP							
	UG-3MNE-PG *	NPN	3.0m						
	UG-3MPE-PG *	PNP							
Thru-beam	UT-6MN	NPN	6.0m	Lead wire	Red LED	270° Trimmer	2ms	10~30Vdc	Emitter <20mA Receiver <20mA.
	UT-6MP	PNP							
	UT-20MN	NPN	20.0m		Infrared LED	Non			
	UT-20MP	PNP							
	UT-6MN-M8	NPN	6.0m	M8 Connector	Red LED	270° Trimmer			
	UT-6MP-M8	PNP							
	UT-20MN-M8	NPN	20.0m	Infrared LED	Non				
	UT-20MP-M8	PNP							
	UT-6MN-PG	NPN	6.0m	M8 Lead wire	Red LED	270° Trimmer			
	UT-6MP-PG	PNP							
	UT-20MN-PG	NPN	20.0m		Infrared LED	Non			
	UT-20MP-PG	PNP							
M18 Nut fixed			Horizontal M3 screw fixed			Vertical M3 screw fixed			

* With Polarized filter

RTM Series M18 Ultra short tubular type Photo sensor



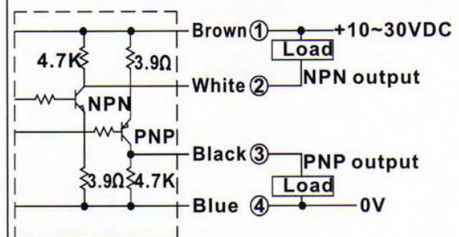
- Ultra short body length : 30 mm
- Ultra long setting distance : 30m
- Twice output : NPN & PNP
- High solid compact structure



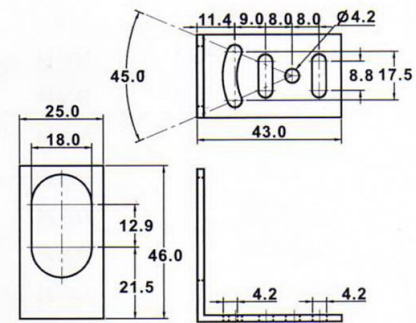
◆ General Specification / 共同規格

Specification	Data
Operating voltage 工作電壓	10~30VDC
Ripple of power 電源漣波	20% peak to peak
Output method 輸出方式	NPN & PNP two way output
Output current 輸出電流	150mA max.
Output status 輸出狀態	Standard : NO ; Appended with 「B」 : NC
Residual voltage 殘留電壓	0.1V max.
Leakage current 洩露電流	0.8mA max.
Protection circuit 保護電路	Short circuit & polarity reversed protection
Housing material 外殼材質	Intensive PBT
Illumination 耐外亂光	Lamp light < 10,000Lux ; Sunlight < 20,000Lux
Noise resistance 抗干擾	2kv / 1μs
Dielectric strength 電介強度	2.5kv / 1 minute min.
Insulation strength 絕緣強度	100 MΩ / 500vdc
Operating circumstance 工作環境	-25°C ~ +80°C ; 35% ~ 85% RH
Protection class 保護等級	IP-67
Approval 認證	CE

Connection diagram / 接線圖



Fixed Bracket / 固定架



◆ Outline dimension / 外形尺寸圖

Lead wire	M8 Lead wire	M12 Connector

◆ Reflex type / 反射型

Connection method	Lead wire		M8 Lead wire		M12 Connector	
Model 型號	R18-10X	R18-30X	R18-10X-PG	R18-30X-PG	R18-10X-M12	R18-30X-M12
Sensing distance 檢測距離	10 cm	30 cm	10 cm	30 cm	10 cm	30 cm
Sensitivity adjuster 感度調整	270° Trimmer				Non	
Emitter 發射光源	Infrared LED					
Current consumption 消耗電流	30mA max.					
Response time 反應時間	1.0 ms max.					
Approval 認證	CE					

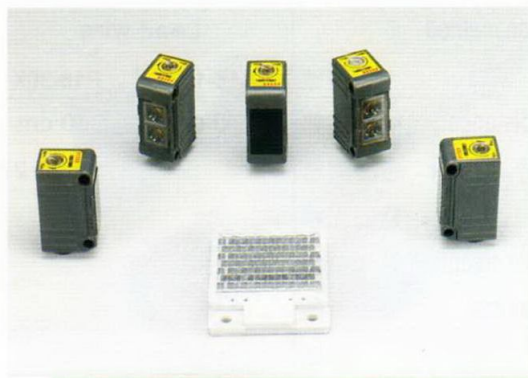
◆ Mirror Reflex type / 鏡片反射型

Connection method	Lead wire			M8 Lead wire		
Model 型號	M18-3MX	M18-1MG	M18-2MRE	M18-3MX-PG	M18-1MG-PG	M18-2MRE-PG
Filter	Non	Non	Polarity	Non	Non	Polarity
Emitter 發射光源	Infrared LED	Blue LED	Red LED	Infrared LED	Blue LED	Red LED
Setting distance 設定距離	0.1~3.0m	0.2~1.2m	0.2~2.0m	0.1~3.0m	0.2~1.2m	0.2~2.0m
Sensitivity adjuster 感度調整	Non	270° Trimmer	270° Trimmer	Non	270° Trimmer	270° Trimmer
Sensible object 可被檢測物	Non-Transparent	Transparent	Non-Transparent	Non-Transparent	Transparent	Non-Transparent
Current consumption 消耗電流	30mA max.					
Response time 反應時間	1.0 ms max.					
Approval 認證	CE					
Connection method	M12 Connector					
Model 型號	M18-3MX-M12		M18-1MG-M12		M18-2MRE-M12	
Filter	Non		Non		Polarity	
Emitter 發射光源	Infrared LED		Blue LED		Red LED	
Setting distance 設定距離	0.1~3.0m		0.2~1.2m		0.2~2.0m	
Sensitivity adjuster 感度調整	Non		Non		Non	
Sensible object 可被檢測物	Non-Transparent		Transparent		Non-Transparent	
Current consumption 消耗電流	30mA max.					
Response time 反應時間	1.0 ms max.					
Approval 認證	CE					

◆ Thru beam type / 透過型

Connection method	Lead wire		M8 Lead wire		M12 Connector	
Model 型號	T18-30MX	T18-6MX	T18-30MX-PG	T18-6MX-PG	T18-30MX-M12	T18-6MX-M12
Sensing distance 設定距離	0~30m	0~6m	0~30m	0~6m	0~30m	0~6m
Sensitivity adjuster 發射光源	Infrared LED					
Emitter 感度調整	Non					
Current consumption 消耗電流	30mA max.					
Response time 反應時間	1.0 ms max.					
Approval 認證	CE / UL					

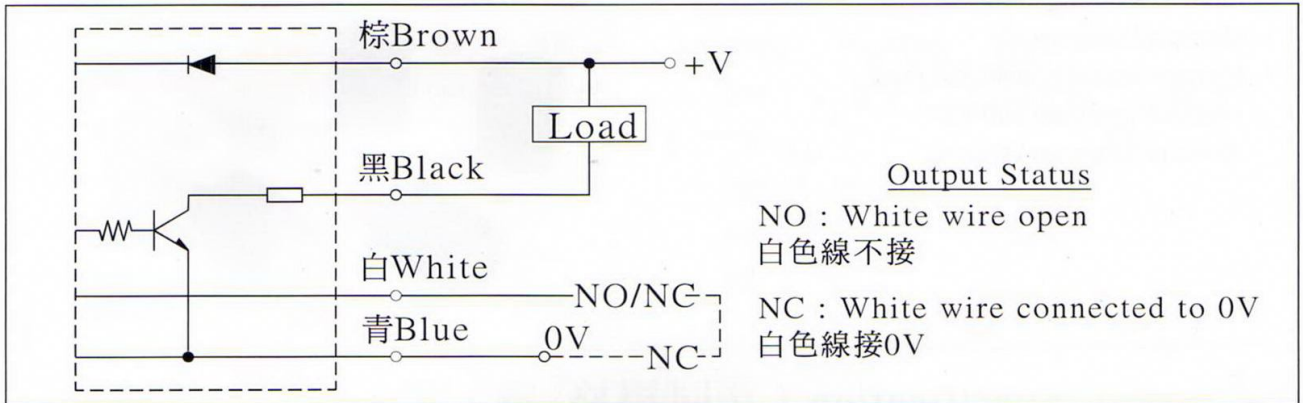
- Solid compact structure :
12x30x17 (WxHxD mm)
- Protection class : IP-66
- Output status NO / NC changeable
- Polarized mirror reflex type available
- Transparent object detectable



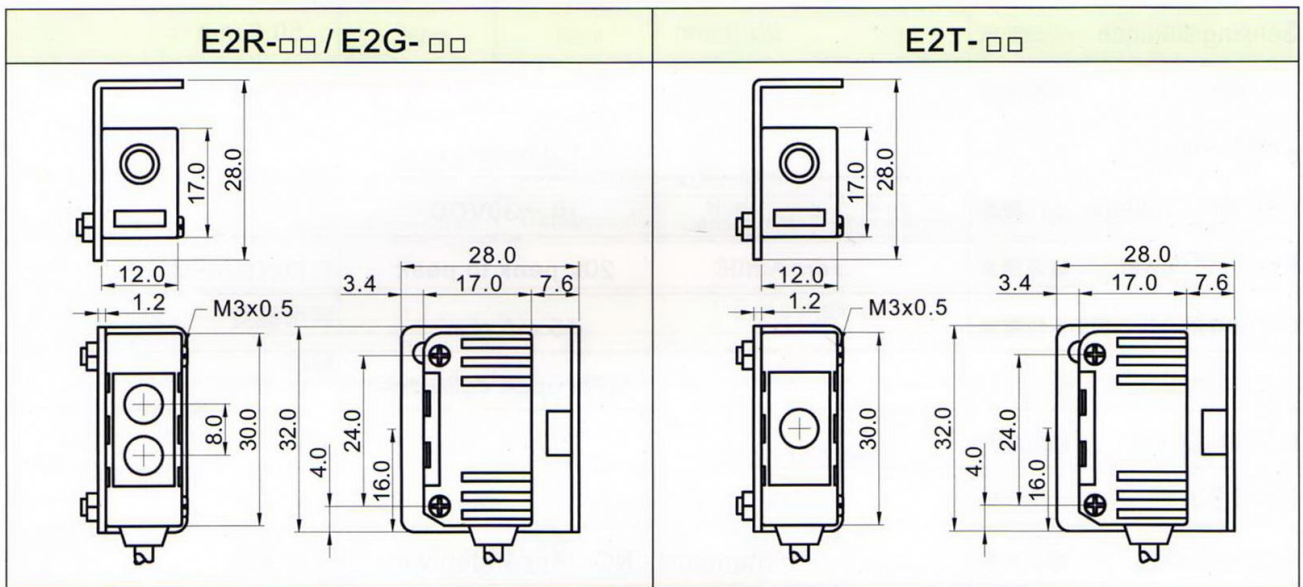
◆ General Specification / 共同規格

Type	Diffuse Reflex		Mirror Reflex			Thru Beam
Model	E2R-10N	E2R-30N	E2G-2MN	E2G-1MRE	E2G-1MG	E2T-4MN
Sensing distance	10cm	30cm	2.0m	1.2m	1.2m	6.0m
Emitter	Infrared LED		Red LED		Green LED	Infrared LED
Current consumption 耗電流	30 mA max.		25 mA max.			40 mA max.
Response time 應答時間	1 ms max.					
Operating voltage 工作電壓	10 ~ 30VDC					
Ripple of power 電源漣波	20% peak to peak					
Output method 輸出方式	NPN NO/NC changeable					
Output current 輸出電流	150mA max.					
Residual voltage 殘留電壓	0.1V max.					
Leakage current 洩露電流	0.8mA max.					
Protection circuit 保護電路	Short circuit & polarity reversed protection					
Housing material 外殼材質	Intensive PBT					
Illumination 耐外亂光	Lamp light < 10,000Lux ; Sunlight < 20,000Lux					
Noise resistance 抗干擾	2kv/1μs					
Dielectric strength 電介強度	2.5kv / 1 minute min.					
Insulation strength 絕緣強度	100 MΩ / 500vdc					
Operating circum. 工作環境	-25°C ~ +80°C ; 35% ~ 85% RH					
Protection class 保護等級	IP-66					
Approval 認證	CE Rohs					

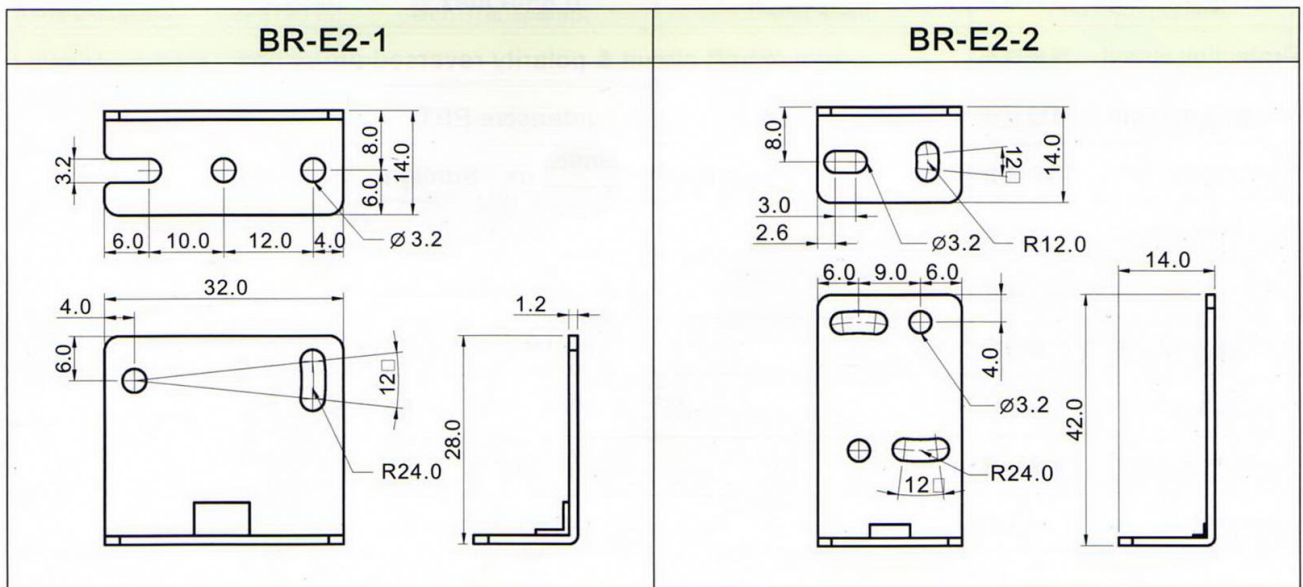
◆ Output circuit & Connection diagram / 輸出回路及接線圖



◆ Dimension / 外形尺寸圖



◆ Fixed bracket / 固定架



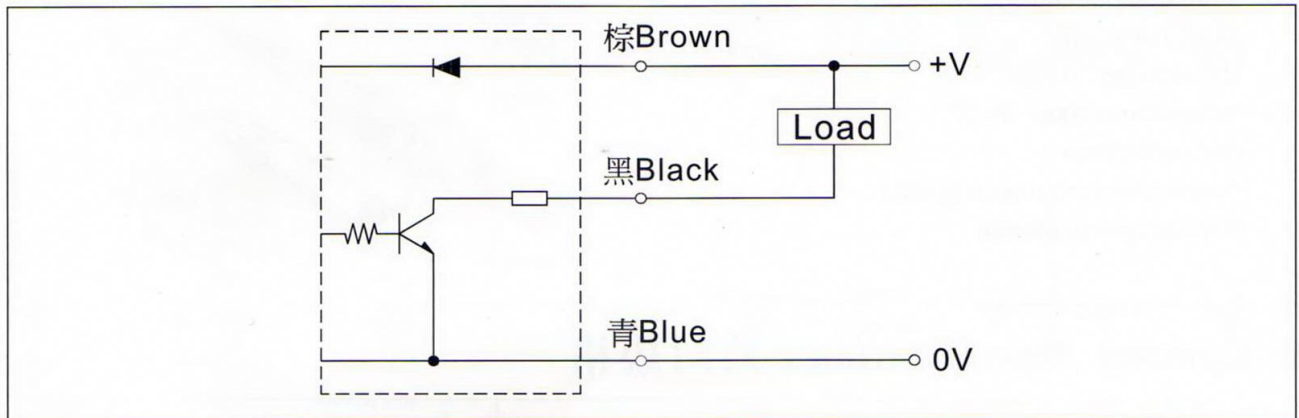
- Limited sensing distance
- Mini-plate outline
- Mirror interruption immunized
EX-03N less than 100 mm
EX-07N less than 200 mm



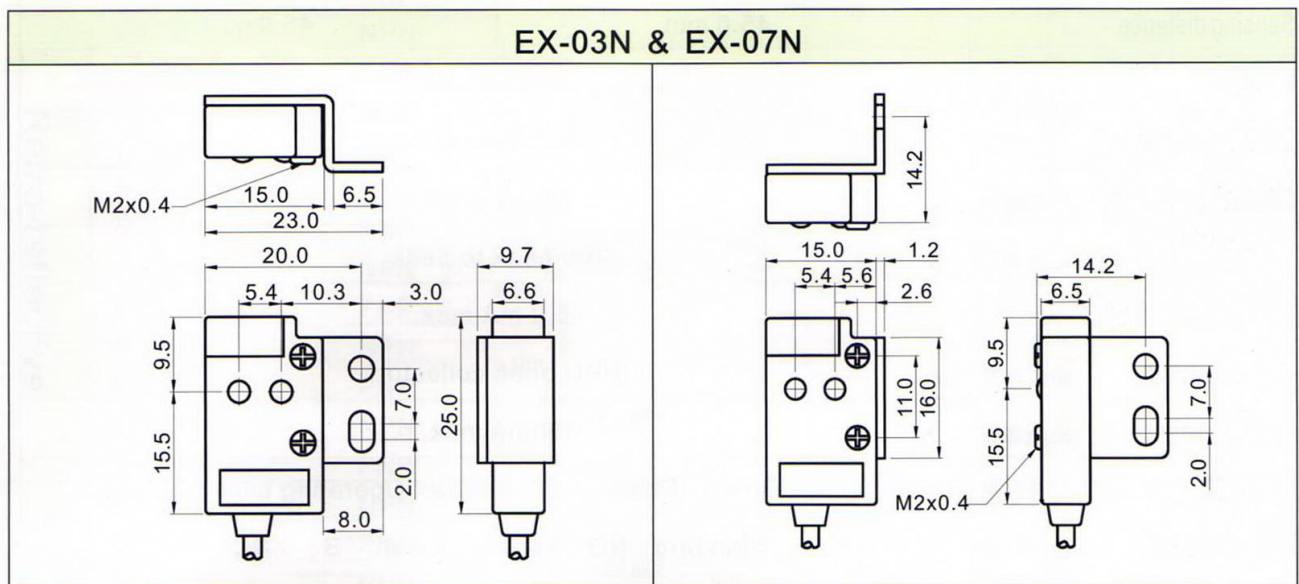
◆ **General Specification / 共同規格**

Model	型號	EX-03N	EX-07N
Sensing distance	檢測距離	25.0 mm	50.0 mm
Emitter	發射光源	Red LED	Infrared LED
Response time	應答時間	1.0 ms max.	
Operating voltage	工作電壓	10 ~ 30VDC	
Ripple of power	電源漣波	20% peak to peak	
Current consumption	耗電流	15 mA max.	
Output method	輸出方式	NPN open collector	
Output current	輸出電流	150mA max.	
Pilot LED	指示燈	Green : Power pilot ; Yellow : Operating pilot	
Output Status	輸出狀態	Standard : NO ; Appended with 「B」 : NC	
Residual voltage	殘留電壓	0.1V max.	
Leakage current	洩露電流	0.8mA max.	
Protection circuit	保護電路	Short circuit & polarity reversed protection	
Housing material	外殼材質	Intensive PBT	
Illumination	耐外亂光	Lamp light < 10,000Lux ; Sunlight < 20,000Lux	
Noise resistance	抗干擾	2kv/1μs	
Dielectric strength	電介強度	2.5kv / 1 minute min.	
Insulation strength	絕緣強度	100 MΩ / 500vdc	
Operating circum.	工作環境	-25°C ~ +80°C ; 35% ~ 85% RH	
Protection class	保護等級	IP-65	
Approval	認證	CE / Rohs	

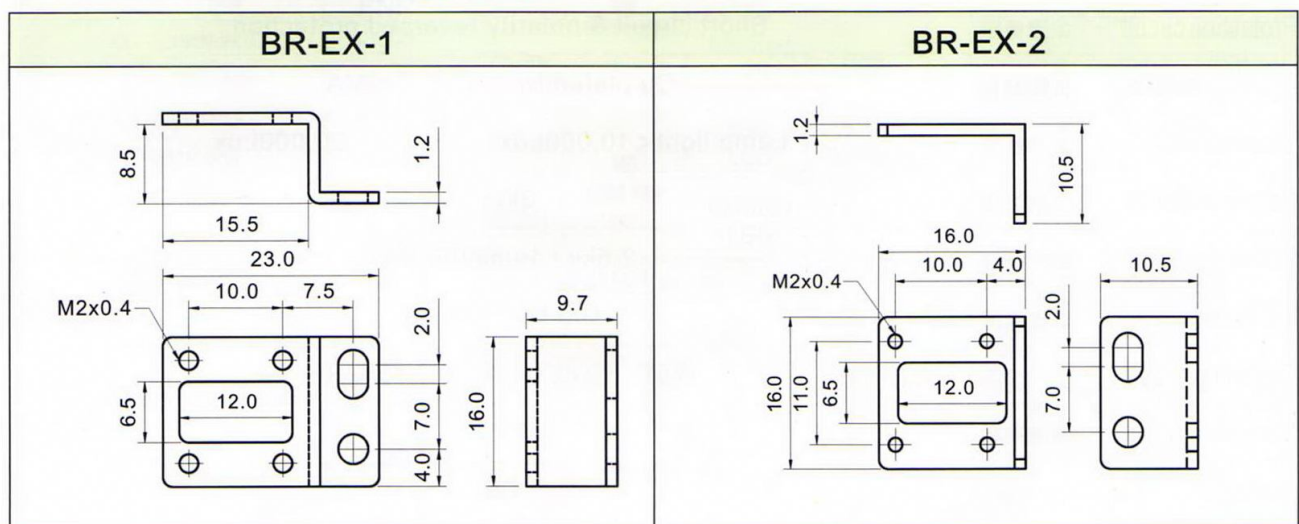
◆ Output circuit & Connection diagram / 輸出回路及接線圖



◆ Dimension / 外形尺寸圖



◆ Fixed bracket / 固定架



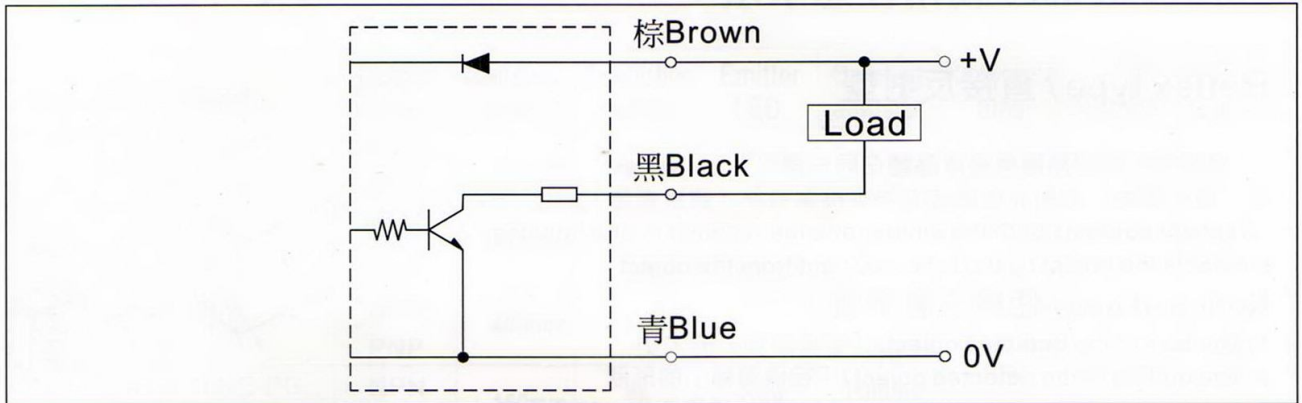
- Solid compact structure :
7 Φ x 43 mm
M8 x 43 mm
- Protection class : IP-67
- High reliability :
Output short circuit protection
High noise resistance



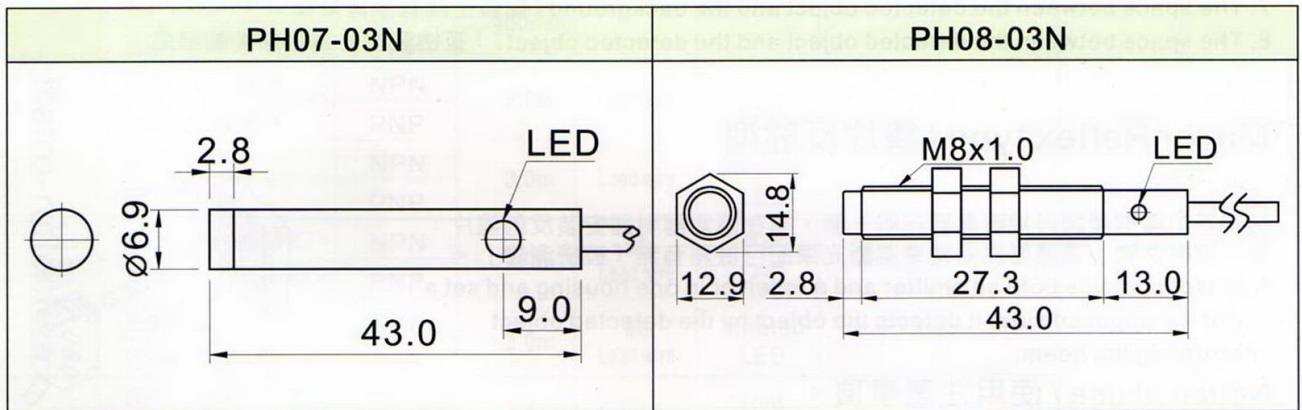
◆ General Specification / 共同規格

Outline	外形	$\Phi 7$	M8
Model	型號	PH07-03N	PH08-03N
Sensing distance		45.0 mm	45.0 mm
Emitter		Infrared LED	
Response time		1.0 ms max.	
Operating voltage	工作電壓	10 ~ 30VDC	
Ripple of power	電源漣波	20% peak to peak	
Current consumption		15.0 mA max.	
Output method	輸出方式	NPN open collector	
Output current	輸出電流	150mA max.	
Pilot LED	指示燈	Green : Power pilot ; Yellow : Operating pilot	
Output Status	輸出狀態	Standard : NO ; Appended with 「B」 : NC	
Residual voltage	殘留電壓	0.1V max.	
Leakage current	洩露電流	0.8mA max.	
Protection circuit	保護電路	Short circuit & polarity reversed protection	
Housing material	外殼材質	Cu plated Ni ; Lenz : PMMA	
Illumination	耐外亂光	Lamp light < 10,000Lux ; Sunlight < 20,000Lux	
Noise resistance	抗干擾	2kv/1	
Dielectric strength	電介強度	2.5kv / 1 μ minute min.	
Insulation strength	絕緣強度	100 M Ω / 500vdc	
Operating circum.	工作環境	-25 $^{\circ}$ C ~ +80 $^{\circ}$ C ; 35% ~ 85% RH	
Protection class	保護等級	IP-67	
Approval	認證	CE	

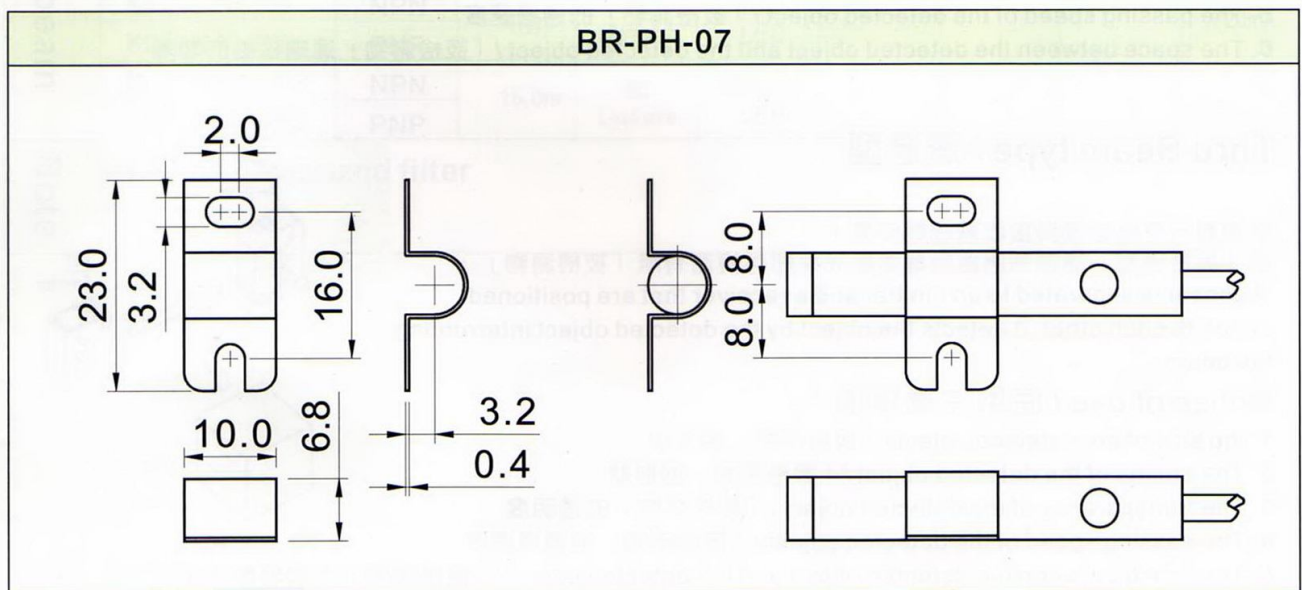
◆ Output circuit & Connection diagram / 輸出回路及接線圖



◆ Dimension / 外形尺寸圖



◆ Fixed bracket / 固定架



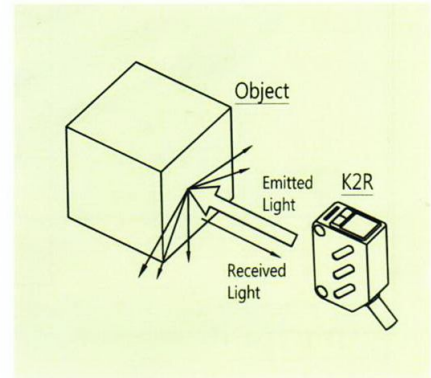
◆ Notice of use / 使用注意事項：

Reflex type / 直接反射型

感測器的發射晶體與接收晶體在同一側，依「被檢測物」反射光強弱或有無來檢測有無「被檢測物」。
A sensor contains both the emitter and the receiver in one housing, It detects the object by the reflected light from the object

Notice of use / 使用注意事項：

1. The size of the detected object / 「被檢測物」的大小
2. The outline of the detected object / 「被檢測物」的形狀
3. The transparency of the detected object / 「被檢測物」的透明度
4. The surface color of the detected object / 「被檢測物」的表面顏色
5. The passing speed of the detected object / 「被檢測物」的通過速度
6. The surface roughness of the detected object / 「被檢測物」的表面粗糙度
7. The space between the detected object and the background / 安裝空間有無背景物
8. The space between the detected object and the detected object / 「被檢測物」連續移動的間隔

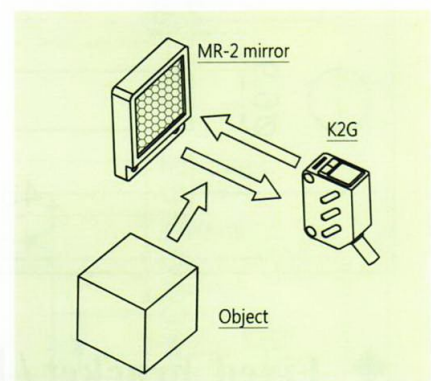


Mirror Reflex type / 鏡片反射型

感測器的發射晶體與接收晶體在同一側，須在感測器對面安裝反射鏡片；當「被檢測物」通過感測器時會遮斷光束即可檢測有無「被檢測物」。
A sensor contains both an emitter and a receiver in one housing and set a mirror on opposed side, It detects the object by the detected object interrupting the beam.

Notice of use / 使用注意事項：

1. The size of the detected object / 「被檢測物」的大小
2. The outline of the detected object / 「被檢測物」的形狀
3. The transparency of the detected object / 「被檢測物」的透明度
4. The shiny surface of the detected object / 「被檢測物」的表面亮度
5. The passing speed of the detected object / 「被檢測物」的通過速度
6. The space between the detected object and the detected object / 「被檢測物」連續移動的間隔

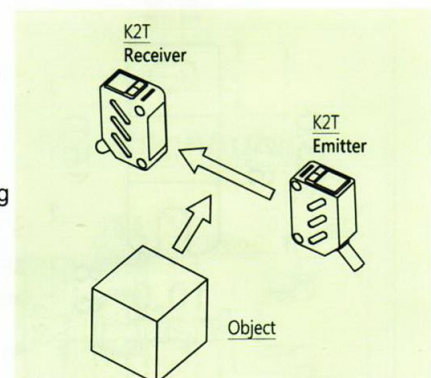


Thru Beam type / 透過型

感測器分成發射器與接收器相對安裝；當「被檢測物」通過感測器時會遮斷光束即可檢測有無「被檢測物」。
A sensor is separated to an emitter and a receiver that are positioned opposite each other, It detects the object by the detected object interrupting the beam.

Notice of use / 使用注意事項：

1. The size of the detected object / 「被檢測物」的大小
2. The outline of the detected object / 「被檢測物」的形狀
3. The transparency of the detected object / 「被檢測物」的透明度
4. The passing speed of the detected object / 「被檢測物」的通過速度
5. The space between the detected object and the detected object / 「被檢測物」連續移動的間隔

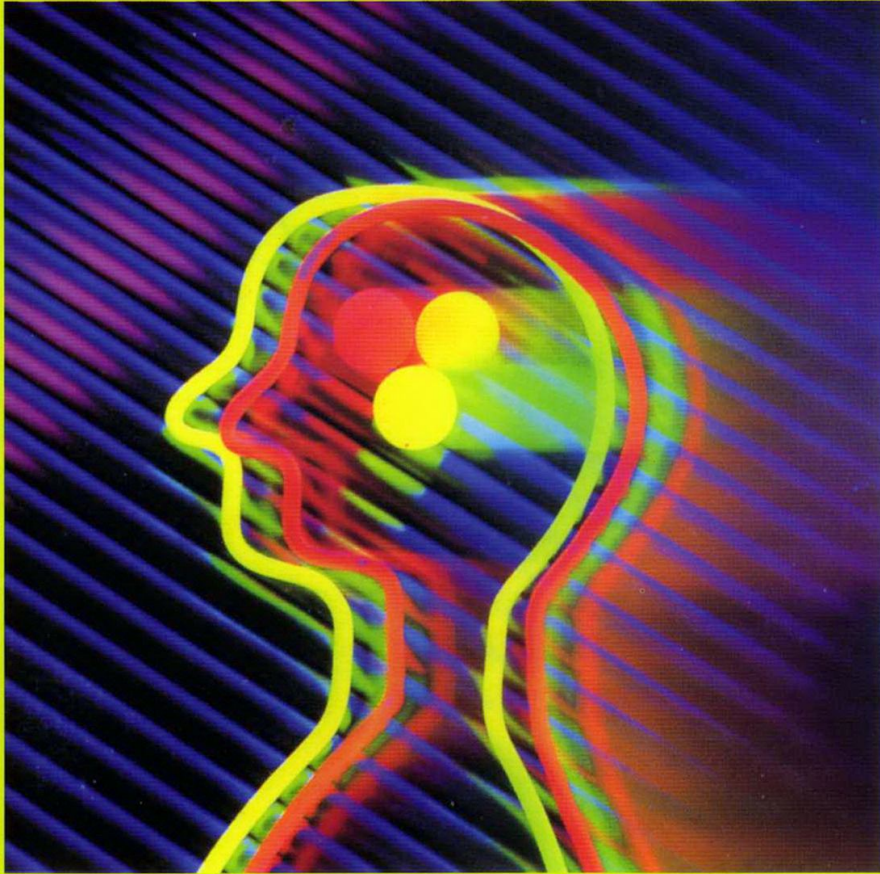


◆ Mirror/反射鏡片

Mirror / MR-1	Mirror / MR-2	Mirror / MR-3	Mirror / MR-4
<p>Fixed Hole $\varnothing 4.2 \times 2$</p>	<p>$\varnothing 3.5 \times 2$</p>	<p>$\varnothing 4.5 \times 2$</p>	<p>$\varnothing 3.2$</p>

◆ Connection cable

<h3>M8-4C-□M</h3>	<table border="1"> <thead> <tr> <th>4P PLUG</th> <th>COLOR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BROWN</td> </tr> <tr> <td>2</td> <td>WHITE</td> </tr> <tr> <td>3</td> <td>BLUE</td> </tr> <tr> <td>4</td> <td>BLACK</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>規格</th> <th>"A"</th> <th>"B"</th> <th>"C"</th> </tr> </thead> <tbody> <tr> <td>M8-3m</td> <td>3m</td> <td>50±3mm</td> <td>5±1mm</td> </tr> <tr> <td>M8-5m</td> <td>5m</td> <td>50±3mm</td> <td>5±1mm</td> </tr> </tbody> </table>	4P PLUG	COLOR	1	BROWN	2	WHITE	3	BLUE	4	BLACK	規格	"A"	"B"	"C"	M8-3m	3m	50±3mm	5±1mm	M8-5m	5m	50±3mm	5±1mm	
4P PLUG	COLOR																							
1	BROWN																							
2	WHITE																							
3	BLUE																							
4	BLACK																							
規格	"A"	"B"	"C"																					
M8-3m	3m	50±3mm	5±1mm																					
M8-5m	5m	50±3mm	5±1mm																					
<h3>M12-□M</h3>	<table border="1"> <thead> <tr> <th>4P PLUG</th> <th>COLOR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BROWN</td> </tr> <tr> <td>2</td> <td>WHITE</td> </tr> <tr> <td>3</td> <td>BLUE</td> </tr> <tr> <td>4</td> <td>BLACK</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>規格</th> <th>"A"</th> <th>"B"</th> <th>"C"</th> </tr> </thead> <tbody> <tr> <td>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> </tbody> </table>	4P PLUG	COLOR	1	BROWN	2	WHITE	3	BLUE	4	BLACK	規格	"A"	"B"	"C"	M12-3m	3m	50±3mm	5±1mm	M12-5m	5m	50±3mm	5±1mm	
4P PLUG	COLOR																							
1	BROWN																							
2	WHITE																							
3	BLUE																							
4	BLACK																							
規格	"A"	"B"	"C"																					
M12-3m	3m	50±3mm	5±1mm																					
M12-5m	5m	50±3mm	5±1mm																					
<h3>M12-L□M</h3>	<table border="1"> <thead> <tr> <th>4P PLUG</th> <th>COLOR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BROWN</td> </tr> <tr> <td>2</td> <td>WHITE</td> </tr> <tr> <td>3</td> <td>BLUE</td> </tr> <tr> <td>4</td> <td>BLACK</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>規格</th> <th>"A"</th> <th>"B"</th> <th>"C"</th> </tr> </thead> <tbody> <tr> <td>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> </tbody> </table>	4P PLUG	COLOR	1	BROWN	2	WHITE	3	BLUE	4	BLACK	規格	"A"	"B"	"C"	M12-L3m	3m	50±3mm	5±1mm	M12-L5m	5m	50±3mm	5±1mm	
4P PLUG	COLOR																							
1	BROWN																							
2	WHITE																							
3	BLUE																							
4	BLACK																							
規格	"A"	"B"	"C"																					
M12-L3m	3m	50±3mm	5±1mm																					
M12-L5m	5m	50±3mm	5±1mm																					



量產化、標準化 製造世界標準電控器材
先進技術、嚴格品管 提供最佳品質保證

To manufacture the World-standard controls
By Mass-producing & Standardizing

To offer an excellent Quality assurance
By Advanced manufacture technology
& Strict Total Quality control

陽明電機股份有限公司
FOTEK CONTROLS CO., LTD.

Specification may be modified
without notice in advance
Copy right @ FOTEK 2010/05/10
B-38