LASER SENSORS

PHOTOELECTRIC SENSORS

AREA SENSORS

SAFETY LIGHT CURTAINS / SAFETY COMPONENTS PRESSURE /

FLOW SENSORS INDUCTIVE PROXIMITY **SENSORS**

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE -SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES

FNFRGY MANAGEMENT SOLUTIONS

FA COMPONENTS

MACHINE VISION SYSTEMS

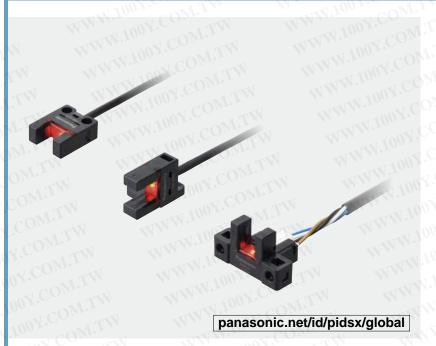
UV CURING SYSTEMS

Convergent Reflective

U-shaped Micro Photoelectric Sensor Amplifier Built-in

Related Information

- General terms and conditions F-3
- Glossary of terms / General precautions.....P.1549~ / P.1552~
- Selection guide P.393~
- Korea's S-mark......P.1602







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



One step ahead in performance and mounting ease

Three protection circuits standard on all models PM-25/45/65 SERIES

All models are standardly equipped with the following protection circuits in their compact bodies. These protection circuits minimize the possibility of sensor malfunctions caused by erroneous wiring.

- 1 Reverse supply polarity protection circuit
- 2 Reverse output polarity protection circuit
- 3 Output short-circuit protection circuit

Ample beam emitting / receiving distance of PM-25/45/65 SERIES 6 mm 0.236 in

The beam emitting and receiving sections are 0.5 mm 0.02 in thinner than those on our conventional models while their external dimensions are the same. As a result, the distance between the beam emitting point and receiving point increased by 1 mm 0.039 in. The wider distance means less possibility of collision between the sensing section and sensing object.



Industry's first*! IP64 rating

*As of April 2017, in-company survey.

PM-25/45 SERIES

Our original integrated molding method has eliminated grooves and gaps on the sensing surface and main body, thus reducing the possibility of malfunctions caused by splashing water or dust.

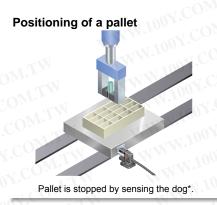


Beam marks for easy adjustment PM-25/45/65 SERIES

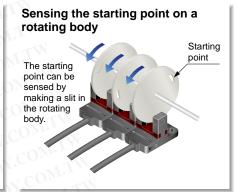
The upper-limit and lower-limit positions of beam can be visually confirmed from the front, back, right and left sides of the sensor unit. This allows easy adjustment of the position of sensing object.



APPLICATIONS



Sensing the starting point and overrun of a moving body Overrun sensing Dog Overrun sensing Starting point and overrun is sensed using the dog* on the base.



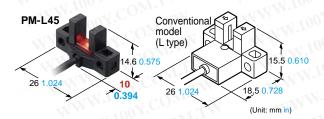
Large and easy to see Multi-angle operation indicator PM-25/45/65 SERIES

The large operation indicator (orange) lights up when the beam enters. The indicator is easy to see from above and from the sides.

Compact size

PM-45 SERIES

All new models require significantly less mounting space than our conventional models when mounted with the same pitch. What's more, the new models can directly replace our conventional models currently in use.



All models easy to mount with M3 screws

PM-25/45/65 SERIES

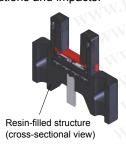
The sensor unit can be installed with one or two M3 screws. * M3 screws and washers are not included.

- Models requiring one M3 screw for installation PM-F25, PM-R25, PM-F65, PM-R65
- Models requiring two M3 screws for installation Models other than above

Resistant to vibrations and impacts

PM-25/45/65 SERIES

The sections where stress concentrates, such as the connecting section of the cable and internal circuit, are covered with a resin. This helps prevent malfunctions caused by vibrations and impacts.



VARIATION

Sensors come in various shapes to suit a wide range of mounting conditions

Ultra-small / Cable type

PM-25 SERIES

Easy mounting with M2/M3 screws!

NPN output	1 m 3.281 ft cable	3 m 9.843 ft cable	1 m 3.281 ff bending- resistant cable
PNP output	1 m 3.281 ft cable	3 m 9.843/ft cable	1 m 3.281 ft bending- resistant cable

Compact / Cable type

PM-45 SERIES

Compact size!

NPN output	1 m 3.281 ft cable	3 m 9.843 ft cable	1 m 3.281 ft bending- resistant cable
PNP output	1 m 3.281 ft cable	3 m 9.843 ft cable	1 m 3.281 ft bending- resistant cable

Compact / Connector built-in type PM-65 SERIES

Easy connection with a single touch using commercially-available connectors

Connector attached cable 1 m 3.281 ft, 2 m 6.562 ft, 3 m 9.843 ft, 5 m 16.404 ft	Connector attached bending-resistant cable 1 m 3,281 ft, 2 m 3,382 ft, 3 m 15,434 ft, 5 m 15,400 ft
Connector attached cable 1 m 3.281 ft, 2 m 6.562 ft, 3 m 9.843 ft, 5 m 16.404 ft	Connector attached bending-resistant cable 1 m 3 201 H, 2 m 13 502 H, 3 m 13 201 H
M.TW	WW.100

FIBER

LASER SENSORS

PHOTO-ELECTRIC SENSORS

PHOTO-ELECTRIC SENSORS

AREA SENSORS

CURTAINS / SAFETY COMPONENTS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE

WIRE-SAVING SYSTEMS

MEASURE-

MENT SENSORS STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN

INTERFACES

ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS MACHINE

UV CURING

CURING SYSTEMS

Selection Guide J-shaped

PM-25/PM-45/ PM-65

^{*&}quot;Dog" refers to the sensing object for activating the sensor's detecting operation.

PM-F25

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

AREA SENSORS COMPONENTS PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS PARTICULAR USE SENSORS SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS

STATIC CONTROL DEVICES LASER MARKERS

PLC

HUMAN MACHINE INTERFACES ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS MACHINE VISION SYSTEMS

CURING SYSTEMS

Ultra-small / Cable type PM-25 SERIES

Easy mounting with M2/M3 screws!

PM-L25



PM-U25



PM-R25





* NPN output / 1 m 3.281 ft cable length type only (Excluding bending-resistant cable type)

ORDER GUIDE

PM-K25

ре	Appearance (mm in)	Sensing range	Model No.	Cable length	Output	Output operation
100	N.COM.TW	MAN.100	PM-K25	1 m 3.281 ft	TOON COM	TW
K type		WWW.10	PM-K25-R	1 m 3.281 ft, bending-resistant cable	NPN open-collector transistor	TW
X	23.9 0.941 0.484 0.236	WWW	PM-K25-C3	3 m 9.843 ft	17.100X.CO	M.TW
		WWW	PM-K25-P	1 m 3.281 ft	PNP open-collector transistor	OM.TW
(XX)	W.100X.COM.TW		PM-L25	1 m 3.281 ft	MM.100	ONTIN
L type	12 0 472		PM-L25-R	1 m 3.281 ft, bending-resistant cable	NPN open-collector transistor	COM.
Lt	13.4 0.528 12 0.472	W W	PM-L25-C3	3 m 9.843 ft	WWW.100	L.COM.TW
	NWW.100Y.COM.	IN A	PM-L25-P	1 m 3.281 ft	PNP open-collector transistor	Incorporated with 2 outputs: Light-ON/Dark-ON
	MAM. 100A.CO.	0.236 6 mm 0.236 in (fixed)	PM-U25	1 m 3.281 ft		
U type	6 0.236		PM-U25-R	1 m 3.281 ft, bending-resistant cable		
U	13.4 0.528		PM-U25-C3	3 m 9.843 ft		
	MMM.100X.		PM-U25-P	1 m 3.281 ft	PNP open-collector transistor	
	SAMM TOO		PM-F25	1 m 3.281 ft	NPN open-collector transistor	W.100Y.COM.T
F type	11.7 0.461		PM-F25-R	1 m 3.281 ft, bending-resistant cable		or
Ę.	13.4 0.528 12.5 0.492	OY.COM.TV	PM-F25-C3	3 m 9.843 ft	LTW	
	0.525 VWW.1	OOY.COM.T	PM-F25-P	1 m 3.281 ft	PNP open-collector transistor	MMM.100X.COD
	N	100 Y. COM.	PM-R25	1 m 3.281 ft	NPN open-collector transistor	WWW.100Y.CON WWW.100Y.CO
R type	11.7 0.461	100X.COM	PM-R25-R	1 m 3.281 ft, bending-resistant cable		
Α.	13.4 0.528 12.5 0.492	N.Tuo.X.CO	PM-R25-C3	3 m 9.843 ft	CONTY	
	0.520	AN. TOOX.CO	PM-R25-P	1 m 3.281 ft	PNP open-collector transistor	M.M. M. 100A

OPTIONS

Designation	Model No.	Description
Mounting screw	MS-M2	Mounting screw with washers for the ultra-small type sensor (50 pcs. lot). It can mount securely as it is spring washer attached.

Mounting screw

• MS-M2



M2 (length 10 mm 0.394 in) screw with a spring washer

SPECIFICATIONS

1	VXV	- TW	V. T. CONT.		Ultra-small / Cable type		
1		Туре	M.100 T. COM. T.		Bending-resistant cable	3 m 9.843 ft cable	
M	<u>`</u>	NPN output	PM-□25		PM-□25-R	PM-□25-C3	
Item	Model No.	PNP output	PM-□25-P		M. TOOLS		
CE m	narking dire	ctive compliance	WW. 100Y.Co. IV.TV		EMC Directive, RoHS Directive	No.	
Sens	ensing range 6 mm 0.236 in (fixed)				TW		
Minir	num sensi	ng object	MANA COMP.	0.8	x 1.2 mm 0.031 x 0.047 in opaque object	ct	
Hyste	eresis	-0X]	COM.	TIN	0.05 mm 0.002 in or less	TW	
Repe	eatability	TW	W. 100 L. COM		0.01 mm 0.0004 in or less	M. I	
Supp	oly voltage	Λ^{TN}	WW.100Y.	5 to	o 24 V DC ±10 % Ripple P-P 10 % or les	s	
Curre	ent consun	nption	WW. 1007.00	MI	15 mA or less	OW.TW	
NPN open-collector transistor • Maximum sink current: 50 mA • Maximum sink current: 50 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Applied voltage: 30 V DC or less (between output and 0 V)				sink current) • Residual voltage			
	Output op	eration	Incorporated with 2 outputs: Light-ON/Dark-ON				
Short-circuit protection		uit protection	M.100	7 (Incorporated	CONT.	
Response time			Under light received condition: 20 µs or less Under light interrupted condition: 80 µs or less (Maximum response frequency: 3 kHz) (Note 2)				
Oper	ation indic	ator	Orange LED (lights up under light received condition)				
Pollu	tion degre	e any Cu	WWW WITH	1100	1.00	1100Y.COM.TW	
	Protection	N. TO C	IP64 (IEC)				
Environmental resistance	Ambient to (Note 3, 4	emperature)	-25 to +55 °C −13 to +131 °F (No dew condensation or icing allowed), Storage: -30 to +80 °C −22 to +176 °F				
əsist	Ambient h	umidity	5 to 85 % RH, Storage: 5 to 95 % RH				
ıtal r	Ambient il	luminance	Fluorescent light: 1,000 tx or less at the light-receiving face				
mer	Voltage w	ithstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure				
viror	Insulation	resistance	20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclo				
ш	Vibration	resistance	10 to 2,000 Hz frequency, 1.5 mm 0.059 in double amplitude (maximum acceleration 196 m/s²) in X, Y and Z directions for two hours each				
Shock resistance			15,000 m/s² acceleration (1,500 G approx.) in X, Y and Z directions three times each				
Emitting element		nt	Infrared LED (Peak emission wavelength: 855 nm 0.034 mil, non-modulated)				
Mate	rial	THE WAY	The COMP.	Encl	osure: PBT, Display section: Polycarbona	ate CONTRACTOR	
Cabl	e	WW	0.09 mm ² 4-core cabtyre cable, P 1 m 3.281 ft long		.1 mm ² 4-core bending-resistant cabtyre able, PVC, 1 m 3.281 ft long (Note 5, 6)	0.09 mm ² 4-core cabtyre cable, PVC, 3 m 9.843 ft long	
Cable	e extensio	1 1	Extension up to	total 100	m 328.084 ft is possible with 0.3 mm ² , o	r more, cable. (Note 7)	
Weig	jht	W	Net weight: 10 g ap	prox., Gro	oss weight: 15 g approx.	Net weight: 30 g approx., Gross weight: 35 g approx.	

WWW.100Y.COM Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73.4 °F.

2) The response frequency is the value when the disc, given in the figure below, is rotated.



- 3) In case the PM-25 series is used at an ambient temperature of +50 °C +122 °F, or more, make sure to mount it on a metal body.
- 4) Note that the cable of PM-□25-R loses its flexibility when the ambient temperature decreases to about -10 °C +14 F°
- 5) The cable of PM-025-R is a bending-resistant cable usable on a moving base. When the sensor is mounted on a moving base, secure the sensor cable joint at the unit in place so that stress is not applied to it.
- 6) When storing PM-u25-R, make sure that the cable does not come into contact with the sensing section or operation indicator.
- 7) If the cable is extended to 20 m 65.617 ft or longer, confirm that the supply voltage at the end of the cable attached to the sensor is 4.5 V or higher.

LASER SENSORS

PHOTO-ELECTRIC SENSORS

AREA SENSORS SAFETY LIGHT CURTAINS / SAFETY COMPONENTS

PRESSURE / FLOW SENSORS INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

MEASURE-MENT SENSORS

STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES

FA COMPONENTS MACHINE

VISION SYSTEMS

LASER SENSORS

PHOTO-ELECTRIC SENSORS MICRO PHOTO-ELECTRIC SENSORS AREA SENSORS

COMPONENTS PRESSURE / FLOW SENSORS INDUCTIVE PROXIMITY SENSORS

SENSOR OPTIONS SIMPLE WIRE-SAVING UNITS

PARTICULAR USE SENSORS

MEASURE-MENT SENSORS

STATIC CONTROL DEVICES LASER MARKERS

HUMAN MACHINE INTERFACES ENERGY MANAGEMENT SOLUTIONS

PLC

FA COMPONENTS MACHINE

VISION SYSTEMS CURING SYSTEMS

Convergent Reflective

PM-25/PM-45/ PM-65

Compact / Cable type PM-45 SERIES

Compact size!









* NPN output / 1 m 3.281 ft cable length type only

ORDER GUIDE

Туре	Appearance (mm in)	Sensing range	Model No.	Cable length	Output	Output operation
1.10		MANNIO	PM-K45	1 m 3.281 ft	NPN open-collector	CTW
K type	7 0.276	MMM.10	PM-K45-C3	3 m 9.843 ft	transistor	
X Š	25.4 1.000 21.3 0.839	WWW.1	PM-K45-P	1 m 3.281 ft	PNP open-collector	ONL
NV	0.839	WWW	PM-K45-P-C3	3 m 9.843 ft	transistor	ONL
		VWW	PM-T45 1 m 3.281 ft NPN open-collector	CONTAN		
be De	13.7 0.539	WW	PM-T45-C3	3 m 9.843 ft	transistor	Y.CONT.
T type	26	N WY	PM-T45-P	1 m 3.281 ft	PNP open-collector	N.COM.
N	1.024 0.713		PM-T45-P-C3	3 m 9.843 ft	transistor	ON.COM. TW
	MIN CONT		PM-L45	1 m 3.281 ft	NPN open-collector	OOY.CONLTW
e d		TW	PM-L45-C3	3 m 9.843 ft	transistor	
Compact / Cable type	26 14.6 0.575	6 mm 0.236 in	PM-L45-P	1 m 3.281 ft	PNP open-collector transistor	N.100Y.COM.TW
2	1.024 >7 0.276		PM-L45-P-C3	3 m 9.843 ft		Incorporated with 2 outputs:
מכו	Ø 150	(fixed)	PM-Y45	1 m 3.281 ft	NPN open-collector	Light-ON/Dark-ON
<u></u>	14.6 0.575		PM-Y45-C3 3 m 9.843 ft transistor		MANTO AT LONG	
Y type	13.4		PM-Y45-P 1 m 3.281 ft PNP open-collector	AMAN'TOOX'COM		
	0.528		0.528 PM-Y45-P-C3 3 m 9.843 ft transistor	transistor	MMM-100A'COW	
		V.COM.	PM-F45	1 m 3.281 ft	NPN open-collector	1 1110
F type	13 0.512	PM-F45-C3 3 m 9.843 ft transistor	transistor	MMM.100X.CO		
π t	13.7 0.539 21.3 0.839	ON COM.	PM-F45-P	1 m 3.281 ft	PNP open-collector	MMM.100X.CC
	0.539	Ing COM.	PM-F45-P-C3	3 m 9.843 ft	transistor	
	a WWW	Jun COM	PM-R45	1 m 3.281 ft	NPN open-collector	WWW.
R type	13 0.512	W.Inv.CO	PM-R45-C3	3 m 9.843 ft	transistor	WWW.1007.C
R t	13.7 21.3 0.539 0.839	M. Jun Z.CC	PM-R45-P	1 m 3.281 ft	PNP open-collector	WWW.100
	0.539 \ \ \ \ 0.839	WW.100 C	PM-R45-P-C3	3 m 9.843 ft	transistor	W WWW.I

SPECIFICATIONS

Var	WE	Compact /	Cable type			
	Туре	W.100 COM. IN STAM. IO	3 m 9.843 ft cable			
S.	NPN output	PM-□45	PM-□45-C3			
Item \ 9	PNP output	PM-□45-P	PM-□45-P-C3			
CE marking direct	ctive compliance	EMC Directive,	RoHS Directive			
Sensing range	N .	6 mm 0.23	36 in (fixed)			
Minimum sensi	ng object	0.8 × 1.2 mm 0.031 ×	0.047 in opaque object			
Hysteresis	7.1	0.05 mm 0.0	002 in or less			
Repeatability	TW	0.01 mm 0.0	004 in or less			
Supply voltage	1.TV	5 to 24 V DC ±10 % R	Ripple P-P 10 % or less			
Current consum	nption	15 mA	or less			
Output		<npn output="" type=""> NPN open-collector transistor Maximum sink current: 50 mA Applied voltage: 30 V DC or less (between output and 0 V) Residual voltage: 2 V or less (at 50 mA sink current) 1 V or less (at 16 mA sink current) </npn>	<pnp output="" type=""> PNP open-collector transistor Maximum source current: 50 mA Applied voltage: 30 V DC or less (between output and +V) Residual voltage: 2 V or less (at 50 mA source current) 1 V or less (at 16 mA source current) </pnp>			
Output op	eration	Incorporated with 2 out	puts: Light-ON/Dark-ON			
Short-circuit protection		Incorp	porated			
Response time		Under light received condition: 20 μs or less Under light interrupted condition: 80 μs or less (Maximum response frequency: 3 kHz) (Note 2)				
Operation indic	ator	Orange LED (lights up und	der light received condition)			
Pollution degree	e CO	M. W. W. W. COM. TAS W. W. CO. T. T. W.				
Protection	1.100 × C	IP64	(IEC)			
8 Ambient to	emperature	-25 to +55 °C −13 to +131 °F (No dew condensation or icing allowed), Storage: -30 to +80 °C −22 to +176 °F				
Ambient to Ambient in Voltage w Vibration	numidity	5 to 85 % RH, Storage: 5 to 95 % RH				
Ambient il	lluminance	Fluorescent light: 1,000 & or less at the light-receiving face				
Voltage w	rithstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure				
Insulation	resistance	20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure				
Vibration resistance		10 to 2,000 Hz frequency, 1.5 mm 0.059 in double amplitude (maximum acceleration 196 m/s²) in X, Y and Z directions for two hours each				
Shock res	sistance	15,000 m/s² acceleration (1,500 G approx	15,000 m/s² acceleration (1,500 G approx.) in X, Y and Z directions three times each			
Emitting elemer	nt	Infrared LED (Peak emission wavelen	gth: 855 nm 0.034 mil, non-modulated)			
Material	MMM	Enclosure: PBT, Displa	y section: Polycarbonate			
Cable	WWW	0.09 mm² 4-core cabtyre cable, PVC, 1 m 3.281 ft long	0.09 mm² 4-core cabtyre cable, PVC, 3 m 9.843 ft long			
Cable extension	n www	Extension up to total 100 m 328.084 ft is po	ssible with 0.3 mm², or more, cable. (Note 3)			
Weight		Net weight: 10 g approx., Gross weight: 15 g approx.	Net weight: 30 g approx., Gross weight: 35 g approx.			

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73.4 °F.

2) The response frequency is the value when the disc, given in the figure below, is rotated.



3) If the cable is extended to 20 m 65.617 ft or longer, confirm that the supply voltage at the end of the cable attached to the sensor is 4.5 V or higher.

FIBER SENSORS

LASER SENSORS

MICRO PHOTO-FLECTRIC

AREA SENSORS SAFETY LIGHT CURTAINS / SAFETY COMPONENTS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS PARTICULAR USE SENSORS

SENSOR OPTIONS

> SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS STATIC

STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS

MACHINE VISION SYSTEMS

> Selection Guide

Convergent Reflective

LASER SENSORS PHOTO-ELECTRIC SENSORS

AREA SENSORS

PRESSURE / FLOW SENSORS INDUCTIVE PROXIMITY SENSORS PARTICULAR USE SENSORS

COMPONENTS

SIMPLE WIRE-SAVING UNITS MEASURE-MENT SENSORS

SENSOR OPTIONS

STATIC CONTROL DEVICES LASER MARKERS

PLC HUMAN MACHINE INTERFACES

ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Compact / Connector built-in type PM-65 SERIES

Easy connection with a single touch using commercially-available connectors









* NPN output type only



Built-in connector

















ORDER GUIDE

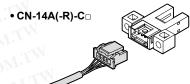
/ре	Appearance (mm in)	Sensing range	Model No.	Output	Output operation
K type	7 0.276	MMM.100X.CC	PM-K65	NPN open-collector transistor	CONT.TW
X	26 1.024 22.4 0.882	M.M.M.100X.	PM-K65-P	PNP open-collector transistor	COMITY
WW.	13.7 0.539	MMM.100X	PM-T65	NPN open-collector transistor	N.COM.TW
ed	26 1.024 22.4 0.882	MMM.100	PM-T65-P	PNP open-collector transistor	OOY.COM.TW
T type	0.882 16,7 0.657	WWW.1	PM-T65W	NPN open-collector transistor	1001.COW.IA
W	26 1.024		PM-T65W-P	PNP open-collector transistor	W.100Y.COM.TW
be		TW WW	PM-L65	NPN open-collector transistor	NW.100X.COM.TA
L type	26.2 1.031 0.618		PM-L65-P	PNP open-collector transistor	NMM:100X:COM:
be	14.9 0.587		PM-Y65	NPN open-collector transistor	Incorporated with 2 outputs
Y type	13.4 0.528 22.7 0.894	6 mm 0.236 in (fixed)	PM-Y65-P	PNP open-collector transistor	Light-ON/Dark-ON
	13.5 0.531	COMITY	PM-F65	NPN open-collector transistor	MAM.1001.
be	13.4 0.528 22.4 0.882	V.COM.TW	PM-F65-P	PNP open-collector transistor	MMM.100X
F type	13 0.512	TOOX.COM.TW	PM-F65W	NPN open-collector transistor	N MMM.10
	13.4 0.528 22.4 0.882	100X.COM.T	PM-F65W-P	PNP open-collector transistor	IM MMM'T
	13.5 0.531	M.100X.COM	PM-R65	NPN open-collector transistor	TW WWW
R type	13.4 0.528 22.4 0.882	MM·100X·CON	PM-R65-P	PNP open-collector transistor	DM.TW
Rt	13 0.512	MMM.100X.CO	PM-R65W	NPN open-collector transistor	
	13.4 0.528 0.882	WWW.100X.C	PM-R65W-P	PNP open-collector transistor	

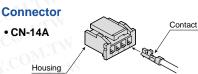
Note: PM-T65W is mounting-compatible with our conventional model "PM-T64W". PM-F65W(-P) is mounting-compatible with our conventional model "PM-F54(P)". PM-R65W(-P) is mounting-compatible with our conventional model "PM-R54(P)".

OPTIONS

Designation	Model No.	Description		Connect • CN-14
WIT	CN-14A-C1	Length: 1m 3.281 ft	22 24 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Connector	CN-14A-C2	Length: 2m 6.562 ft	0.2 mm ² 4-core cabtyre cable with connector on one end	
attached cable	CN-14A-C3	Length: 3m 9.843 ft	Cable outer diameter: ø3.7 mm	
TW	CN-14A-C5	Length: 5m 16.404 ft	ø0.146 in	TIMO
Connector	CN-14A-R-C1	Length: 1m 3.281 ft	0.2 mm ² 4-core cabtyre cable with connector on one end	CO.
attached cable	CN-14A-R-C2	Length: 2m 6.562 ft		Connec
(Bending-)	CN-14A-R-C3	Length: 3m 9.843 ft	Cable outer diameter: ø3.7 mm	• CN-14
resistant /	CN-14A-R-C5	Length: 5m 16.404 ft	ø0.146 in	
Connector	CN-14A	Set of 10	Ho	

Connector attached cable





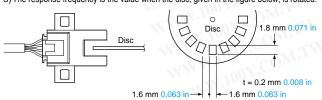
SPECIFICATIONS

/	CONTRACT	Compact / Conn	ector built-in type				
1/10	Туре	WW.Ing. COM.	Mounting-compatible with conventional model (Note 2)				
-788	≥ਂ NPN output	PM-□65	PM-□65W				
Item	PNP output	PM-□65-P	PM-□65W-P				
CE ma	arking directive compliance	EMC Directive,	RoHS Directive				
Sensi	ing range	6 mm 0.23	36 in (fixed)				
Minim	num sensing object	0.8 × 1.2 mm 0.031 ×	0.047 in opaque object				
Hyste	eresis	0.05 mm 0.0	002 in or less				
Repe	atability	0.01 mm 0.0	0004 in or less				
Suppl	ly voltage	5 to 24 V DC ±10 % F	Ripple P-P 10 % or less				
Curre	ent consumption	15 mA	or less				
Outpu	M.M.M. 100.7°C	<npn output="" type=""> NPN open-collector transistor Maximum sink current: 50 mA Applied voltage: 30 V DC or less (between output and 0 V) Residual voltage: 2 V or less (at 50 mA sink current) 1 V or less (at 16 mA sink current) </npn>	<pnp output="" type=""> PNP open-collector transistor • Maximum source current: 50 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 2 V or less (at 50 mA source current) 1 V or less (at 16 mA source current)</pnp>				
	Output operation	Incorporated with 2 outputs: Light-ON/Dark-ON					
	Short-circuit protection	Incorporated					
Resp	onse time	Under light received condition: 20 µs or less, Under light interrupted condition: 80 µs or less (Maximum response frequency: 3 kHz) (Note 3)					
Opera	ation indicator	Orange LED (lights up und	der light received condition)				
Pollut	tion degree	COM., ANN. AC	3)				
9	Protection	IP40	(IEC)				
tan	Ambient temperature	-25 to +55 °C −13 to +131 °F (No dew condensation or icing allowed), Storage: -30 to +80 °C −22 to +176 °F					
resistance	Ambient humidity	5 to 85 % RH, Storage: 5 to 95 % RH					
	Ambient illuminance	Fluorescent light: 1,000 & or less at the light-receiving face					
Jen	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure					
e L	Insulation resistance	20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure					
Environmental	Vibration resistance	10 to 2,000 Hz frequency, 1.5 mm 0.059 in double amplitude (maximum acceleration 196 m/s²) in X, Y and Z directions for two hours each					
Ш	Shock resistance	15,000 m/s² acceleration (1,500 G approx	15,000 m/s² acceleration (1,500 G approx.) in X, Y and Z directions three times each				
Emitti	ing element	Infrared LED (Peak emission wavelen	igth: 855 nm 0.034 mil, non-modulated)				
Mater	rial	Enclosure: PBT, Displa	y section: Polycarbonate				
Cable	elength	Extension up to total 100 m 328.084 ft is po	essible with 0.3 mm², or more, cable. (Note 4)				

Notes: 1)Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73.4 °F

Weight

2) PM-T65W is mounting-compatible with our conventional model "PM-T64W". PM-F65W(-P) is mounting-compatible with our conventional model "PM-F54(P)". PM-R65W(-P) is mounting-compatible with our conventional model "PM-R54(P)".
3) The response frequency is the value when the disc, given in the figure below, is rotated.



4)If the cable is extended to 20 m 65.617 ft or longer, confirm that the supply voltage at the end of the cable attached to the sensor is 4.5 V or higher.

Recommended connector

Net weight: 3 g approx., Gross weight: 3 g approx.

Contact: SPHD-001T-P0.5, Housing: PAP-04V-S (Manufactured by J.S.T. Mfg. Co., Ltd.)
Note: Contact the manufacturer for details of the recommended products.

Recommended crimping tool

Model No.: YC-610R (Manufactured by J.S.T. Mfg. Co., Ltd.) Note: Contact the manufacturer for details of the recommended products.

FIBER

LASER SENSORS

PHOTO-ELECTRIC SENSORS MICRO PHOTO-ELECTRIC

AREA SENSORS

SAFETY LIGHT CURTAINS / SAFETY COMPONENTS PRESSURE / FLOW SENSORS

SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS

STATIC CONTROL DEVICES LASER MARKERS

PLC

HUMAN MACHINE INTERFACES

ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS

MACHINE VISION SYSTEMS

> V URING YSTEMS

Selection Guide U-shaped Convergent

M-25/PM-45/ M-65 FIBER

LASER SENSORS

PHOTO-ELECTRIC SENSORS MICRO PHOTO-ELECTRIC SENSORS AREA SENSORS

SENSORS

SAFETY LIGHT
CURTAINS /
SAFETY
COMPONENTS

PRESSURE /
FLOW
SENSORS

INDUCTIVE
PROXIMITY
SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

MEASURE-MENT SENSORS

STATIC CONTROL DEVICES LASER MARKERS

PLC

MACHINE INTERFACES ENERGY MANAGEMENT SOLUTIONS

COMPONENTS MACHINE

VISION SYSTEMS UV CURING SYSTEMS

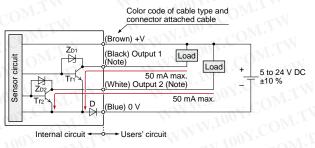
Selection Guide U-shaped Convergent Reflective

> PM-25/PM-45/ PM-65

I/O CIRCUIT AND WIRING DIAGRAMS

NPN output type

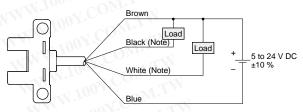
I/O circuit diagram



Note: Ensure to insulate the unused output wire.

Symbols...D: Reverse supply polarity protection diode ZD1, ZD2: Surge absorption zener diode Tr1, Tr2: NPN output transistor

Wiring diagram (PM-25 series / PM-45 series)

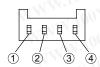


Note: Ensure to insulate the unused output wire.

Output operation

MALLY.	Color code	Output operation
Output 1	Black	Light-ON
Output 2	White	Dark-ON

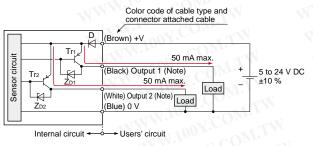
Terminal arrangement diagram (PM-65 series)



Terminal No.	Designation
1	VI V 100+V 00 1 1 1 W
2	Output 1: Light-ON
3	Output 2: Dark-ON
4	0V 00N

PNP output type

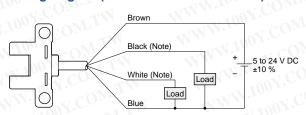
I/O circuit diagram



Note: Ensure to insulate the unused output wire.

Symbols...D: Reverse supply polarity protection diode ZD1, ZD2: Surge absorption zener diode Tr1, Tr2: PNP output transistor

Wiring diagram (PM-25 series / PM-45 series)



Note: Ensure to insulate the unused output wire.

Output operation

MAN HOXIC	Color code Output	
Output 1	Black	Light-ON
Output 2	White	Dark-ON

Terminal arrangement diagram (PM-65 series)

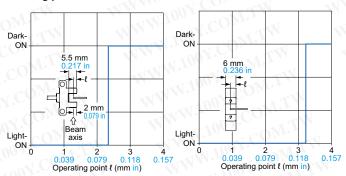


Terminal No.	Designation
1	+V
2	Output 1: Light-ON
3	Output 2: Dark-ON
4	0 V

SENSING CHARACTERISTICS (TYPICAL)

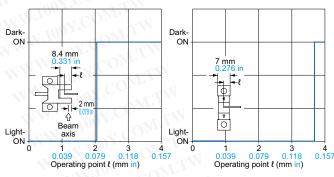
PM-25 series

Sensing position



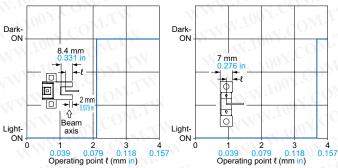
PM-45 series

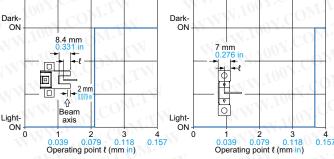
Sensing position



PM-65 series

Sensing position





PRECAUTIONS FOR PROPER USE

Refer to p.1552~ for general precautions.

 Never use this product as a sensing device for personnel protection.

• In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

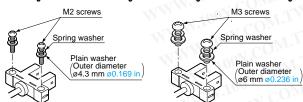
Mounting

PM-25 series

• The following conditions must be observed when using screws to mount the sensor unit.

Screw	Spring washer	Flat washer	Tightening torque
M2 screw	1 pc.	ø4.3 mm ø0.169 in (small round washer)	0.15 N⋅m
M3 screw	1 pc.	ø6 mm ø0.236 in (small round washer)	0.5 N⋅m

< When using M2 screws for mounting > < When using M3 screws for mounting >



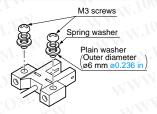
When using the optional mounting screw set MS-M2, a spring washer is included.

• In case the PM-25 series is used at an ambient temperature of +50 °C +122 °F, or more, make sure to mount it on a metal body.

PM-45 series

• The following conditions must be observed when using screws to mount the sensor unit.

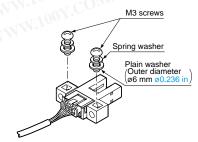
Screw	Spring washer	Flat washer	Tightening torque
M3 screw	1 pc.	ø6 mm ø0.236 in (small round washer)	0.5 N⋅m



PM-65 series

• The following conditions must be observed when using screws to mount the sensor unit.

Screw	Spring washer	Flat washer	Tightening torque
M3 screw	1 pc.	ø6 mm ø0.236 in (small round washer)	0.5 N·m



LASER SENSORS

AREA SENSORS CURTAINS / SAFETY COMPONENTS

PRESSURE FLOW SENSORS INDUCTIVE PROXIMITY SENSORS

> PARTICULAR USE SENSORS SENSOR OPTIONS

MEASURE-MENT SENSORS

CONTROL DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

LASER SENSORS

PHOTO ELECTRIC SENSORS MICRO PHOTO

AREA SENSORS SAFETY LIGHT CURTAINS/ SAFETY COMPONENTS PRESSURE/ FLOW SENSORS

PARTICULAR
USE
SENSORS

SENSORS

SENSORS

SIMPLE WIRE-SAVING UNITS

MEASURE-MENT SENSORS STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN
MACHINE
INTERFACES

ENERGY MANAGEMENT SOLUTIONS FA COMPONENTS

MACHINE VISION SYSTEMS UV CURING SYSTEMS

Selection Guide U-shaped Convergent Reflective

PM-25/PM-45/ PM-65

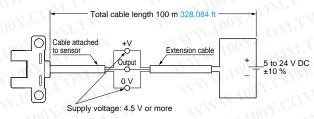
PRECAUTIONS FOR PROPER USE

Refer to p.1552~ for general precautions.

Cable extension

PM-25 series / PM-45 series

 Cable extension is possible up to an overall length of 100 m 328.084 ft with a 0.3 mm², or more, cable.
 However, since a voltage drop shall occur due to the cable extension, ensure that the power supply voltage at the end of the cable attached to the sensor is within the rating.

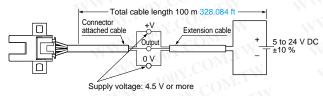


But, when the overall cable length, including the cable attached to the sensor, is as given below, there is no need to confirm the voltage.

Conductor cross-section area of extension cable	Total cable length
0.08 to 0.1 mm ²	Up to 5 m 16.404 ft
0.2 mm ²	Up to 10 m 32.808 ft
0.3 mm ²	Up to 20 m 65.617 ft

PM-65 series

 Cable extension is possible up to an overall length of 100 m 328.084 ft with a 0.3 mm², or more, cable.
 However, since a voltage drop shall occur due to the cable extension, ensure that the power supply voltage at the end of the connector attached cable of the sensor or at the sensor terminals is within the rating.



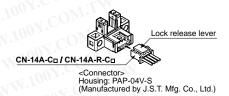
But, when the overall cable length, including the cable attached to the sensor, is as given below, there is no need to confirm the voltage.

Conductor cross-section area of extension cable	Total cable length
0.08 to 0.1 mm ²	Up to 5 m 16.404 ft
0.2 mm ²	Up to 10 m 32.808 ft
0.3 mm ²	Up to 20 m 65.617 ft

Wiring (PM-65 series)

Connection method

• Insert the connector attached cable CN-14A-C□ / CN-14A-R-C□ in the connector part of this product as shown in the figure below.



<Connector pin position>



Connector pin No.	1	2	3	4
Terminal designation	+V	Output 1	Output 2	0 V

Disconnection method

 Press and hold the lock release lever to disconnect the cable connector.

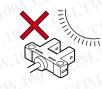
Note: Pulling the cable without pressing the lock release lever in an attempt to disconnect the connector can cause wire breakage in the cable or damage to the connector.

When using the product as an S-mark compatible product in Korea

 The power supply cable and output cable connected to the product must be less than 10 m 32.808 ft.

Others

- This device has been developed / produced for industrial use only.
- Since the sensor is intended for use inside machines, no special countermeasures have been taken against extraneous light. Take care that extraneous light is not directly incident on the beam receiving section.



- Do not use during the initial transient time (50 ms) after the power supply is switched on.
- Note that the cable of PM-□25-R loses its flexibility when the ambient temperature decreases to about -10 °C +14 °F
- The cable of PM-□25-R is a bending-resistant cable usable on a moving base. When the sensor is mounted on a moving base, secure the sensor cable joint at the unit in place so that stress is not applied to it.
- If the sensor is used in a place having excessive dust, periodically clean the emitting and receiving sections with a dry, soft cloth.
- If there is a large surge generating equipment, such as, motor, solenoid, electromagnetic valve, etc., in the vicinity of the sensor, use a surge absorber on that equipment. Further, do not run the sensor cables along power lines and use a capacitor between +V and 0 V, if required. Use the sensor after confirming that the surge has been eliminated.

LASER SENSORS

PHOTO-ELECTRIC SENSORS

AREA SENSORS

SAFETY LIGHT CURTAINS / SAFETY COMPONENTS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS MEASURE-MENT SENSORS

CONTROL DEVICES LASER MARKERS

PLC

HUMAN MACHINE INTERFACES

FA COMPONENTS

MACHINE

VISION SYSTEMS

Sensor

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

PM-K25□ 6 Beam Operation indicator (Orange) 23.9 18.7 Operation indicator (Orange) 13.4 6 2 0.079 Beam size: 1.2 × 0.8 0.047 × 0.031 ♦ 0.315 5 0.197 2-a3 2 a0 126 mounting holes ø6 ø0.236 ø2.5 ø0.098 cable

Operation indicator (Orange)

1.75
0.069
2-elongated mounting holes
0.472 0.236
0.126
0.315

Operation indicator (Orange)
1.6
0.063
0.3.2
0.126
0.315

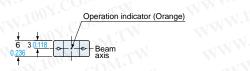
Operation indicator (Orange)
1.6
0.063
0.2063
0.326
0.126
0.315

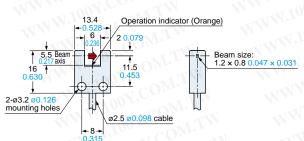
Operation indicator (Orange)
1.2 x 0.8 0.047 × 0.031
0.079

0.079

0.079

PM-U25□ Sensor





Operation indicator (Orange)

11.7

0.264

Operation indicator (Orange)

1.5

0.264

Operation indicator (Orange)

1.2 x 0.8 0.047 x 0.031

1.5 0.059

1.5 0.079

1.95 0.077

1.95 0.077

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

1.95 0.079

Operation indicator (Orange)

Operation indicator (Orange)

13.4

1.5

Beam 6

axis 0.236

0.264

Operation indicator (Orange)

13.4

0.55

Beam size:

0.059

1.2 x 0.8 0.047 x 0.031

0.217 axis

0.217 axis

0.217 axis

0.217 axis

0.218

0.118

0.118

0.118

0.118

0.118

0.118

Selection Guide U-shaped Convergent Reflective

PM-25/PM-45/

LASER SENSORS

PHOTO-ELECTRIC SENSORS

AREA SENSORS

COMPONENTS

PRESSURE / FLOW SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

MEASURE-MENT SENSORS

STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN

MACHINE INTERFACES ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS

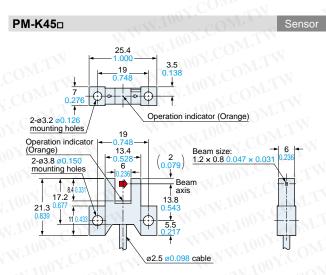
MACHINE

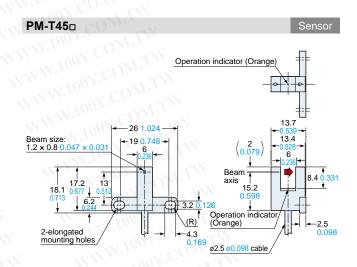
VISION SYSTEMS

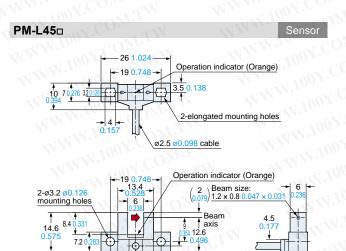
CURING

FIBER SENSORS Unit: mm in)

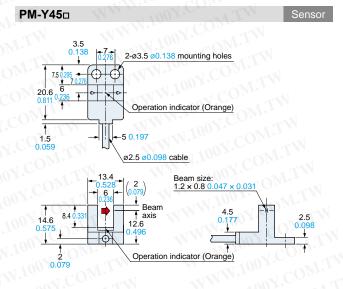
The CAD data can be downloaded from our website.



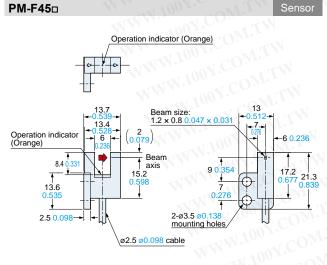




2 0.079







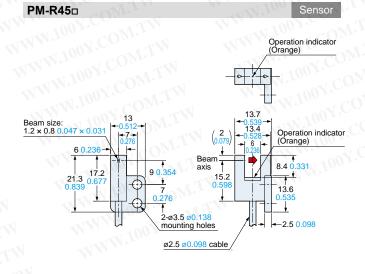


PHOTO-ELECTRIC SENSORS

AREA SENSORS

SAFETY LIGHT CURTAINS / SAFETY COMPONENTS

PRESSURE / FLOW SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

Operation indicator (Orange)

6.5

Operation indicator (Orange)

2-ø3.2 ø0.126 mounting holes

axis

2-mounting

Operation indicator (Orange)

Beam size:
1.2 × 0.8 0.047 × 0.031

2-Ø3.2 Ø0.126 mounting holes

13.4

0.882

13.8

0.882

13.8

0.882

13.8

0.543

7.4(291

13.8

0.543

7.4(291

13.7

0.146

PM-T65 PM-T65-P

26 1.024

2-elongated mounting holes

13 0.512

0.244

1.6 0.063

0.244

1.6 0.063

0.236

Operation indicator (Orange)

2.2.4

Operation indicator (Orange)

3 0.327

0.327

0.331

0.327

0.331

0.327

0.331

0.327

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

0.331

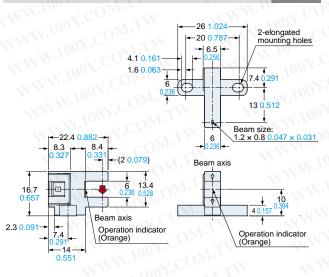
0.331

PM-T65W PM-T65W-P

PM-Y65 PM-Y65-P

--20 0.787→

Sansor



PM-L65 PM-L65-P

-26.2 1.031·

-20 0.787 -3.9 0.154/ -1.7 0.067/

13.4

-∣ 6

-26.2 1.031

(2 0.079)

Sensor

MEASURE-MENT SENSORS STATIC

CONTROL DEVICES

PLC

HUMAN MACHINE INTERFACES ENERGY

FA COMPONENTS

MACHINE

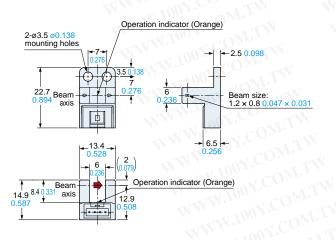
MACHINE VISION SYSTEMS

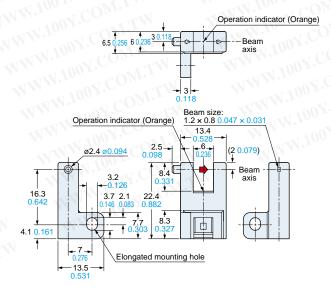
OM.

U-shaped Convergent

PM-25/PM-45/ PM-65

PM-F65 PM-F65-P





LASER SENSORS PHOTO-ELECTRIC SENSORS

AREA SENSORS COMPONENTS

PRESSURE / FLOW SENSORS INDUCTIVE PROXIMITY SENSORS PARTICULAR USE SENSORS

SENSOR OPTIONS SIMPLE WIRE-SAVING UNITS

MEASURE-MENT SENSORS STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES SOLUTIONS FA COMPONENTS

MACHINE VISION SYSTEMS CURING

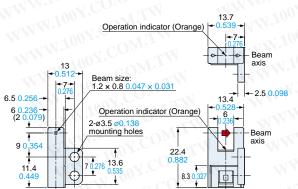
DIMENSIONS (Unit: mm in)

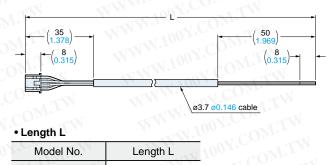
The CAD data can be downloaded from our website.

PM-F65W PM-F65W-P 13.7 -0.539 Operation indicator (Orange) Beam axis 13 Beam size: $1.2 \times 0.8 \ 0.047 \times 0.031$ 2.5 0.098 -Operation indicator (Orange) -6.5 **0.256** 13.4 6 0.20 (2 0.079) -6 0.236 → 6 | 2-ø3.5 ø0.138 mounting holes Beam 9 0.354 22.4 0.882 13.6

PM-R65 PM-R65-P Operation indicator (Orange) 0. axis Beam size 0.031 Operation indicator (Orange) 6 236 **|--**2.5 0.098 16.3 0.642 3.7 0.14 1 8.3 4.1 0.161 2.1 0.083 Elongated mounting hole -13.5

PM-R65W PM-R65W-P





Length L

Model No.	Length L
CN-14A(-R)-C1	1,000 39.370
CN-14A(-R)-C2	2,000 78.740
CN-14A(-R)-C3	3,000 118.110
CN-14A(-R)-C5	5,000 196.850

W.100Y.COM.TW 料 886-3-5753170 特力材 胜特力电子(上海) 86-21-34970699 胜特力电子(深圳) 86-755-83298787 Http://www. 100y. com. tw

WWW.100Y.COM.