



Photo Sensor

PZ1 series Mini photo sensor

Specification

		PZ series					
Appearance							
Type		Through beam			Diffuse reflection		
Model	NPN type	PZ1-T1N	PZ1-T5N	PZ1-T7N	PZ1-R10N	PZ1-R30N	PZ1-R40N
Sensing distance		1 m	5 m	7 m	100 mm	30-300 mm	40-400 mm
Detecting object		Opaque object of Min.Ø6 mm			White no-glossy paper 200×200 mm		
Power voltage		12 - 24 V d.c. (±10 %)					
Current consumption	Trns	Max. 20 mA d.c.			Max. 30 mA d.c.		
	Rcvr	Max. 18 mA d.c.					
Operating mode		LIGHT ON(L.ON) / DARK ON(D.ON) Selectable S/W build in type.					
Control Output		NPN/PNP OPEN collector output , Load current : Max,100 mA d.c. (Resistive load), Residual voltage : Max,1 V d.c.					
Response time		Max. 1 ms					
Hysteresis		-			Within 25 % of Operating distance	Within 10 % of Operating distance	Within 10 % of Operating distance
Light source		Infrared emitting diode					
Material		CASE : PC(EXRL)			Lense : PC		
Protection circuit		Reverse polarity protection and overcurrent protection					
Connection		3P (Trsn, 2P), Ø 3,8 mm, length : 2 m					
Ambient light		Sunlight : Max, 11,000 lx, Incandescent lamp : Max,3,000 lx					
Ambient temperature		Operating : -20 ~ 60 °C, Preserving : - 25 ~ 70 °C(Without condensation)					
Ambient humidity		Max. 35 ~ 85 % R.H.					
Protection structure		IP 65(IEC) (IP67 is an option)					
Vibration resistance		10 - 55 Hz (for a minute), double amplitude width : 1,5 mm, each X,Y,Z direction for 2hr.					
Dielectric strength		1000 V a.c. (50-60 Hz for a minute)					
Shock resistance		500 ㎉ (Approx 50 G), each X,Y,Z direction for 3times					
Insulation resistance		20 MΩ min.(At 500 V d.c. between code and case, adjusting switch and case)					
Weight		Trns., Rcvr. : each approx. 55 g			approx. 60 g		




Suffix code

Model	Code	Information
PZ1-	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Small size photo sensor
Sensing method and sensing distance	T 1	1 m
	T 5	5 m
	T 7	7 m
	R 10	100 mm
	R 30	30 - 300 mm
	R 40	40 - 400 mm
Output	N	NPN open collector output
	P	PNP open collector output
Protective structure (cautious 1)		IP 65 : Standard type
		IP 67 : Optional (No volume & setting switch)

Photo Sensor

PS series Compact photo sensor with high accuracy

Specification

		PS series										
Appearance												Temperature Controller
Type		Through beam			Retroreflection	Diffuse reflection			Distance convergent beam			Recorder
Model	NPN	PS-T1N	PS-T7N	PS-T10RN	PS-M2RN	PS-R7N	PS-R30N	PS-R40RN	PS-D3RN	PS-D4RN	PS-D5RN	Digital Counter
	PNP	PS-T1P	PS-T7P	PS-T10RP	PS-M2RP	PS-R7P	PS-R30P	PS-R40RP	PZS-D3RP	PS-D4RP	PS-D5RP	Timer
Sensing distance		1 m	7 m	10 m	0.1-2 m	70 m	300 mm	400 mm	10-30 mm	10-40 mm	10-50 mm	Analog Timer
Detecting object		Ø6 mm			Ø20 mm	white no-glossy paper 100×100 mm	white no-glossy paper 200×200 mm		White no-glossy paper 50×50 mm			Panel Meter
Power voltage		12 - 24 V d.c. ±10 % (Ripple ±10 %)										Multi Pulse Meter
Current consumption	Trns	Max. 23 mA	Max. 20 mA	Max. 23 mA	Max. 23 mA	Max. 28 mA	Max. 23 mA	Max. 25 mA	Max. 30 mA			Proximity Sensor
	Rcvr	Max. 20 mA	Max. 20 mA	Max. 20 mA								
Output	Control output	NPN / PNP open collector output, load voltage : Max. 30 V d.c., Resistive load : 100 mA, Inductive load : Max. 50 mA, Residual voltage : Max.1 V										Photo Sensor
	Stability output	NPN open collector output, load voltage : Max. 30 V d.c., Resistive load : Max. 50 mA, Residual voltage : Max.1 V										
Operating mode		Light On / Dark On selection by switch Volume built-in type										Rotary Encoder
Response time		Max. 0.7 ms										Thyristor Power Regulator
Hysteresis		-			Within 20 % of operating distance			Within 10 % of operating distance				Solid State Relay
Light source		Infrared emitting diode	Red emitting diode		Infrared emitting diode		Red emitting diode					Power Supply
Operating indicator		Control output indicator : Red LED, stability output indicator : Green LED(Infrared LED of emitting part for through beam type is power indicator)										Control Switch
Ambient light		Sunlight : Max. 5000 lx										Push Button / Main Switch
Ambient temperature		-20 ~ 60 °C / -25 ~ 70 °C (No condensation)										Cam Switch / Limit Switch
Ambient humidity		35 ~ 85 % RH (No condensation)										Micro / Hoist Switch
Case protection		IP67(IEC)										Foot / Mono Lever Switch
Vibration resistance		10 - 55 Hz (Cycle for 1 min.), Double amplitude : 1.5 mm, each X-Y-Z direction for 2 hr.										Signal Light
Shock resistance		500 % (approx. 50 G), each X-Y-Z direction for 3 time										Terminal Block / Power Buzzer / Fuse Holder / Control Box
Connection		Flying lead NPN 4P(Trns. 2P) / PNP 3P(Trns 2P), Ø3 mm, length 2 m				Flying lead NPN 4P / PNP 3P, Ø3 mm, length 2 m						
Material		CASE : PC, Lens Cover : PC										
Weight		Trns/Rcvr:each 50 g(Net weight)				Approx. 50 g (Net weight)						


Suffix code

Model	Code	Information		
PS-	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Small size photo sensor		
Sensing method and sensing distance	T 1	1 m	Through-beam	
	T 7	7 m		
	T 10R	10 m		
	M 2R	0.1 - 2 m	Retro-reflective	
	R 7	7	70 mm	Diffuse-reflective
		R 30	300 mm	
		R 40R	400 mm	
	D 3R	3R	10 - 30 mm	Distance-settable
		D 4R	10 - 40 mm	
		D 5R	10 - 50 mm	
Output	N	NPN open collector output		
	P	PNP open collector output		

Photo Sensor

■ PW series Compact photo sensor with distance setting

■ Specification

		PW series			
Appearance					
Type		Diffuse reflection			
Model	NPN type	PW-D10RN	PW-D10N	PW-D15N	PW-D20N
	PNP type	PW-D10RP	PW-D10P	PW-D15P	PW-D20P
Sensing distance		10 – 100 mm	10 – 100 mm	10 – 150 mm	10 – 200 mm
Detecting object		White no-glossy paper 100×100 mm			
Power voltage		12 – 24 V d.c. ±10 % (Ripple ±10 % (Max.))			
Current consumption		Max. 30 mA			
Output	Control output	NPN open collector output(NPN TYPE)/PNP open collector output(PNP TYPE), Load Current:Max. 100 mA, Load voltage:Max. 30 V d.c.			
	Stabilize output	NPN open collector output Load Current:Max. 50 mA, Load voltage:Max. 30 V d.c. but there is no stable output with PNP output type			
Operating mode		Light ON / Dark ON Selectable			
Response time		Max. 0.7 ms			
Hysteresis		10 % of operating distance			
Light source		Red LED	Infrared emitting diode		
Operating Indicator		Control output indicate : Red LED, Stabilized output indicate : Green LED			
Ambient light		Sunlight : Max. 5000 lx			
Ambient temperature		-20 ~ 60 °C (Surrounding storage temperature : -25~70 °C) (Without condensation)			
Ambient humidity		35 ~ 85 % RH (Without condensation)			
Case Protection		IP67(IEC)			
Vibration resistance		10 – 55 Hz for 1 minute, Double amplitude width : 1.5 mm, X-Y-Z each direction for 2 hours			
Shock resistance		500 % (About 50 G), X-Y-Z each direction for 10 times			
Connection		NPN type : Ø4/4C(Length : 2 m), PNP type : Ø4/3C(Length : 2 m)			
Material		CASE : Heatproof ABS, Lens Cover : PC(Translucent red)			
Weight		Approx. 80 g			


■ Suffix code

Model	Code	Information
PW –	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Photo Sensor Small Wide Type
Detection	D	Distance Convergent Beam Type
Sensing distance	10	10 ~ 100 mm
	15	10 ~ 150 mm
	20	10 ~ 200 mm
LED indicator	–	Infrared LED
	R	Red LED
Output	N	NPN output
	P	PNP output

Photo Sensor

■ PY series Mini flat type photo sensor

■ Specification

		PY series			
Appearance					Temperature Controller
					Recorder
Type	Through beam				Digital Counter Timer
Model	PY-T3N		PY-T3P		Analog Timer
	PY-T3N-D	PY-T3N-L	PY-T3P-D	PY-T3P-L	
	PY-TL3(Trns.), PY-TR3N-D(Rcvr.)	PY-TL3(Trns.), PY-TR3N-L(Rcvr.)	PY-TL3(Trns.), PY-TR3P-D(Rcvr.)	PY-TL3(Trns.), PY-TR3P-L(Rcvr.)	Panel Meter
Detecting object	Opaque object of over (Min. Ø5 mm)				Multi Pulse Meter
Operating mode	Dark ON	Light ON	Dark ON	Light ON	Proximity Sensor
Sensing distance	3 m				
Response time	Max. 1 ms				
Power voltage	+12 ~ +24 V d.c. ±10 % (Ripple Max. ±10 %)				
Current consumption	In case of rating Voltage 24 V d.c., Trns : 23 mA, Rcvr : Max. 18 mA				
Light source	Infrared emitting diode				
Control Output	<ul style="list-style-type: none"> • Load voltage : Max. 30 V d.c. • Stability output current : Max. 50 mA • Residual voltage : Max.1 V • NPN open collector output • load current : Max. 100 mA 		<ul style="list-style-type: none"> • PNP open collector output • Load current : Max. 100 mA • Residual voltage: Min.(Power voltage -2.0 V) 		Photo Sensor
Protection circuit	Reverse polarity protection, overcurrent protection				Rotary Encoder
LED Indicator	Trns. : Power indicate(Red LED), Rcvr. : Operating indicate(Red LED), Stability indicate(Green LED)				Thyristor Power Regulator
Insulation resistance	Min. 20 MΩ (At 500 V d.c.)				Solid State Relay
Dielectric strength	1000 V a.c. (for a minute in 50/60 Hz mega)				
Vibration resistance	10 ~ 55 Hz (cycle for 1 minute) double amplitude width : 1.5 mm, each X:Y:Z direction 2 hrs				
Shock resistance	500 % (Approx. 50 G) each X:Y:Z direction 2 time				Power Supply
Ambient light	Sunlight : Max. 11000 lx, Incandescent : Max. 3000 lx				
Ambient temperature	-20 ~ 60 °C (Surrounding storage temperature : -25~70 °C) (Without condensation)				
Ambient humidity	35 ~ 85 % R,H				Control Switch
Case Protection	IP 67 (IEC)				Push Button / Main Switch
Material	Lens, case : PC				
Connection	Trns. : Ø3 mm, 2P, Rcvr. : Ø3 mm, 3P(NPN:4P), Cable length : 2 m				Cam Switch / Limit Switch
Weight	Approx. 66 g				Micro / Hoist Switch




■ Suffix code

Model	Code	Information
PY -	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Slim type Photo Sensor
Detection	D	Through beam
Sensing distance	3	3 m
Output	N	NPN Open Collector Output
	P	PNP Open Collector Output
Operation	D	Dark ON Operation
	L	Light ON Operation

Photo Sensor

PN series Voltage output type photo sensor

Specification

Model	PN-T3	PN-R02	PN-M1
Appearance			
Type	Through beam	Diffuse reflection	Retroreflection
Sensing distance	3 m	200 mm	0.1–1 m
Detecting object	Substance (over Ø8 mm)	White no-glossy (200 x 200 mm)	Substance (over Ø48 mm)
Power voltage	12 – 24 V d.c.(± 10 %)		
Current consumption	Emitter : Max. 2.0 mA d.c., Receiver : Max. 18 mA d.c.	Max. 30 mA d.c.	
Operating mode	Dark : ON	Light : ON	Dark : ON
Control Output	NPN voltage output : Load voltage Max. 30 V d.c., Load current : Max 200 mA , Residual voltage: Max. 1 V		
Protection circuit	Reverse polarity protection, Overcurrent protection		
Response time	Max. 3 ms		
Hysteresis	–	Max. 20 %	–
Light source	Infrared LED (Modulated)		
Sensitivity control	–	By sensitivity control volume	–
Material	Case	Polycarbonate	
	Lens	Polycarbonate	
Connection	Cable		
Ambient light	Sun light : Max. 11,000 lx, Incandescent light : Max. 3,000 lx		
Ambient temperature	–25 ~ 55 °C (Surrounding storage temperature : –40~70 °C) (Without condensation)		
Ambient humidity	35 ~ 85 % RH (Without condensation)		
Case protection	IP54(IEC)		
Vibration resistance	10 – 55 Hz, Double amplitude 1.5 mm, X-Y-Z each direction for 2 hours		
Dielectric strength	1,000 V a.c. for 1 minute		
Insulation resistance	Min. 20 MΩ (At 500 V d.c., Between code and case, contact and power supply)		
Accessories	Bracket for fixing, Bolt, Nut for fixing		

(Note 1) The sensing distance can be varied depending on the size, surface condition, glossy, non-glossy of the sensing object

(Note 2) PN-TL3 is transmitter and PN-TR3 is receiver when it is through beam type

Suffix code

Model	Code	Information
PN –	<input type="checkbox"/> □ □	Photo Sensor
Detection	T □ 3	Through beam
	M □ 1	Diffuse reflection
	R □ 02	Retroreflection
Operation		12 – 24 V d.c. ± 10 %

Photo Sensor

PR series Simple installing cylinder type photo sensor

Specification

Model	Brass case	PR-T10NC	PR-M1NC	PR-M2NC	PR-R100NC	PR-R300NC
	Plastic	PR-T10NP	PR-M1NP	PR-M2NP	PR-R100NP	PR-R300NP
Appearance						
Sensing method	Through beam type		Retroreflection type		Diffuse reflection type	
Sensing distance	10 m		1 m	2 m	100 mm	300 mm
Detecting object	Min Ø10 mm (Opaque above)		Min Ø25 mm (Opaque above)		200 x 200 mm White non-glossy paper	
Power supply voltage	12 - 24 V d.c. ±10 %					
Current consumption	Transmitter	Max. 20 mA		Max. 35 mA		
	Receiver	Max. 15 mA				
Control output	NPN voltage output, Load current max 200 mA (30 V d.c.), Resistive load					
Output action	L,ON, D,ON * Selected by the control line, but limited with receiver in the through beam type					
Response time	max 1.5 ms					
Hysteresis	-				Less than ±20 % of the sensing range	
Light source(Wave length)	Infrared lightening LED (890 nm)					
LED	Control output indicator: Red LED (Red LED of through beam type transmitter is the power indicator)					
Sensitivity adjustment	By the sensitivity adjusting volume (But limited with the receiver in the through beam type)					
Protection circuit	Reverse polarity protection and output short-circuit protection					
Ambient illumination	Sunlight: max 11,000 Lux, Incandescent lamp : max 3,000 Lux					
Ambient temperature	-20 ~ 60 °C (Surrounding storage temperature : -25 ~ 70 °C) (Without condensation)					
Ambient humidity	35 ~ 85 % RH (With no condensation)					
Protective structure	IP 66 (IEC)					
Insulation resistance	min 20 MΩ (500 V d.c., Between the code and case)					
Dielectric strength	1,000 V a.c., 50/60 Hz for 1 min					
Vibration resistance	10 - 55 Hz double amplitude 1.5mm, for 2 hours each in X, Y and Z directions					
Shock resistance	500 %, 3 times each in X, Y and Z directions					
Connection method	Code extended type 2 m, 4P (Transmitter of the through beam type : 3P)					
Material	Case : brass (Nickel plating) / PBT, lens : PC					
Weight	Brass case : Approx. 120 g, Plastic case : Approx. 100 g					

(Note 1) The sensing distance can be varied depending on the size, surface condition, glossy, non-glossy of the sensing object

(Note 2) PR-TL10N□ is transmitter and PR-TR10N□ is receiver

(Note 3) Sensing range of the retroreflection type is a distance when using HY-M5 (Mirror)





Suffix code

Model	Code	Information	
PR	□ □ □ □	Round type photosensor	
Sensing method and Sensing distance	T 10	Through-beam	10 m
	M 1 2	Retro-reflection	1 m
			2 m
	R 100 300	Diffuse reflection	100 mm
300 mm			
Output	N	NPN open collector output	
	P	PNP open collector output	
material	P	Plastic case	
	C	Brass case	

Photo Sensor

■ PU series Fast responding, Best reliability

■ Specification

Model	PU-30	PU-30S	PU-50	PU-50S
Appearance				
Sensing distance	30 mm		50 mm	
Detecting object	Over $\varnothing 2$ mm(Substance)	Over $\varnothing 0.6$ mm (Substance)	Over $\varnothing 1.5$ mm (Substance)	Over $\varnothing 0.4$ mm (substance)
Power voltage	12 – 24 V d.c. ± 10 %			
Current consumption	Max. 30 mA			
Operating mode	Selectable Light On/Dark On for reverse polarity			
Control Output	NPN Open collector output : Load voltage Max. 300 V d.c., Load current : Max. 180 mA, Residual voltage : Max. 2 V			
Protection circuit	Reverse polarity protection , Overcurrent protection			
Response time	Max.1 ms			
Light source	Infrared LED (Modulated)			
LED Indicators	Output : Red LED, Power : Green LED			
Sensitivity adjustment	–	By adjusting volume	–	By adjusting volume
Material	Case	Zn		
	Lens	Polycarbonate		
Connection	Cable			
Ambient light	Sun light : Max, 11,000 lx, Incandescence light : Max 3,000 lx			
Ambient temperature	$-25 \sim 55$ °C (Surrounding storage temperature : $-40 \sim 70$ °C) (Without condensation)			
Ambient humidity	35 ~ 85 % RH (Without condensation)			
Case protection	IP65(IEC)			
Vibration resistance	10 – 55Hz, Double amplitude 1.5 mm, X-Y-Z each direction for 2 hours			
Dielectric strength	1,000 V a.c. for 1minute			
Insulation resistance	Min. 20 M Ω (At 500 V d.c., Between code and case, contact and power supply)			

PTX series Photo sensor

Specification

Model	Type	Normal Type	Timer Built-in Type	Normal Type	Timer Built-in Type	Normal Type	Timer Built-in Type	
	Built in Power Supply	PTX-T15A	PTX-T15A-T	PTX-M7A	PTX-M7A-T	PTX-R1A	PTX-R1A-T	
Built in Amplifier	PTX-T15B	PTX-T15B-T	PTX-M7B	PTX-M7B-T	PTX-R1B	PTX-R1B-T	Recorder	
Appearance							Digital Counter	
Sensing Type	Through beam		Retroreflection		Diffuse reflection		Timer	
Sensing distance	15 m		7 m		1 m		Analog	
Detecting object	More than Ø20 mm (Opaque object)		More than Ø60 mm (Opaque object)		200 x 200 mm (White no glossy paper)		Timer	
Power voltage	Built in Power Supply	24 - 240 V a.c./d.c. ±10 % 50/60 Hz						Panel Meter
	Built in Amplifier	12 - 24 V d.c. (± 10 %)						
Current Consumption	Emitter	Max 2 W		Max 2 W				
	Transmitter	Max 1 W						
Control Output	Built in Power Supply	Relay contact output (Contact composition 1a, 1b), Contact capacity : 5A resistive load, rated load life expectancy less than 100,000 times.						Multi Pulse Meter
	Built in Amplifier	NPN/PNP open collector yield output at the same time, Load : 150 mA, Load current: (Resistive load) NPN Residual voltage: Max 1 V d.c./PNP Residual voltage: Max 2 V d.c.						
Operation mode	Light ON/Dark ON are selectable by the selector switch							Proximity Sensor
Response time	Built in Power Supply	Max 20 ms						
	Built in Amplifier	Max 1 ms						
Hysteresis	-		Less than 20 % of sensing distance				Photo Sensor	
Light source	Output indication: Red LED, Stability indication: Green LED							
Sensitivity adjustment	Sensitivity adjusting volume built-in							
Protection circuit	Built in Power Supply	Surge protection						Rotary Encoder
	Built in Amplifier	Reverse polarity protection and output-circuit protection						
Timer function built-in (Only corresponds to timer built-in type)	Select OFF Delay, ON Delay or One Shot Delay by using the ON/OFF switch. Delay Time: 0.1~5sec adjust by the volume.							Thyristor Power Regulator
Ambient illumination	Sun light: Max 11,000 lx, Incandescent lamp: Max 3,000 lx							
Ambient temperature	Operation temperature : -20 ~ 60 °C, Storage temperature : -25 ~ 70 °C((with no icing nor dew condensation)							
Ambient humidity	35 ~ 85 % RH (with no icing nor dew condensation)							
Degree of protection	IP66 (IEC standard)							
Insulation resistance	Min 20MΩ (standard on 500 V d.c. mega)							
Dielectric strength	1,500 V a.c. (for 1min)							
Vibration resistance	10 - 55 Hz Double amplitude: 1.5 mm, 2 hours to each of X, Y, Z directions							
Shock resistance	500 % (approx 50G), 3 times to each of X, Y, Z directions							
Connection method	Terminal							
Material	Case : ABS, Lens : PC							
Weight	Max 80g							
Accessories	Individual	-		Reflector		-		Push Button / Main Switch
	Common	Driver, Bracket, Bolt, Nut, Water-proof rubber, Wire holder						

Note1) The sensing distance may vary depending on the size, surface condition, glossy, non-glossy of the sensing object

Note2) The sensing distance of PTX-M7A (-T), PTX-M7B (-T) is the distance when using the reflector HY-M5


Suffix code

Model	Code	Information		
PTX -	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Photo Sensor		Micro / Hoist Switch
Sensing method and Sensing distance	T 15	Through-beam	15m	Foot / Mono Lever Switch
	M 7	Retro-reflection	7m	
	R 1	Diffuse reflection	1m	
Power supply voltage	A	24 - 240 V a.c./d.c. ±10 % 50/60 Hz		Signal Light
	B	12 - 24 V d.c. ±10 %		
Timer	-	Normal type		Terminal Block / Power Buzzer / Fuse Holder / Control Box
	-T	Timer Built-in type		

Photo Sensor

■ PL-D2B Photo sensor

■ Specification

Model	PL-D2B
Appearance	
Sensing method	Distance-settable
Sensing distance	0.2 ~ 2 m
Detecting object	200 X 200 mm White paper with no gloss
Power supply voltage	12 - 24 V d.c. ±10 %
Current consumption	30 mA max.
Control output	NPN / PNP open collector asynchronously, Load current : 150 mA d.c. max. (Resistive load) NPN remaining voltage : 1 V d.c. max., PNP remaining voltage Max : 2 V d.c.
Operation mode	Light ON / Dark ON ※ Selectable by the mode V/R
Response time	2 ms max.
Hysteresis	Less than 10% of the sensing distance
Light source(Wave length)	Infrared lightening LED (880 nm)
Receiving part	2 photo diodes
Display	Control out display: Red LED, Stability display: Green LED
Distance setting	Near/Far: Optical distance adjusting volume 5 cycles.
Protection circuit	Reverse polarity protection and output short-circuit protection
Ambient illumination	Sunlight : 11,000 lx max., Incandescent lamp : 3,000 lx max.
Ambient temperature	Operation : -20 ~ 60 °C, Storage : -25 ~ 70 °C (Without freezing)
Ambient humidity	35 ~ 85 % RH (Without condensation)
Protective structure	IP 65
Insulation resistance	20 MΩ min.(500 V d.c. Mega)
Dielectric strength	1000 V a.c. (50/60 Hz for 1 min)
Vibration resistance	10 - 55 Hz, double amplitude :1.5mm for 2 hours each in X, Y and Z directions.
Shock resistance	500 % 3 times each in X, Y and Z directions.
Connection method	Cable output type, Number of wires: 4P, Thickness:Ø 4mm, Length 2m
Material	Case : PC, Lens : PC
Accessory	Bracket, Adjustable driver, bolt, Nut.

■ Suffix code

Model	Code	Information
PL -	D 2 B	Photosensor
Sensing method	D	Distance-settable
Sensing distance	2	2 m
Power supply voltage	B	12 - 24 V d.c.

Photo Sensor

■ PLD series Amp built-in photo sensor

■ Specification

PLD series	
Appearance	
Type	Diffuse Reflection
Model	PLD-R2N PLD-R2P
Sensing distance	2 m (200X200 mm White No reflective object)
Detecting object	Over Ø6 mm opacity objection
Power voltage	12 – 24 V d.c., ±10%
Power consumption	Max. 30 mA d.c.
Control output	NPN open collector Max 150 mA d.c. (resistance load) PNP open collector Max 150 mA d.c. (resistance load)
Operation mode	Light On mode
Response time	Max 1 ms
Hysteresis	Within 20 % of detectable distance
Light source	Infrared LED (850 nm)
Operation display	Control output : Red LED, Safety : Green LED
Sensitivity adjustment	'Built-in' sensitivity adjustment V/R (220,degree spin V/R)
Protection circuit	Reverse polarity protection, overcurrent protection
Ambient intensity of illumination	Light of the sun: Max 11000 Lux, Incandescent lamp: Max 3000 Lux
Ambient temperature	When operating : -20 ~ 60 , when maintaining : -25 ~ 70
Ambient humidity	Max. 35 ~ 85 % RH (Freezing not allowed)
Protective structure	IP64 (IEC standard)
Insulating resistance	Min 20 Ω (using 500 V d.c. between code and case)
Dielectric strength	1,000 V a.c., for 1 minute
Vibration resistance	10-55 Hz double amplitude 1.5mm, X,Y,Z each direction for 2 hours
Shock resistance	500 % X,Y,Z each direction for 2 times
Connection method	Number of cable 3P, Thickness : Ø3 mm, length : 2 m.(But, Emitter 2P)
Material	Case : PET, Lens cap: PC, Lens : PMMA
Cable	3P (26 AWG), Length : 2 m
Accessories	Sensitivity adjust driver, Fixing volt (3-M3 X 17L)
Weight	Approx. 60 g



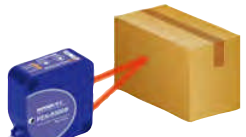
■ Suffix code

Model	Code	Information
PLD -	R 2 □	Small size photosensor
Sensing method	R	Diffuse reflection
Sensing distance	2	2 m
LED indicator	N	NPN open collector output
	P	PNP open collector output
Protective structure	IP 64 (IEC)	

Photo Sensor

■ PEN series Photo sensor

■ Specification

Model	PEN-T10A	PEN-M5A	PEN-R700A
Appearance			
Type	Through beam	Retroreflection	Diffuse reflection
Sensing distance	10 m	0,1 ~ 5 m	700 m
Detecting object	More than Ø16 mm (Opaque object)	More than Ø60 mm (Opaque object)	200 x 200 mm (White no glossy paper)
Power voltage	24 – 240 V a.c./d.c. 50/60 Hz ±10 %		
Current Consumption	Trns	Max. 1 W	Max. 2 W
	Rcvr	Max. 2 W	
Control Output	Relay output (Contact composition 1a,1b)capacity : 30 V d.c. 5 A / 250 V a.c. 5 A Resistance load life expectancy – min 100 thousand time		
Operation mode	Light ON / Dark ON		
Response time	Less than 20 ms		
Hysteresis	–		Within 20 % of detecting distance
Light source	Infrared LED		
Protection circuit	Reverse polarity protection and overcurrent protection		
Connection	Length of code : 1,5 M 5P Ø6 mm, Trns : 2P (Built in power supply : 4P Ø4 mm, Trns : 2P)		
Ambient light	Sun light: less than 11,000 lx, Incandescent lamp: less than 3,000 lx		
Ambient temperature	Operation : –20 ~ 60 °C (Storage : –25 ~ 70 °C)		
Protection	IP64(IEC)		
Vibration resistance	10 – 55 Hz, Double amplitude width 1,5 mm , X-Y-Z, each direction for 2 hours		
Dielectric strength	1,500 V a.c. (1 minute)		
Insulation resistance	500 %, X,Y,Z each direction 3 times		
Material	Case : Heatproof ABS, Lens : PC		
Insulation resistance	More than 20 MΩ (At 500V d.c. between code and case, adjusting switch and case)		
Weight	150 g (Built in Power Supply), 100 g (Built in Amplifier)		

■ Suffix code

Model	Code	Information	
PEN –	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Photo Sensor	
Sensing method and Sensing distance	T 10	Through-beam	10 m
	M 5	Retro-reflection	0,1 – 5 m
	R 700	Diffuse reflection	700 mm
Power supply voltage	A	24 – 240 V a.c./d.c. 50/60 Hz ±10 %	
	B	12 – 24 V d.c. ±10 %	

Photo Sensor

■ PE series Power built-in photo sensor

■ Specification

MODEL	PE-T5D	PE-R05D	PE-M3D	
Appearance				Temperature Controller
Type	Through beam	Diffuse reflection	Retroreflection	Recorder
Sensing distance	5 m	500 m	0.1m – 3 m	Digital Counter Timer
Detecting object	Substance(over 20 mm)	White no-glossy paper (500x500 mm)	Substance(overØ60 mm)	Analog Timer
Power voltage	24 – 240 V a.c. (50/60 Hz) / 24 – 240 V d.c.			Panel Meter
Current Consumption	Trns : Max. 0.7 W Rcvr : Max. 1.2 W	Max. 2 W	Max. 1.6 W	Multi Pulse Meter
Operation mode	Dark : ON	Light : ON	Dark : ON	Proximity Sensor
Control Output	Relay output 1c 250 V a.c., 2 A(Resistive load)			Photo Sensor
Response time	Max. 25 ms			
Hysteresis	–	Max. 20 %	–	
Light source	Infrared LED(Modulated)			
LED Indicators	Power ON / OFF	Operation Indicating		Rotary Encoder
Sensitivity control	–	By sensitivity control volume		Thyristor Power Regulator
Material	Polycarbonate			Solid State Relay
Connection	Cable			
Ambient light	Max. 20,000 lx			
Ambient temperature and humidity	Max. –20 °C ~ 60 °C, 85 % RH			
Case protection	IP54(IEC)			
Vibration resistance	10 – 55 Hz, Double amplitude width 1.5 mm , X-Y-Z, each direction for 2 hours			
Dielectric strength	1,500 V a.c. for 1 minute			Power Supply
Insulation resistance	Min. 20 MΩ (At 500 V d.c., Between code and case, contact and power supply)			
Accessories	Bracket for fixing, Bolt Nut for fixing			Control Switch
				Push Button / Main Switch
				Cam Switch / Limit Switch
				Micro / Hoist Switch
				Foot / Mono Lever Switch
				Signal Light
				Terminal Block / Power Buzzer / Fuse Holder / Control Box

Photo Sensor

PG series Fiber optic sensor

Specification

		Universal type	Multi type(Stable output)
Appearance			
Model	NPN	PG-TRN	PG-TARN
	PNP	PG-TRP	PG-TARP
Function		Change OFF Delay, ON Delay by switch Delay Time : 40 ms	Change OFF Delay, ON Delay, One Shot Delay by switch Delay Time : 0.1 ~ 5 sec. (adjustable by volume)
Sensing method		Through beam type, Diffuse reflection type(Decision by combined with Fiber unit)	
Sensing distance		Decision by combined with Fiber unit	
Power supply voltage		12 - 24 V d.c. ±10 %	
Current consumption		Max. 35 mA	
Output	Control	NPN/PNP Voltage output , Load voltage : Max. 200 mA(30 V d.c.), Residual voltage : Max. 1 V d.c.	
	Stability	-	NPN/PNP Voltage output Load voltage : Max. 50 mA(30 V d.c.) Residual voltage : Max. 1 V d.c.
Operation mode		Light ON / Dark ON switch selection operating Normal or ON/OFF delay Switch selection operating	
Response time		Max. 1 ms	
Hysteresis		Max. 10 % of sensing distance (Reflection)	
Light source(wave length)		Red LED(630 nm)	
LED		Control output indicator : Red LED, Stability indicator : Green LED	
Sensitivity adjustment		Built in the sensitivity control V/R	
Protection circuit		Reverse polarity protection, overcurrent protection (except for stable output of multi-function type)	
Ambient illumination		Sunlight : Max. 11,000 lx, Incandescent lamp : Max. 3,000 lx	
Ambient temperature		Operating : -20 ~ 60 °C, preserving : -25 ~ 70 °C(Without condensation)	
Ambient humidity		35 ~ 85 % RH(Without condensation)	
Protective structure		IP40	
Insulating resistance		Min. 20 MΩ (500 V d.c. Mega standard)	
Dielectric strength		1000 V a.c. 50/60 Hz for 1 min	
Vibration resistance		10 - 55 Hz double amplitude 1.5mm, X,Y,Z each direction for 2 hours	
Shock resistance		500 % X,Y,Z each direction for 2 times	
Connection method		Cable extended type (Number of wire : 3P, Diameter ø4, Length 2 m)	Cable extended type (Number of wire : 4P, Diameter ø4, Length 2 m)
Weight		Approx. 120 g	

Suffix code

Model	Code	Information
PG -	<input type="checkbox"/> <input type="checkbox"/>	Fiber optic sensor
Sensing method and Sensing distance	TR	Universal type
	TAR	Multi type (stable output)
Output	N	NPN open collector output
	P	PNP open collector output

Photo Sensor

■ PFD series Digital Multi Control Type

■ Specification

		Digital Multi Control Type	
Appearance			
Type		General purpose	Multi function
Model	NPN	PFD-RGN	PFD-RMN
	PNP	PFD-RGP	PFD-RMP
Power voltage		12 - 24 V d.c. ±10 % (Ripple Max. 10 %)	
Current consumption		Max. 30 mA	
Output	Control	Open collector output, 100 mA (Supplied voltage Max. 30 V, Residual voltage Max. 0.5 V)	
	Stability	Open collector output, 100 mA (Supplied voltage Max. 30 V, Residual voltage Max 0.5 V)	
External input		Teaching / Auto teaching	Teaching / Auto teaching / Reset input
Operating mode		Light On / Dark On output Normal output, ON DELAY, OFF DELAY, ON/OFF DELAY output	
On/Off Delay		0 ~ 9999 ms	
Light source		Red emitting diode / 660 nm	
Protection circuit		Reverse polarity protection, Overcurrent protection	
Response time		Max. 700	
LED indicator		7 points status LED, 4 Digits FND	
Sensitivity control		Auto-teaching, Manual	
Additional function		Brightness control 180 ° Turning indication Display time set, Zero Reset, Initial reset, Lock function	
Ambient light		Incandescent Light : Max. 10,000 lx	
Ambient temperature		Operating : -20 ~ 60 °C, preserving : -25 ~ 70 °C (Without condensation)	
Ambient humidity		35 ~ 85 % RH	
Vibration resistance		10 - 55 Hz for 1 minute, Double amplitude : 1.5 mm, X-Y-Z each direction for 2 hours	
Shock resistance		1,000 % (About 50 G), X-Y-Z each direction for 3 times	
Dielectric strength		1500 V a.c. 50/60 Hz for 1 minute	
Insulation Resistance		Min. 20 MΩ (at 500 V d.c.)	
Connection		For DIN Rail attachment Flying lead 1.5 m 5 P	

MODEL : PFD-RMN only

Multi function	Counter	<ul style="list-style-type: none"> • UP / DOWN Mode, Prescale 1 ~ 1000 integers setting • Output mode : 8 kinds selectable (N, F, C, R, K, P, Q, A) 	<ul style="list-style-type: none"> • Indicating range : 0 ~ 9999 • External reset : Min. Signal width 5 ms 	<ul style="list-style-type: none"> • Counting speed : 400 cps
	RPM	<ul style="list-style-type: none"> • Indicating range : 0 ~ 9999 rpm 	<ul style="list-style-type: none"> • Speed monitoring output function 	<ul style="list-style-type: none"> • Prescale : 1~1000 integers setting • Measurement cycle setting
Option	Communication	RS485 or RS232 (TTL Level), No external output when using communication		

■ Suffix code

Model	Code	Information
PFD -	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	10 bit A/D, 4Digit display
Light source	R	Red LED
Use	G	General purpose (MARK)
	M	Multi type (MARK / RPM / COUNTER)
External output	N	NPN Open collector
	P	PNP Open collector

Photo Sensor

■ PFB series Bar Indication Type

■ Specification

		Bar Indication Type
Appearance		
Type		General purpose
Model	NPN	PFB-RN
	PNP	PFB-RP
Power voltage		12 – 24 V d.c. ±10 % (Ripple Max. 10 %)
Current consumption		Max. 20 mA
Output	Control	Open collector output, 100 mA (Supplied voltage Max. 30 V, Residual voltage Max. 0.5 V)
	Stability	Open collector output, 100 mA (Supplied voltage Max. 30 V, Residual voltage Max 0.5 V)
External input		Auto teaching
Operating mode		Normal output, ON DELAY, OFF DELAY output
On/Off Delay		10, 40 ms
Light source		Red emitting diode / 660 nm
Protection circuit		Reverse polarity protection, Overcurrent protection
Response time		1 ms
LED indicator		6 Points bar
Sensitivity control		Auto-teaching
Ambient light		Incandescent Light : Max. 11,000 / 3,000 lx
Ambient temperature		Operating : -20 ~ 60 °C, preserving : -25 ~ 70 °C (Without condensation)
Ambient humidity		35 ~ 85 % RH
Vibration resistance		10 – 55 Hz for 1 minute, Double amplitude : 1.5 mm, X-Y-Z each direction for 2 hours
Shock resistance		500 % (About 50 G), X-Y-Z each direction for 3 times
Dielectric strength		1,000 V a.c. 50/60 Hz for 1 minute
Insulation Resistance		Min. 20 MΩ (at 500 V d.c.)
Connection		For DIN Rail attachment Flying lead 1.5 m 5 P

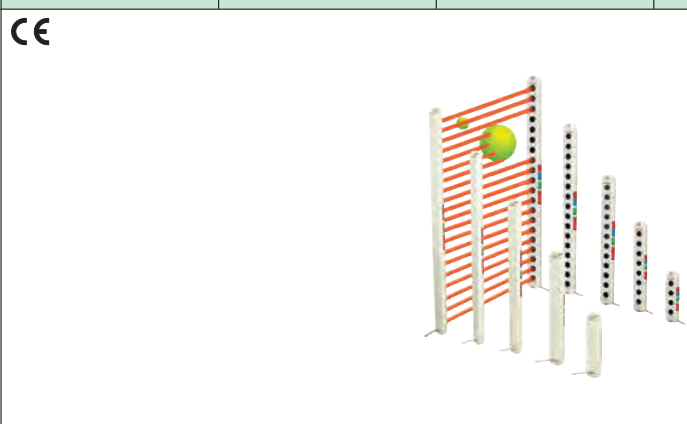
■ Suffix code

Model	Code	Information
PFB –	<input type="checkbox"/> : <input type="checkbox"/>	10 bit A/D, Bar display
Light source	R : <input type="checkbox"/>	Red LED
External output	N	NPN Open collector
	P	PNP Open collector

Photo Sensor

PAS series Area sensor

Specification

Model	NPN	PAS-T4N	PAS-T8N	PAS-T12N	PAS-T16N	PAS-T20N	
	PNP	PAS-T4P	PAS-T8P	PAS-T12P	PAS-T16P	PAS-T20P	
Appearance							Temperature Controller
Type	Through beam						Recorder
Sensing distance	5 m						Digital Counter
Detecting object	Opaque object of Min. Ø30 mm						Timer
Optical axis pitch	20 mm						Analog Timer
Number of optical axis	4	8	12	16	20	Panel Meter	
Sensing range	60 mm	140 mm	220 mm	300 mm	380 mm	Multi Pulse Meter	
Power voltage							Proximity Sensor
Current Consumption	Max. 80 mA	Max. 90 mA	Max. 100 mA	Max. 110 mA	Max. 120 mA	Photo Sensor	
Output range	NPN open collector output—Load current : Max. 100 mA, Load voltage : Max. 30 V d.c., Residual voltage : Max. 1 V PNP open collector output—Load current : Max. 100 mA, Output voltage : (Power voltage—over 2.5 V)						Rotary Encoder
Operating mode	Light ON						Thyristor Power Regulator
Response time	Below 7 ms						Solid State Relay
Light source	Infrared emitting diode(Wave length 850 nm)						Power Supply
Point angle	Within ±5° (At over 2 m sensing distance)						Control Switch
Operating indicator	Trns.:M/S display:Red LED, Power display : Green LED, Operation Display : Red LED Rcvr.E1 display : Red LED, E2 display : Blue, Red, Light on stability display : Green LED, Operation display : Red LED						Push Button / Main Switch
Ambient light	Sun light : 11,000 / 3,000 lx						Cam Switch / Limit Switch
Ambient temperature	Operating : -20 ~ 60 °C, preserving : -25 ~ 70 °C (Without condensation)						Micro / Hoist Switch
Ambient humidity	35 ~ 85 % RH						Foot / Mono Lever Switch
Vibration resistance	0 - 55 Hz (Cycle for 1 min.) Double amplitude width 1.5 mm, each X-Y-Z direction for 2 hr.						Signal Light
Case protection	IP40(IEC)						Terminal Block / Power Buzzer / Fuse Holder / Control Box
Dielectric strength	1,000 V a.c. for 1 min, between current part and case						
Material	Case : ABS, Window : Acryl						
Connection	Flying lead 5P, Ø4.3 length 3 m						
Weight	Each Max.160 g	Each Max.180 g	Each Max.200 g	Each Max.220 g	Each Max.240 g		
Protection function/circuit	Auto sensitivity compensation, Mutual interference prevention in parallel installation (M/S mode), Reverse polarity protection, Overcurrent protection						


Suffix code

Model	Code	Information
PAS -	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Area sensor
Sensing method	T	Through beam
Number of optical axis	4	4 optical axis
	8	8 optical axis
	12	12 optical axis
	16	16 optical axis
	20	20 optical axis
Control output	N	NPN open collector
	P	PNP open collector

Photo Sensor

PAN series High reliable optical area sensor with an exclusive IC

Specification

Model	PAN20-T□□□N, PAN20-T□□□P	PAN40-T□□□N, PAN40-T□□□P
Appearance		
Type	Through beam	
Sensing distance	7 m	
Detecting object	Opaque object of over Ø32 mm	Opaque object of over Ø52 mm
Optical axis pitch	20 mm	40 mm
Power voltage	12 – 24 V d.c. ±10 % (Ripple P–P ± 10 %)	
Current Consumption	Max. 170 mA	Max. 100 mA
Output Control	Light ON	
Operating mode	Trns./M/S display: Red LED, Power display : Green L(+) Rcvr. E1 display : Red LED, E2 display : Blue LED stability display : Green LED, Operation display : Red LED	
Response time	Max. 15 ms	Max. 7 ms
Light source	Infrared emitting diode (Wave length 880 nm)	
Operating indicator	Trns./M/S display: Red LED, Power display : LED, Operation Display : Red, Rcvr.: E1 display : Green LED, E2 display : Red, Light on stability display : Green LED, Operation display : Red LED	
Operating S/W	ALL/ONE S/W Operation (only for Rcvr.), Max./ter/Slave S/W Operation (only for Trns.)	
Ambient light	Sun light : Max. 11,000 / 3,000 lx	
Ambient temperature	Operating : -20 ~ 60 °C, preserving : -25 ~ 70 °C (Without condensation)	
Ambient humidity	Max. 35 ~ 85 % RH	
Vibration resistance	10 – 55 Hz (Cycle for 1 min.) Double amplitude width 1.5 mm, each X-Y-Z direction for 2 hr.	
Case protection	IP65 (IEC)	
Dielectric strength	1000 V a.c. for 1 min. between current part and case	
Material	Case: Aluminum, Window : acryl, Lens : acryl	
Connection	Connector flying lead 4P Ø5.5	
Protection function/circuit	Mutual interference prevention when parallel installation (M/S mode), Reverse polarity protection, Overcurrent protection	

Production formation

series	Model	Sensing Distance	Number of optical axis	Sensing range	Detecting object
PAN20	PAN20-T08	7 m	8EA	140 mm	Opaque object of over Ø32 mm
	PAN20-T12		12EA	220 mm	
	PAN20-T16		16EA	300 mm	
	PAN20-T20		20EA	380 mm	
	PAN20-T24		24EA	460 mm	
	PAN20-T28		28EA	540 mm	
	PAN20-T32		32EA	620 mm	
	PAN20-T36		36EA	700 mm	
	PAN20-T40		40EA	780 mm	
	PAN20-T44		44EA	860 mm	
PAN20-T48	48EA	940 mm			
PAN40	PAN40-T04	7 m	4EA	120 mm	Opaque object of over Ø57 mm
	PAN40-T06		6EA	200 mm	
	PAN40-T08		8EA	280 mm	
	PAN40-T10		10EA	360 mm	
	PAN40-T12		12EA	440 mm	
	PAN40-T14		14EA	520 mm	
	PAN40-T16		16EA	600 mm	
	PAN40-T18		18EA	680 mm	
	PAN40-T20		20EA	760 mm	
	PAN40-T22		22EA	840 mm	
PAN40-T24	24EA	920 mm			


Suffix code

Model	Code	Information
PAN-	□ □ □ □	Area sensor
Optical axis pitch	20 40	20 mm gap 40 mm gap
Sensing method	T	Through beam
Number of optical axis	□	Number of optical axis (please refer to the dimension)
Output	N P	NPN open collector PNP open collector

Photo Sensor


HPAN series Sensor controller

Specification

MODEL	HPAN-C7	HPAN-CT7	HPAN-C7W
Appearance	 <p>8,5(W) X 82,1(H) X 80,8(D)</p>		
Function	Multi-purpose	Timer function	Two sensors connectable
How to attach	DIN Rail		
Power Voltage	100 – 240 V a.c. 50/60 Hz		
Power consumption	Approx. 5 VA		
Power supply to sensor	+12 V d.c. ($\pm 10\%$), Max. 200 mA		
Connectable sensor	NPN / PNP transistor output or relay output sensor		
Output	· Relay contact : 1c (250 V a.c. 3 A, Resistive load) Rated electrical life : over 100,000 operation · NPN Transistor output (open collector) Max. sink current : 100 mA, Applied voltage : 30 V d.c. Max.		· Relay contact:1c (2outs separately) (250 V a.c. 3A resistive load) Rated electrical life: over 100,000 operations (in power off)
Response time	Relay contact : Approx. 10 ms, Open collector : 5 Max.		Approx. 10 ms
External synchronization	Gate synchronization	Frequency and differential synchronization	–
Timer	–	· Selectable from on-delay, off-delay and one shot-delay · Time range 40 ms~1 S \rightarrow 0.4~10 S (selectable by dip switch)	–
Ambient temperature and humidity	–25 ~ 70 °C, 35 – 85 % RH (without condensation)		
Noise immunity	Power line: 2,000 VP, 0.5 pulse width (by noise simulation)		
Dielectric strength	1,500 V a.c. for 1 minute (Between supply and output)		
Insulation resistance	20 M Ω (At 500 V d.c., Between supply and output)		
Vibration resistance	10 – 55 Hz (For a minute), double amplitude width 1.5 mm, each X-Y-Z direction for 2 hour (in power off)		
Shock resistance	100 % (Approx. 10 G), each X-Y-Z, 2 direction (in power off)		
Net-Weight	Approx. 150 g	Approx. 160 g	Approx. 165 g

HPA-12 Sensor controller

Specification

MODEL	HPA-12
Appearance	 <p>49(W) X 62(H) X 91(D)</p>
Function	Multi-purpose
How to attach	Relay Socket 8PIN
Power Voltage	220 V a.c. $\pm 10\%$ 60 Hz
Power consumption	Approx. 4 VA
Power supply to sensor	12 V DC $\pm 10\%$ 50 mA
Connectable sensor	NPN, PNP transistor output
Output	· Relay contact: 1c (250 V a.c. 3 A, resistive load) Rated electrical life: over 100,000 operations (in power off)
Response time	Approx. 10 ms
Ambient temperature and humidity	–20 ~ 60 °C, 25 ~ 70 % RH (No freezing or No condensation)
Noise immunity	Power line: 2,000 VP, 0.5 pulse width (by noise simulation)
Dielectric strength	1,500 V a.c. for 1 minute (Between supply and output)
Insulation resistance	20 M Ω (At 500 V d.c., Between supply and output)
Vibration resistance	10 – 55 Hz (For a minute), double amplitude width 1.5 mm, each X-Y-Z direction for 2 hour (in power off)
Shock resistance	100 % (Approx. 10 G), each X-Y-Z, 2 direction (in power off)
Net-Weight	Approx. 260 g