PAN Series

High reliable optical area sensor

- Various gap of optical axis
- Built in the mutually preventing interference function
- Built in the output break protecting circuit
- Operation mode selection
  (When all optical axes/1 optical axis light on then ON)

Suffix code

Model	Model number				Description
PAN-	□	□	□	□	Area sensor
Optical axis pitch	10				10 ㎜ gap (coming soon)
	20				20 ㎜ gap
	40				40 ㎜ gap
Sensing method		T			Through beam
Number of optical axis					Number of optical axis (please refer to the dimension)
Output				N	NPN open collector
				P	PNP open collector

G
Photo Sensor

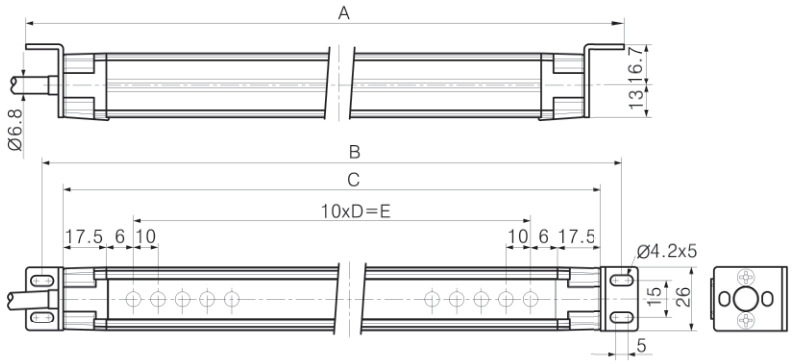
Specification

Model				
NPN	PAN10-T□N	PAN20-T□N	PAN40-T□N	
PNP	PAN10-T□P	PAN20-T□P	PAN40-T□P	
Sensing method	Through beam			
Sensing distance	2 m	7 m		
Sensing object	Opaque object above Ø17 ㎜	Opaque object above Ø32 ㎜	Opaque object above Ø52 ㎜	
Optical axis pitch	10 ㎜	20 ㎜	40 ㎜	
Power supply voltage	12 – 24 V DC ±10 % (Ripple less than 10 %)			
Current consumption	max 220 ㎃	max 170 ㎃	max 100 ㎃	
Response time	max 30 ㎳	max 15 ㎳	max 7 ㎳	
Weight	Approx. 1400 g (Included the weight of box)	Approx. 1400 g (Included the weight of box)	Approx. 1400 g (Included the weight of box)	

Output	NPN/PNP open collector output , max 100 ㎃ (30 V DC) Inductive load : 50 ㎃, Remaining voltage : max 0.5 V DC
Operation mode	Emitter : select the master/slave operation (mutually preventing interference function) Receiver : A mode (ON when all optical axis L.ON)/O mode (select ON when 1 optical axis L.ON)
Light source (wave length)	Red light LED (880 ㎚)
LED	Emitter : Power indicator(Green LED), M/S display(Red LED) Receiver : Light on stability display(Green LED), output Display(Red LED) E1 display(Red LED), E2 display(Blue LED)
Protective circuit	Power reverse connection protecting circuit and output break protecting circuit
Ambient illumination	Sunlight : max 10,000 Lux, Incandescent lamp : max 3,000 Lux
Ambient temperature	−10 ~ 55 ℃ (Surrounding storage temperature : −25 ~ 70 ℃)
Ambient humidity	35 ~ 85 % RH (With no condensation)
Protective structure	IP 65 (IEC)
Insulation resistance	min 20 ㏁, (500 V DC between the code and case) between adjustment switch and case
Dielectric strength	500 V AC, 50/60 ㎐ for 1 min
Vibration resistance	10 − 55 ㎐, double amplitude : 1.5 ㎜, for 2 hours in X, Y and Z direction
Shock resistance	500 ㎨, 3 times each in X, Y and Z directions
Connection method	Connector code extended type, code length : 200 ㎜, Number of wires : 5P, Dimension : Ø5.5 ㎜ connector
Material	Case : aluminum, front cover and lens: acryl

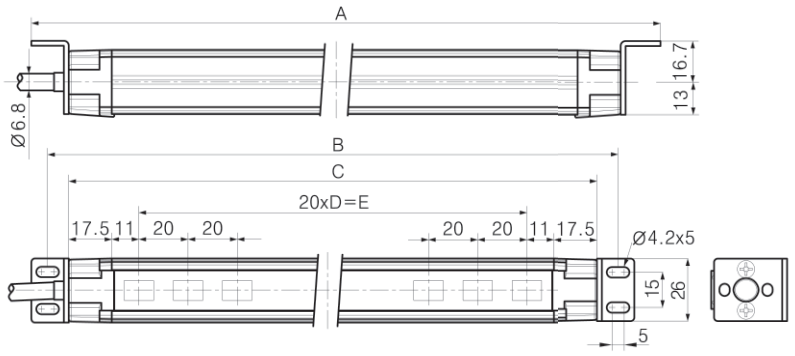
Dimension

■ PAN10 Series



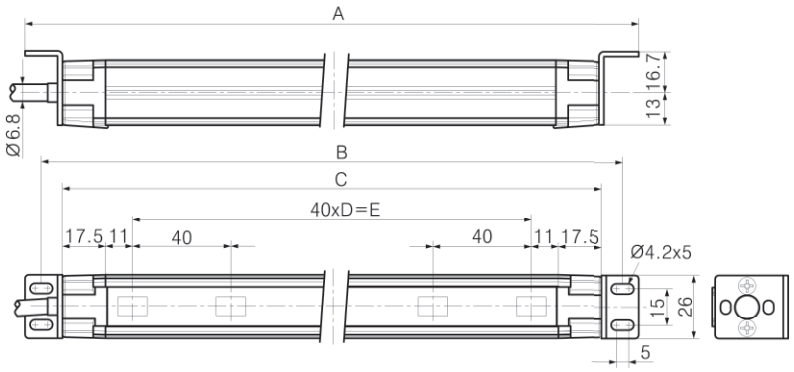
Type	A	B	C	D	E
PAN10-T16	227	214.2	197	15	150
PAN10-T24	307	294.2	277	23	230
PAN10-T32	387	374.2	357	31	310
PAN10-T40	467	454.2	437	39	390
PAN10-T48	547	534.2	517	47	470
PAN10-T56	627	614.2	597	55	550
PAN10-T64	707	694.2	677	63	630
PAN10-T72	787	774.2	757	71	710
PAN10-T80	867	854.2	837	79	790
PAN10-T88	947	934.2	917	87	870
PAN10-T96	1027	1014.2	997	95	950

■ PAN20 Series



Type	A	B	C	D	E
PAN20-T8	227	214.2	197	7	140
PAN20-T12	307	294.2	277	11	220
PAN20-T16	387	374.2	357	15	300
PAN20-T20	467	454.2	437	19	380
PAN20-T24	547	534.2	517	23	460
PAN20-T28	627	614.2	597	27	540
PAN20-T32	707	694.2	677	31	620
PAN20-T36	787	774.2	757	35	700
PAN20-T40	867	854.2	837	39	780
PAN20-T44	947	934.2	917	43	860
PAN20-T48	1027	1014.2	997	47	940

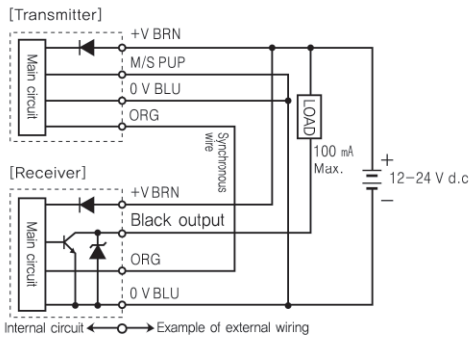
■ PAN40 Series



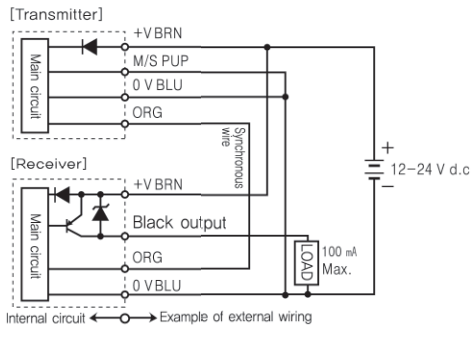
Type	A	B	C	D	E
PAN40-T4	207	194.2	177	3	120
PAN40-T6	287	274.2	257	5	200
PAN40-T8	367	354.2	337	7	280
PAN40-T10	447	434.2	417	9	360
PAN40-T12	527	514.2	497	11	440
PAN40-T14	607	594.2	577	13	520
PAN40-T16	687	674.2	657	15	600
PAN40-T18	767	754.2	737	17	680
PAN40-T20	847	834.2	817	19	760
PAN40-T22	927	914.2	897	21	840
PAN40-T24	1007	994.2	977	23	920

Output circuit diagram

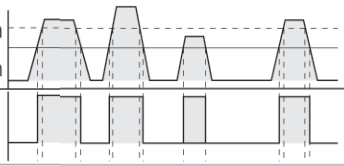
■ NPN open collector output



■ PNP open collector output



Operation chart

Operation / MODE	Detection status	An amount of L.ON	Safety region / operation region
Output Becomes ON when an amount of entered light is more than all optical axes (A operation mode)	Operation indicator (Red LED)	ON / OFF	
	Control output	ON / OFF	
	Stable indicator (Green LED)	ON / OFF	
	Disturbance light	ON / OFF	
	E2 indicator (Blue LED)	ON / OFF	

- Green LED of emitter is power indicator
- E1 indicator (red LED) of receiver becomes turned OFF when sync wire is disconnected.
- E2 indicator (blue LED) of receiver becomes turned OFF when disturbance lights are sensed such as sun light, luminescent light and etc. (E2 indicator may perform malfunction when light is turned OFF so please be cautious)

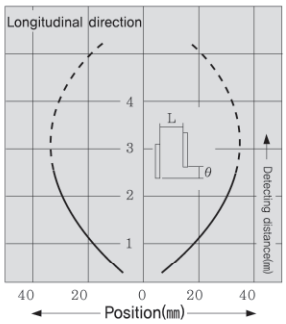
- Please refer to the operation mode

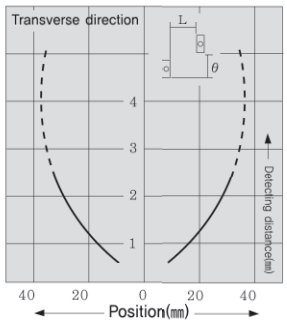
G
Photo Sensor

Graph characteristic

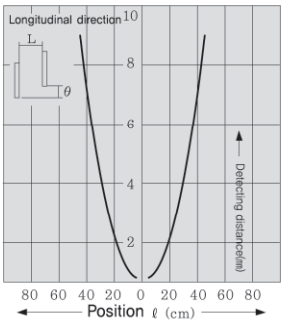
■ Parallel movement characteristic

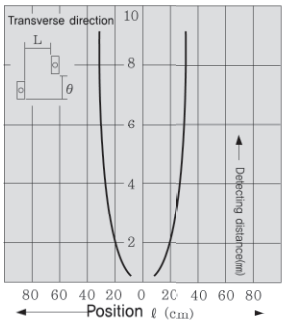
● PAN10 Series





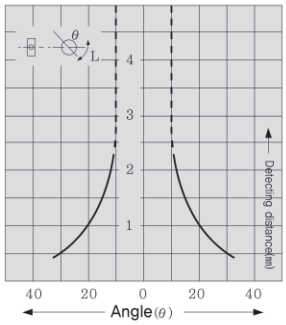
● PAN20/40 Series



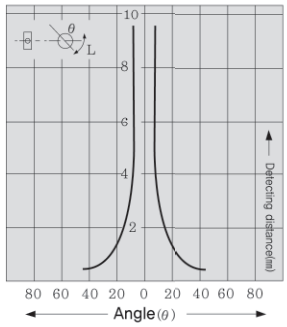


■ Operation angle characteristic

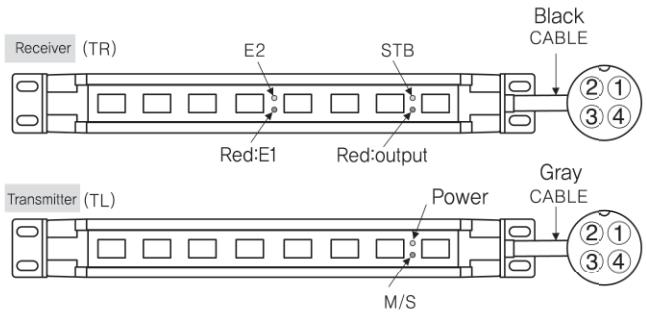
● PAN10 Series



● PAN20/40 Series



Indicator and wiring diagram



■ Operation LED

LED indicator	Emitter
M/S	LED output L.OFF when operation the MASTER /LED output L.ON when operating the SLAVE
Power	Power indicator

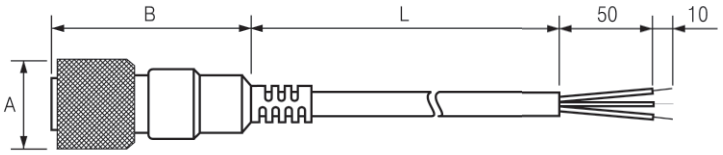
LED indicator	Receiver
Output(red)	Output indicator
STB(green)	L.ON stability indicator
E1(red)	L.OFF with the disconnection or break of cluck (sync signal)/reset signal wire
E2(blue)	L.OFF with the appearance of disturbance light such as mercury lamp, luminescent light and etc.

■ Wiring and connecting classification

PIN NO.	Wiring color	Emitter
1	Brown	Power (12-24 V DC)
2	Orange	Sync wire
3	Blue	0 V
4	Purple	M/S

PIN NO.	Wiring color	Receiver
1	Brown	Power (12-24 V DC)
2	Orange	Sync wire
3	Blue	0 V
4	Black	Output

Relay connector cable design

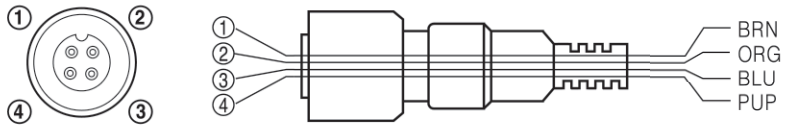


[Unit : mm]

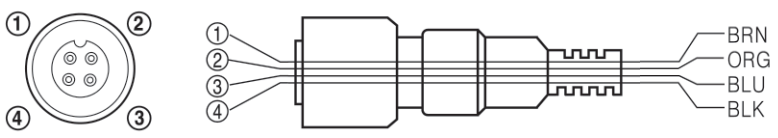
Series name	Cable diameter	Number of cable wire	Color	A	B	L
PAN-TL Series (Emitter)	Ø 5.5	4 C	Brown, Purple, Blue, Orange	Ø14.5	29	4910
PAN-TR Series (Receiver)	Ø 5.5	4 C	Brown, Purple, Blue, Orange	Ø14.5	29	4910

Relay connector internal connection diagram

■ Connection diagram-PAN-TL (Emitter)

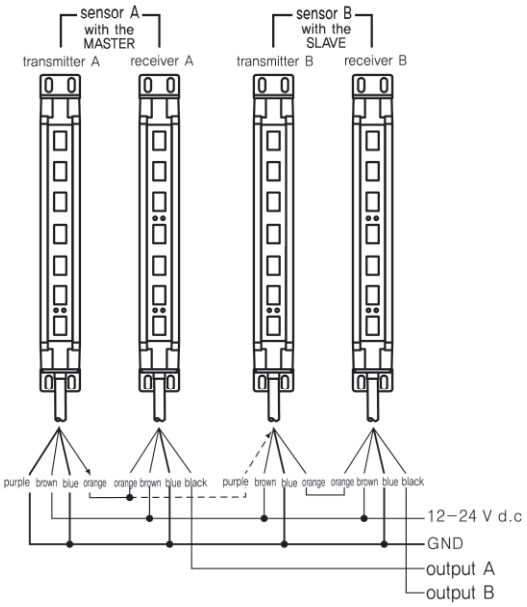


■ Connection diagram-PAN-TR (Receiver)

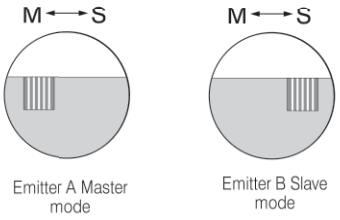


Master/Slave connection diagram

• When using 2 set of the sensor in proximity distance, please set them just like an image below. Depending on the connection method given in the 〈image 1〉, please connect the sensor A and sensor B individually.



〈Image1〉



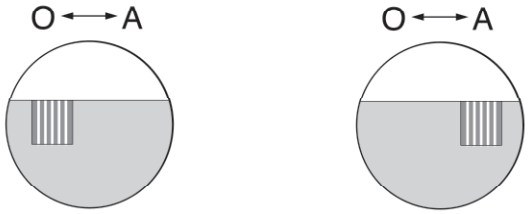
〈Image2〉

※ When using it as 2 set, please wire them correctly so they will not operate as Master mode and Slave mode at the same time

※ Do not mutually connect the sync wire (orange) of sensor A and sensor B.

- Please open the screw cover (bottom connector side of emitter) by flat-head screw driver and makes the operation mode converting switch to just like an image 2. Please set the emitter A as M (Master) and emitter B as S (Slave).
- Default = M (Master)
- Please connect the M/S (purple) wire of emitter A (set as master mode) to the power wire GND (blue) In this case, sensor will be operated as master mode(M mode).
- Please connect the M/S (purple) wire of emitter B (set as slave mode) to the sync wire (orange) located on the opposite side. In this case, sensor is operated as the slave mode (S mode)
- When using different power to the emitter/receiver or master/slave, please common the GND and connect it.
- Please confirm the M/S indicator of emitter after supplying in the power.
  Emitter A (Master operation mode) : M/S indicator OFF
  Emitter B (Slave operation mode) : M/S indicator ON

Operation mode



"ONE" operation mode　　"ALL" operation mode

- Please open the screw cover (use flat driver) which located on the bottom connector side of the receiver and convert the operation mode converting switch to the mode that is suitable to the operation condition and use it.
- Default mode: A operation mode (all optical axes L.ON then ON operates)

A operation mode: all optical axes L.ON – output ON (L.OFF above 1 optical axis output OFF)
O operation mode: all optical axes L.OFF – output OFF (L.ON above 1 optical axis output ON operation)