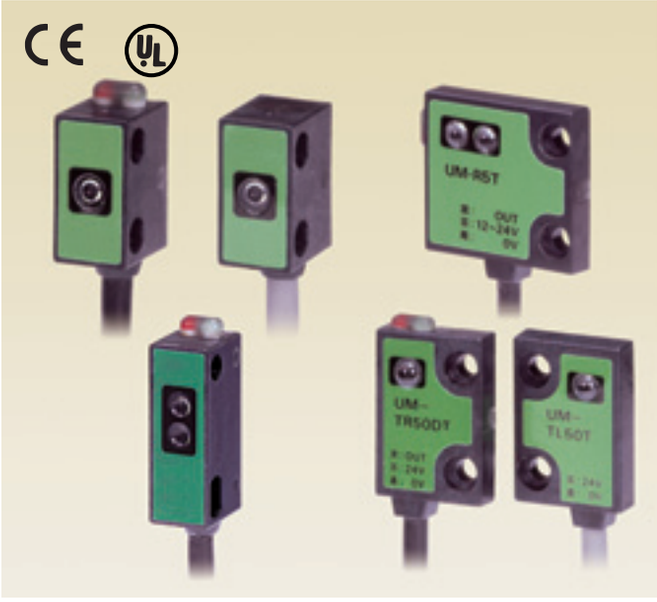
UM series

Embedded Amplifier Photo Sensors

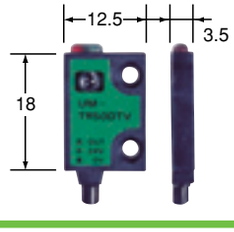


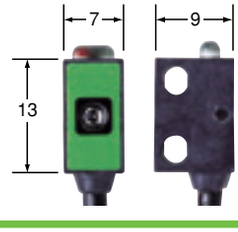
- Ultra miniature size
  (extra thin, extra compact)
- Long distance detecting up to 1 m
- Ideal for integrating into small devices
  - Thinness of 3.5 mm achieved with embedded amplifier type!
    Extremely small volume: less than 0.8 cm^3
    Volume fraction: about 1/5 (to conventional Takex product)
  - Low cost
  - Red LED light source allows checking of emitted light spot
  - Equipped with stability and operation indicators
  - Wide range of applications from small-scale FA to system wide FA

Type

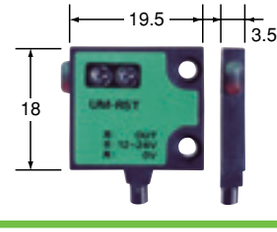
Detection method	Detecting distance	Model	In-line sensitivity adjustment volume	Operation mode	Output mode
Through-beam type	150mm	**UM-T15DT**	—	Dark-ON (Contact Takex for Light-ON type.)	NPN Open collector
		UM-T15DTV	Provided		
	500mm	**UM-T50DT**	—		
		UM-T50DTV	Provided		
		UM-T50DS	—		
		UM-T50DSV	Provided		
	1m	**UM-T100DT**	—		(Contact Takex for PNP-output type.)
		UM-T100DS	—		
Polarization reflector type	2~30mm	**UM-R3T**	—	Light-ON (Contact Takex for Dark-ON type.)	
		UM-R3TV	Provided		
	2~50mm	**UM-R5T**	—		
		UM-R5TV	Provided		
Diffuse-reflective type	5~30mm	**UM-Z3SV**	Provided		

Through-beam type

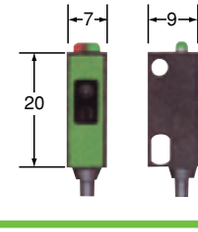




Diffuse-reflective type



Limited reflection type



Rating/Performance/Specification

	Type		UM-T15DT	UM-T15DTV	UM-T50DT	UM-T50DTV	UM-T50DS	UM-R3T	UM-R3TV	UM-R5T	UM-R5TV	UM-Z3SV
Rating/performance	Detection method		Through-beam type					Diffuse-reflective type				Limited reflection type
	Detecting distance		150mm		500mm (*1m)			2 - 30mm *1		2 - 50mm*1		5 - 30mm *1
	Detection object		ϕ 3mm (Min.) Opaque					————				
	Power supply		24V DC ±10% / Ripple 10% max. *2					12 - 24V DC ±10% / Ripple 10% max.				
	Current consumption	Transmitter	15mA max.					20mA max.	27mA max.	20mA max.	27mA max.	27mA max.
		Receiver	15mA max.	22mA max.	15mA max.	22mA max.	15mA max.					
	Output mode		NPN open collector Rating: sink current 80 mA (30 VDC) max. (PNP output type also available.)									
	Operation mode		Dark-ON					Light-ON				
	Response time		0.5ms max.									
	Operating angle		25°					————				
	Hysteresis		————					Up to 10% of detecting distance				
Specification	Light source (light wavelength)		Red LED (660nm) (*Infrared LED)									
	Indicator		Operation indicator (red LED)—— For through-beam type, provided on receiver. Stability indicator (green LED)									
	Volume		———	In-line sensitivity adjustment *3	———	In-line sensitivity adjustment *3	——— *4	———	In-line sensitivity adjustment *3	———	In-line sensitivity adjustment *3	In-line sensitivity adjustment *3
	Material	Case	Liquid crystalline polyester (filler: polypropylene)									
		Lens	Acrylic resin				ABS resin	Acrylic resin				ABS resin
	Connection		Permanently attached cord (outer dimension: dia. 2.8)									
			Transmitter 0.15 sq. 2 core 2 m length (gray) Receiver 0.15 sq. 3 core 2 m length (black)					0.15 sq. 3 core 2 m length (black)				
	Mass	Transmitter	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 40g	Approx. 30g	Approx. 40g	Approx. 40g
		Receiver	Approx. 30g	Approx. 40g	Approx. 30g	Approx. 40g	Approx. 30g					
	Notes		*1 Standard detection object: 50x 50 mm white drawing paper *2 12 VDC type also available. *3 Length of cord between sensor and in-line sensitivity adjustment volume: 30 cm (fixed) *4 Model with in-line sensitivity adjustment volume available									

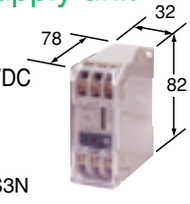
*Models with detecting distance of 1 m are also available (infrared LED used as light source).
For model numbers, see "Type."

Environmental Specification

Environment	Ambient light	3,000 lx max.
	Ambient temperature	–25 - +55 –C (non-freezing)
	Ambient humidity	35-85%RH (non-condensing)
	Protective structure	IP64
	Vibration	10 - 55 Hz / 1.5 mm amplitude / 2 hours each in 3 direction

● Applicable power supply unit

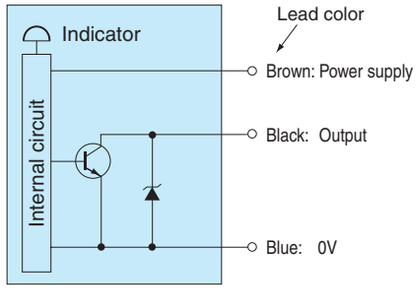
PS series
High capacity of 200 mA at 12 VDC

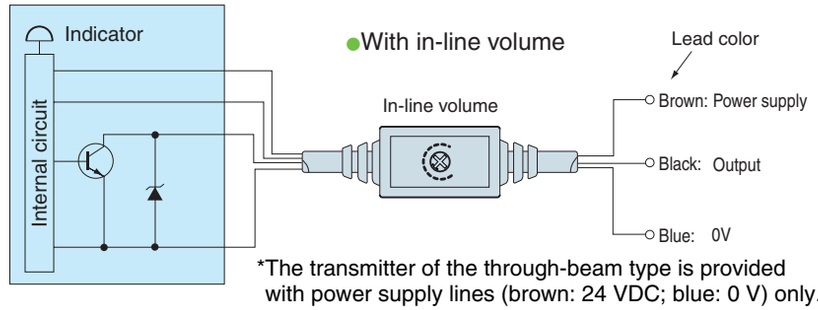


(General-purpose type) PS3N
PS3N-SR
(Multifunctional type) PS3F
PS3F-SR

Input/Output Circuit and Connection

(Shows receiver of through-beam type as typical example. Power supply for reflective type: 12-24 VDC.)



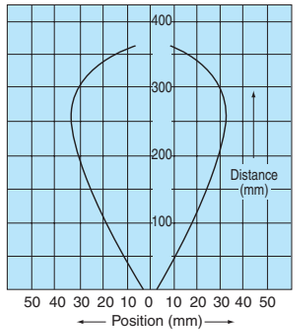


*The transmitter of the through-beam type is provided with power supply lines (brown: 24 VDC; blue: 0 V) only.

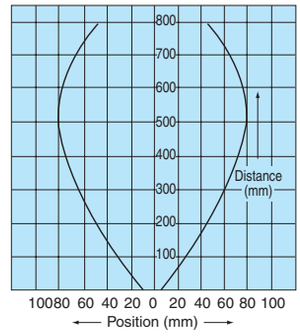
Characteristics (Typical Example)

● Directional characteristics

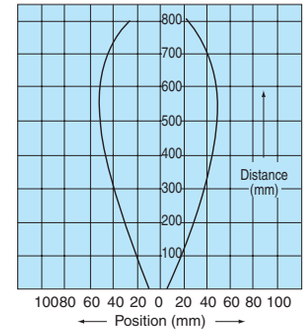
UM-T15DT・UM-T15DTV



UM-T50DT・UM-T50DTV

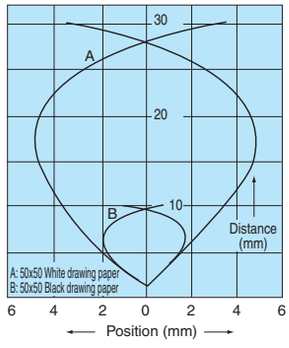


UM-T50DS

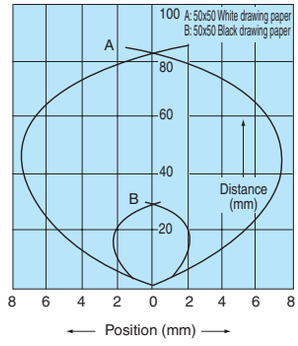


● Activation area characteristics

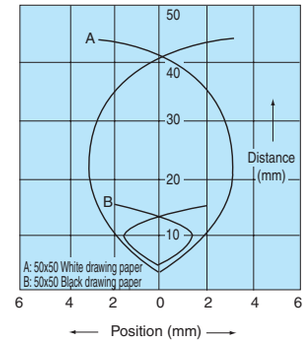
UM-R3T・UM-R3TV



UM-R5T・UM-R5TV

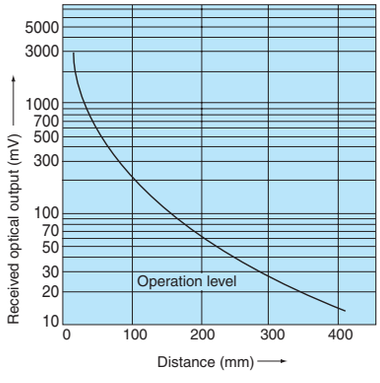


UM-Z3SV

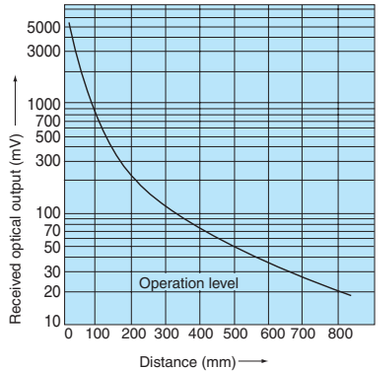


● Distance-area characteristics

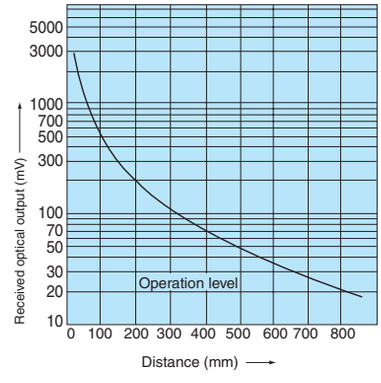
UM-T15DT・UM-T15DTV



UM-T50DT・UM-T50DTV

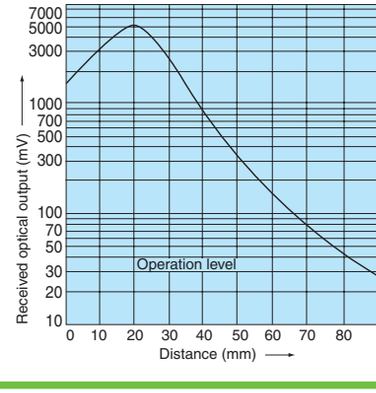


UM-T50DS

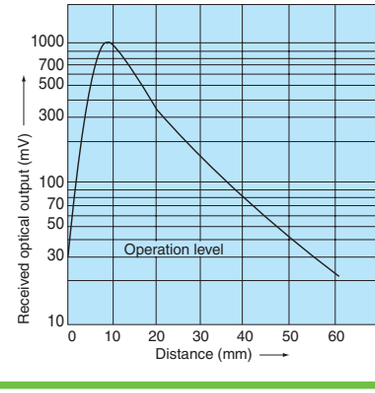


UM-R3T・UM-R3TV

UM-R5T・UM-R5TV



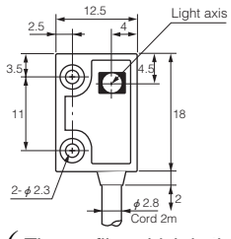
UM-Z3SV



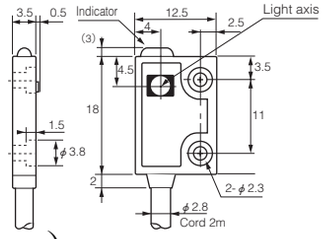
Dimensions (in mm)

UM-T15DT
UM-T15DTV(*1)

CAD Transmitter



Receiver

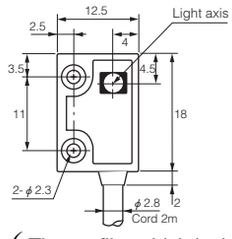


The profile, which is the same as the receiver except that indicator is omitted.

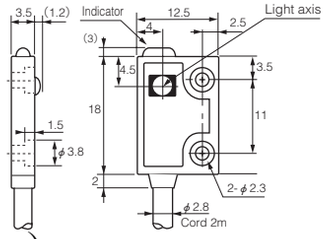
M2 x 10 mm screws, nuts, internal toothed washers provided.

UM-T50DT・UM-T100DT
UM-T50DTV(*1)

CAD Transmitter



Receiver

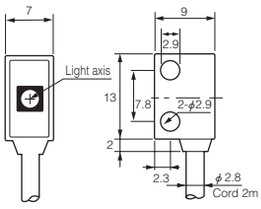


The profile, which is the same as the receiver except that it has no indicator, is omitted.

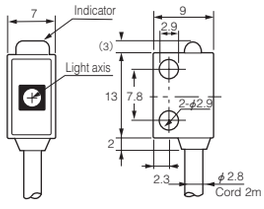
M2 x 10 mm screws, nuts, internal toothed washers provided.

UM-T50DS
UM-T100DS

CAD Transmitter



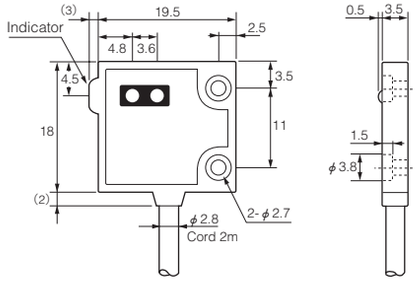
Receiver



M2.6 x 12 mm screws, nuts, internal toothed washers provided.

UM-R3T
UM-R3TV(*1)

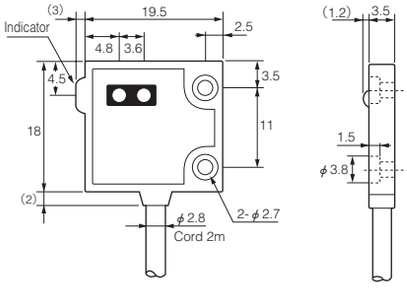
CAD



M2 x 10 mm screws, nuts, internal toothed washers provided.

UM-R5T
UM-R5TV(*1)

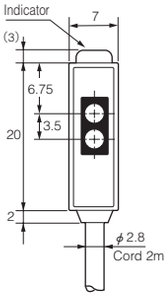
CAD

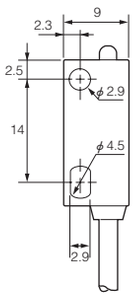


M2 x 10 mm screws, nuts, internal toothed washers provided.

UM-Z3SV(※1)

CAD

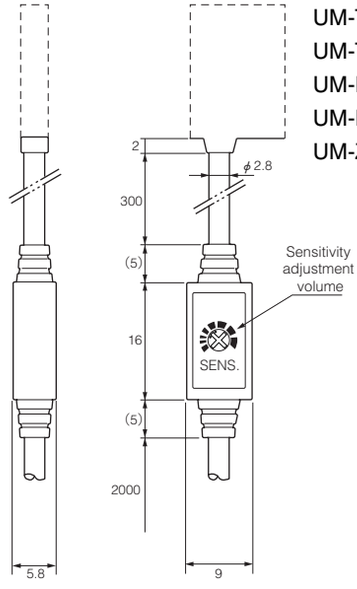




M2.6 x 12 mm screws, nuts, internal toothed washers provided.

(*1) Models identified by "V" at the end of the model number are equipped with a sensitivity adjustment volume. For through-beam type, the volume is provided in the receiver cord.

CAD



UM-T15DTV
UM-T50DTV
UM-R3TV
UM-R5TV
UM-Z3SV

- Directly screw onto the surface for mounting. The tightening torque should not exceed 0.3 N·m. Mounting brackets are available as optional parts.