Photoelectric sensor



* This information is intended for product management of through-beam type models. It is not required when ordering a model. * This ordering information is only for reference. For ordering a specific model, check the ordering information of the model. * There is no micro photo sensor(BS5 Series) and liquid level sensor(BL Series) in this ordering information.

Ultra	a-slim an	d amplifi	er built-i	n type [B	TF Series	s]		Photo electric	
Sp	ecification	IS						sensor	
	l open collector output	BTF1M-TDTI	BTF1M-TDTD	BTE30-DDTI	BTE30-DDTD	BTE15-BDTI	BTE15-BDTD	Fiber	
	Popen collector output	BTF1M-TDTL-P	BTF1M-TDTD-P	BTE30-DDTL-P	BTF30-DDTD-P	BTE15-BDTL-P	BTE15-BDTD-P	sensor	
Appeara	ances	NEW CE	Through-b	eam type	F	Diffuse BGS ref	reflective / lective type	Door/Area sensor Proximity sensor	
						-		Pressure sensor	
Sensing type Inrough-beam Diffuse reflective BGS reflective									
Sensing	distance	1m		5 to 30mm	naper 50x50mm)	1 to 15mm	naper 50x50mm)	Rotary	
Sensing	target	Opaque materials	of max. ø2mm	Opaque materials	s. Translucent mate	rials		encoder	
Min.sensing target Opaque materials of #2mm		ø0.2mm (Sensing distance	e 10mm)	ø0.2mm non-illum (Sensing distance	ninated objects e 10mm)	Connector/ Socket			
Hystere	Hysteresis —		Max. 20% at rate	d sensing distance	Max. 5% at rated	sensing distance			
Reflectiv (black/w	vity characteristics hite error)	—		_		Max. 15% of max sensing distance	imum	Temp. controller	
Respon	se time	Max. 1ms							
Power s	upply	12-24VDC ±10%	ripple P-P: Max. 1	0%)				SSR/ Power	
Current	consumption	Max. 20mA(This	s for each emitter	and receiver of three	ough-beam type)			controller	
Light so	urce	Red LED(650nm)			1			0	
Operatio	on mode	Light ON	Dark ON	Light ON	Dark ON	Light ON	Dark ON	Counter	
Control	output	 NPN or PNP ope Load voltage: N 	n collector output lax. 26.4VDC •Lo	oad current: Max. 5	0mA •Residual vo	ltage - NPN:Max. 1	V, PNP:Max. 2V	Timer	
Protecti	on circuit	Reverse polarity	protection, output	short-circuit protect	ion				
Indicato	r	Operation indicat	or: Red, Stability in	ndicator: Green					
Insulatio	on resistance	Min. 20MΩ(at 500	VDC megger)					Panel meter	
Noise re	esistance	±240V the square	e wave noise(pulse	e width:1µs) by the	noise simulator				
Dielectr	c strength	1,000VAC 50/60F	Iz for 1 minute					Tacho/ Speed/ Pulse	
Vibratio	n	1.5mm amplitude	at frequency of 10	to 55Hz(for 1 min	.) in each of X, Y, Z	directions for 2 hou	irs	meter	
Shock	A subtraction subsections	500m/s ⁻ (approx.	50G) in each of X,	Y, Z directions for	3 times	("		Dicplay	
Environ-	Ambient Illumination	Sunlight: Max. 10	,0001x Incandesc	ent lamp: Max. 3,00	JUIX (receiver lilumii	nation)		unit	
ment	Ambient temperature	-25 to 55°C, Stora	ge40 to 70°C						
Drotooti		JD67/JEC standar	da)					Sensor controller	
Motorial	JII	Case: DPT Sono	ing part: DMMA						
Cable		ø2.5mm, 3-wire,	Length: 2m (Emitte ameter: 0.08mm	er of through-beam	type: ø2.5mm, 2-w 9. Insulator out diar	ire, Length: 2m) neter: ø0 9mm)		Switching mode power supply	
Accesso	ory	Fixing bracket(SL	JS304), Bolt(SWC	H10A)	.,				
Approva	al	CE						Stepper motor&	
Unit wei	ght	Approx. 40g		Approx. 25g				Uriver&Controlle	
※The te	mperature or humic	dity mentioned in E	Environment indica	ates a non freezing	or condensation en	vironment.		Graphic/ Logic panel	

Connections

• Through-beam



• Diffuse reflective/BGS reflective



%2: Load connection for PNP output



Field network device

Dimensions

(unit: mm)



Reflector

Retroreflective photo sensor is sold with a basic reflector. You can select other reflectors for the proper install environment. - Select proper reflector size for the install space. - Basically the bigger reflector size has the longer sensing distance.



Photo electric

Compact and Long sensing distance [BJ Series]

Specification	ons				※The mod	el name with '-C'	is connector type.	Fiber
Туре	Long distance s	ensing type						sensor
NPN open collector output	BJ15M-TDT BJ15M-TDT-C	BJ10M-TDT BJ10M-TDT-C	BJ7M-TDT	BJ3M-PDT BJ3M-PDT-C	BJ1M-DDT BJ1M-DDT-C	BJ300-DDT BJ300-DDT-C	BJ100-DDT BJ100-DDT-C	Door/Area
≥ PNP open collector output	BJ15M-TDT-P BJ15M-TDT-C-P	BJ10M-TDT-P BJ10M-TDT-C-P	BJ7M-TDT-P	BJ3M-PDT-P BJ3M-PDT-C-P	BJ1M-DDT-P BJ1M-DDT-C-P	BJ300-DDT-P BJ300-DDT-C-P	BJ100-DDT-P BJ100-DDT-C-P	361301
	CE	and the second second	COLO.		Lin	e-up		Proximity sensor
Appearances						Pressure sensor		
	ľ		(MS-2A)		Connector ty	The second		Rotary encoder
							Connector/	
Sensing type	Through-beam			Polarized retroreflective	Diffuse reflective	/e		Socket
Sensing distance	15m	10m	7m	0.1 to 3m ^{**1} (MS-2A)	1 m (Non-glossy white paper 300×300mm)	300mm (Non-glossy white paper 100×100mm)	100mm (Non-glossy white paper 100×100mm)	Temp. controller
Sensing target	ensing target Opaque material over ø12mm Opaque material Opaque material Opaque material Translucent, opaque materials						SSR/ Power	
Hysteresis	<u> </u>				Max. 20% at se	ensing distance		controller
Response time	Max. 1ms							
Power supply	12-24VDC±10%	(ripple P-P: Max	10%)					Counter
Current consumption	Emitter/Receive	r: Max. 20mA		Max. 30mA		1		
Light source	Infrared LEDRed LEDRed LEDInfrared LEDRed LEDInfrared LEDInfrared LEDInfrared LED(850nm)(660nm)(660nm)(660nm)(850nm)(850nm)(850nm)						Timer	
Sensitivity adjustment	Built-in the adju	stment VR						
Operation mode	Light on/Dark or	n selectable by V	'R					
Control output	NPN or PNP op • Load voltage:	en collector outp Max. 26.4VDC •	ut Load current: I	Max. 100mA •Re	sidual voltage -	NPN: Max. 1V, P	NP: Max. 2.5V	Panel meter
Protection circuit	Reverse polarity	protection, output	t short-circuit pr	otection, interferen	ce prevention fur	nction(Except throu	ugh-beam type)	Tacho/
Indicator	Operation: Red,	Stable: Green(E	Emitter's power	indicator: Green)				Speed/ Pulse
Insulation resistance	Max.20MΩ(at 5	00VDC megger)						meter
Noise resistance	±240V the squa	re wave noise(pu	ulse width:1µs)	by the noise simu	lator			Display
Dielectric strength	1000VAC 50/60	Hz for 1 minute	(40 L) EELL (C)	. 4				unit
Vibration	1.5mm amplitud	E at frequency of	1 10 to 55HZ(to	r i min.) in each o	of X, Y, Z directio	ns for 2 nours		
	Suplight: Max 1	1 000ly Incardo	A, I, Z directio		or illumination)			Sensor
	25 to 55°C sto							controller
	35 to 85% RH s	torage: 35 to 85%	~					Switching
	B I - IP65(IEC s	tandard) B I-C -	IP67(at non-de	w status)				mode power
Material	Case: PC+ABS	LED Can: PC S	Sensing part: P	MMA				
Cable ^{*2}	BJ: ø3.5mm, 3- (AWG24, Core	wire, Length: 2m	(Emitter of thro n. Number of c	ugh-beam type: ø	3.5mm, 2-wire, I r out diameter: ø	Length: 2m)		Stepper motor& Driver&Controller
. Common	Mounting brack	et, Bolt, Nut, VR	adjustment driv	/er		,		
Accessory Individual	<u> </u>			Reflector(MS-2A)	—			Graphic/
Approval	CE							panel
Unit weight	BJ: Approx. 90g	, BJ-C: Approx. 2	20g	BJ: Approx 60g BJ-C: Approx 30g	BJ: Approx. 45	g, BJ-C: Approx.	10g	Field network
L								device

 \times 1: The sensing distance is extended to 0.1 to 4m or 0.1 to 5m when using optional reflector MS-2S or MS-3S.

%2: M8 connector cable is sold separately. (Cable - AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: ø1.25)

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Transparent glass sensing/BGS reflective/Micro spot type [BJ Series]

Specifications

Туре		Transparent q	ass sensing type	BGS reflective	type		Micro spot type	
<u>⊒</u> N	PN open collector output	BJG30-DDT	3.91	BJ30-BDT	BJ50-BDT	BJ100-BDT	BJN50-NDT	BJN100-NDT
S PI	NP open collector output			BJ30-BDT-P	BJ50-BDT-P	BJ100-BDT-P	BJN50-NDT-P	BJN100-NDT-P
Appe	arances	CE Transparen sensing typ	t glass E e	GGS reflective ty	ine-up npe (Spo ∉2.	(Spot size) @2.0mm	NDT BJN Micross Withe be while be	100-NDT sport type risible with bare eyes arm(Ine) is not.
Sens	ing type	Diffuse reflecti	Ve	BGS reflective			Narrow beam re	eflective
Sens	ing distance	30mm (Non-glossy white paper 100×100mm)	15mm (Transparent glass 50×50mm, t=3.0mm)	10 to 30mm (Non-glossy white paper 50×50mm)	10 to 50mm (Non-glossy white paper 50×50mm)	10 to 100mm (Non-glossy white paper 100×100mm)	30 to 70mm	70 to 130mm
Sens	ing target	Transparent g opaque mater	lass, ials, translucent	Translucent, or	aque materials		Translucent, op	aque materials
Min.c trans	liameter of mitting SPOT	<u> </u>		Approx. ø5.0mm	Approx. ø4.5mm	Approx. ø6.5mm	Approx. ø2.0mm	Approx. ø2.5mm
Min.s	ensing target	—					Approx. min. ø0.2	2mm(Copper wire)
Hyste	eresis	Max. 20% at s	ensing distance	Max. 10% at se	ensing distance		Max. 25% at sensing distance	Max. 20% at sensing distance
Response time Max. 1ms Max. 1.5ms Max. 1ms								
Powe	er supply	12-24VDC ±1	0%(ripple P-P: Ma	x.10%)				
Curre	ent consumption	Max. 30mA				_		
Light	source/Wavelength	Infrared LED(8	350nm)	Red LED(660n	m)		Red LED(650nr	n)
Sens	itivity adjustment	—	— Built-in the adju		ustment VR			
Oper	ation mode	Light ON fixed		Light ON / Darl	ON selectable	by VR		
Contr	rol output	NPN open col • Load voltage • Load current • Residual vol	ector output :: Max. 26.4VDC : Max.100mA tage: Max. 1V	NPN or PNP o • Load voltage • Residual voltage	pen collector out Max. 26.4VDC age - NPN: Max.	•Load current ∙Load current . 1V, PNP: Min. 2	t: Max. 100mA 2.5V	
Prote	ction circuit	Reverse polari	ty protection, outpu	t short-circuit pro	otection, interfere	nce prevention fu	unction(Exept BG	S reflective type)
Indica	ator	Operation indi	cator: red, Stability	y indicator: gree	n			
Insula	ation resistance	Min. 20MΩ(at	500VDC megger)					
Noise	e resistance	±240V the squ	are wave noise(p	ulse width:1µs)	by the noise sim	ulator		
Diele	ctric strength	1,000VAC 50/	60Hz for 1minute					
Vibra	tion	1.5mm amplitu	ide at frequency o	f 10 to 55Hz(for	1 min.) in each	of X, Y, Z directi	ons for 2 hours	
Shoc	k	500m/s²(appro	ox. 50G) in each o	f X, Y, Z directio	ns for 3 times			
Ę	Ambient illumination	Sunlight: Max	11,000lx, Incande	escent lamp: Ma	x. 3,000lx(receiv	ver illumination)		
artic	Ambient temperature	-25 to 55°C, st	orage:-40 to 70°C					
шĔ	Ambient humidity	35 to 85%RH,	storage: 35 to 85	%RH				
Prote	ction	IP65(IEC stan	dard)					
Mate	rial	Case: PC+AB	S, LED Cap: PC, S	Sensing part: PI	AMA			
Cable	9	ø3.5mm, 3-wir	e, Length: 2m(AW	G24, Core diam	eter: 0.08mm, N	umber of cores: 4	40, Insulator out o	diameter: ø1mm)
Acce	ssory	Mounting brac	ket, Bolt	Mounting brack	et, Bolt, Adjustn	nent driver		
Appro	oval	CE						
Unit \	weight	Approx. 45g		Approx. 50g			Approx. 45g	

XThe temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.



Micro photo sensor [BS5 Series]

Specifications

		DOF KOM	DOS TOM	DOFLOM	DOF YOM	
Model	INPIN open collector output	BS5-KZIM	B55-12W	BS5-L2IVI	BS5-YZIVI	BS5-VZIVI
	PNP open collector output	BS5-K2M-P	BS5-12M-P	BS5-L2M-P	BS5-Y2M-P	BS5-V2M-P
Appeara	ances	C E Line-up	C E Line-up	C E Line-up	C E Line-up	C E Line-up
Sensing	distance	5mm fixed				
Sensing	type	Through-beam(Not r	nodulated)			
Sensing	target	ø0.8×1mm Opaque	materials			
Hystere	sis	0.05mm				
Respon	se time	Light ON: Max. 20µs	, Dark ON: Max. 100	lS		
Respon	se frequency	2kHz(refer to the me	asuring range of frequence	uency response)		
Power s	supply	5-24VDC ±10%(rippl	e P-P: Max. 10%)			
Current	consumption	Max. 30mA(at 26.4V	DC)			
Light so	urce	Infrared LED(950nm)			
Operati	on mode	Light ON / Dark ON	selectable by control	wire		
Control	output	NPN or PNP open co • Load voltage: Max.	ollector output 30VDC •Load curr	ent: Max. 100mA •I	Residual voltage: Max	. 1.2V
Protecti	on circuit	Reverse power polar	ity protection, Overcu	irrent protection		
Indicato	r	Operation Indicator:	red LED			
Connec	tion	Connector type				
Insulatio	on resistance	Min. 20MΩ(at 250VE	C megger)			
Noise re	esistance	±240V the square wa	ave noise(pulse width	:1µs) by the noise sim	ulator	
Dielectr	ic strength	1,000VAC 50/60Hz f	or 1minute			
Vibratio	n	1.5mm amplitude at	frequency of 10 to 55	Hz in each of X, Y, Z	directions for 2 hours	
Shock		500m/s²(approx. 500	G) in each of X, Y, Z d	irections for 3 times		
Environ	Ambient illumination	Fluorescent lamp: M	ax. 10001x (receiver i	llumination)		
Environ-	Ambient temperature	-20 to 55°C, storage:	-25 to 85°C			
mont	Ambient humidity	35 to 85%RH, storag	je: 35 to 85%RH			
Protecti	on	IP50(IEC standard)				
Materia		PBT				
Approva	al	CE				
Unit we	ght	Approx. 30g				

**The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Connections



%1: The load connection of NPN open collector output

X2: The load connection of PNP open collector output

*Connect the unit using socket. If it is soldered on terminal pin directly without socket, it may cause product damage.



Small, diffuse reflective type with long sensing distance [BA Series] Specifications

NPN open collector	BA2M-DDT	BA2M-DDTD		
PNP open collector	BA2M-DDT-P	BA2M-DDTD-P		
Appearances	CE			
Sensing type	Diffuse reflective			
Sensing distance	2m(Non-glossy white paper 200×200mm)			
Sensing target	Translucent, opaque materials			
Hysteresis	Max. 20% at sensing distance			
Response time	Approx. 1ms			
Power supply	12-24VDC ±10%(ripple P-P: Max. 10%)			
Current consumption	Max. 15mA(Max. 30mA when the output is ON)			
Light source	Infrared LED(850nm)			
Sensitivity adjustment	Built-in the adjustment VR			
Operation mode	Light ON	Dark ON		
Control output	NPN or PNP open collector output • Load voltage: Max. 26.4VDC • Load current: Max. 100mA • Residual voltage - NPN: Max. 1V, PNP: Min. 2.5V			
Protection circuit	Reverse polarity protection, output short-circuit prot	ection		
Indicator	Operation indicator: red Stability indicator: orange(Light ON), green(Dark ON)			
Insulation resistance	Min. 20MΩ(at 500VDC megger)			
Noise resistance	±240V the square wave noise(pulse width: 1µs) by the noise simulator			
Dielectric strength	1000VAC 50/60Hz for 1minute			
Vibration	1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours			
Shock	100m/s ² (approx. 10G) in each of X, Y, Z directions f	for 3 times		
Ambient illumination	Sunlight: Max. 11,0001x, Incandescent lamp: Max.	3,0001x (Receiving illumination)		
Ambient temperature	-25 to 55°C, storage: -25 to 70°C			
Ambient humidity	35 to 85%RH, storage: 35 to 85%RH			
Protection	IP64(IEC standard)			
Material	Case: ABS, Sensing part: PC, Indicator: PC, VR: IX	(EF		
Cable	ø3mm, 3-wire, Length: 2m (AWG24, Core diameter: 0	0.08mm, Nunber of cores: 40, Insulator out diameter: ø1mm)		
Accessory	VR adjustment driver			
Approval	CE			
Unit weight	Approx. 50g			

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Connections





Photo lectric

Small emitter/receiver synchronizing type [BY Series] Specifications

Madal		Standard type	Side sensing type	Fiber optic		
wouer		BY500-TDT	BYS500-TDT	sensor		
				Door/Area sensor		
Appeara	inces			Proximity sensor		
			' T	Pressure sensor		
Sensing	type	Through-beam	·	Rotary		
Sensing	distance	500mm		encoder		
Sensing	target	Opaque materials of Min. ø5mm]		
Respons	se time	Max. 1ms		Connecto Socket		
Power s	upply	12-24VDC ±10%(ripple P-P: Max. 10%)				
Current	consumption	Max. 30mA		Tomo		
Light so	urce	Infrared LED(940nm)		controller		
Operatio	on mode	Dark ON				
Control	output	 NPN open collector output Load voltage: 30VDC Load current: Max. 10 	0mA • Residual voltage: Max. 1V	SSR/ Power controller		
Protectio	on circuit	Reverse polarity protection, output short-circuit pr	otection]		
Indicato	r	Operation indicator: red LED				
Insulatio	n resistance	Min. 20MΩ(at 500VDC megger)				
Noise re	sistance	±240V the square wave noise(pulse width: 1µs) b	y the noise simulator			
Dielectri	c strength	1,000VAC 50/60Hz for 1minute				
Vibration	1	1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours				
Shock		500m/s²(approx. 50G) in each of X, Y, Z directions for 3 times				
Environ	Ambient illumination	Sunlight: Max. 11,0001x Incandescent lamp: Max	. 3,000 Ix (Receiving illumination)	meter		
ment	Ambient temperature	-10 to 60°C, storage: -25 to 70°C				
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH		Tacho/ Speed/ Pu		
Protectio	on	IP50(IEC standard)		meter		
Material		Case: ABS, Sensing part: Acrylic		Binder		
Cable		ø4mm, 4-wire, Length: 2m (Emitter of through-bea (AWG22, Core diameter: 0.08mm, Nunber of core	am type: ø4mm, 3-wire, Length: 2m) es: 60, Insulator out diameter: ø1.25mm)	unit		
Accesso	ory	Mounting bracket, Bolts/Nuts		Samaa		
Unit wei	ght	Approx. 150g		controller		

%The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Connections



**The power of the emitter and the receiver must be supplied from same power line.
**Synchronous wire(white) of the receiver must be connected with that of the emitter or it must be connected with that of the emitter.

XSynchronous wire(white) of the receiver must be connected with that of the emitter, or it may cause malfunction.

Autonics

Switching mode power supply

Stepper motor& Driver&Control

Graphic/ Logic panel

Field network device 12

M3.5 Bolt

Optical axis

Ŧ

17.2

2

Dimensions

• BY500-TDT



• BYS500-TDT

16

7.5

15







Photo electric sensor

Small diffuse reflective and convergent reflective type [BYD Series]

Specifications

Sp	ecifications					Fiber optic		
Model		BYD30-DDT BYD30-DDT-U ^{×1} BYD30-DDT-T ^{×2}	BYD50-DDT BYD50-DDT-U ^{×1} BYD50-DDT-T ^{×2}	BYD100-DDT	BYD3M-TDT	BYD3M-TDT-P	r Area or	
Appeara	nces	CE		Ope	YD30-DDT-U	Proxim sensor Pressu sensor Rotary	nity Ir ure Ir	
Sensina	type	Convergent reflective	e	Diffuse reflective	Through-beam			
Sensing	distance	10 to 30mm ^{×3}	10 to 50mm*3	100mm ^{×3}	3m	Conne	ector/	
Sensing	target	Translucent, opaque	materials		Opaque materials o	f Min. ø6mm	л	
Hysteres	is	Max. 10% at sensing	g distance	Max. 25% at sensing distance	_	Temp. control	oller	
Response time		Operation: Max. 3ms (When the time adju minimum)	s, Return:Max. 100ms stment VR is	Operation:Max. 3ms Return:Max. 100ms	Max. 1ms	SSR/ Power control	r oller	
Power su	ipply	12-24VDC ±10%(rip	ple P-P: Max. 10%)					
Current consumption		Max. 35mA			Max. 30mA	Counte	ter	
Light source Infrared LED								
Sensitivity adjustment		Fixed		Built-in the adjustment VR	Fixed	Timer		
Operation mode		Light ON			Dark ON(Light ON:	Option)		
Control output		NPN open collector output • Load voltage: Max. 30VDC, • Load current: Max. 50mA, • Residual voltage: Max. 1V			NPN or PNP open of • Load voltage :Max • Load current: Max • Residual voltage -	xollector output x. 30VDC, x. 100mA, NPN: Max.1V, Panel meter Tacho/ Speed/ panel meter)/ d/ Pulse	
Protectio	n circuit	Reverse polarity pro	tection, output short-c	ircuit protection	J			
Timer fur	iction	Built-in(OFF delay) delay Time : Max. 0.1 to 2 sec.(adjustment VR)		_	_			
Indication	1	Operation indicator: red LED						
Insulation	n resistance	Min. 20MΩ(at 500VDC megger)						
Noise res	sistance	±240V the square w	ave noise(pulse width	: 1µs) by the noise sim	nulator			
Dielectric	strength	1,000VAC 50/60Hz f	1,000VAC 50/60Hz for 1minute					
Vibration		1.5mm amplitude at	1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours					
Shock		500m/s²(approx. 500	G) in each of X, Y, Z d	irections for 3 times		Steppe	er	
	Ambient illumination	Sunlight: Max. 11,00	Olx, Incandescent lam	p: Max. 3,000lx(receiv	ver illumination)	motor8 Driver&	& &Controlle	
Environ-	Ambient temperature	-20 to 65°C, storage	: -25 to 70°C					
ment	Ambient humidity	35 to 85%RH, storage	ge: 35 to 85%RH			Graphi Logic	iic/	
Protectio	n	Standard type: IP64 ※1,※2: IP50(IEC st	(IEC standards)/ andards)	IP50(IEC standard)	IP64(IEC standard)	panel		
Material		Case: ABS, Sensing	part: Acrylic			Field	/rk	
Cable		ø3.5mm, 3-wire, Ler (AWG24, Core diam	ngth: 2m(Emitter of thr eter: 0.08mm, Numbe	ough-beam type: ø3.5 r of cores: 40, Insulato	imm, 2-wire, Length: or out diameter: ø1m	2m) m)		
Accesso	Ту.	VR adjustment drive	r, Mounting bracket A,	M3 Screws, Nuts	Mounting bracket A	, M3 Screws, Nuts		
Approval		CE			·			
Unit weig	ht	Approx. 70g			Approx. 150g			

 \times 1: Operation indicator is on the top.

※2: OFF delay timer is built-in. (Delay time: Max. 0.1 to 2sec.)

%3: Sensing distance for Non-glossy white paper(50×50mm)
 %The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Connections



Dimensions





Bracket A dimension when mounting















(unit: mm)



Operation indicator

※Built-in timer type: Timer adjustment VR, Diffuse reflective type: Sensitivity adjustment VR

Photo electric

Slim photoelectric sensor for long sensing distance [BPS Series]

Specifications

	ecifications	1		1	optic	
Model	NPN open collector output	BPS3M-TDT		BPS3M-TDTL		
	PNP open collector output	BPS3M-TDT-P		BPS3M-TDTL-P	Door/Area sensor	
Appeara	nces				Proximity sensor	
			Π.		Pressure sensor	
Sensing	type	Through-beam			Rotary	
Sensing	target	Opaque materials of Min. ø5mm			encoder	
Operatio	n mode	Dark ON		Light ON	Connector/	
Sensing	distance	3m			Socket	
Respons	e time	Max. 1ms			Temp.	
Power su	upply	12-24VDC ±10%(ripple P-P: Max. 10%)			controller	
Current of	consumption	Max. 20mA				
Light sou	irce	Infrared LED(850nm)			Power controller	
Control output		•Load voltage: Max. 30VDC •Load current: Max. 100mA •Residual voltage - NPN: Max. 1V, PNP: Max. 2.5V			Counter	
Protectio	n circuit	Reverse polarity protection, Output short-circuit protection				
Indicator		Emitter: Power indicator(red LED), Receiver: Operation indicator(red LED)				
Insulatio	n resistance	Min. 20MΩ(at 500VDC megger)				
Noise re	sistance	±240V the square wave noise(pulse width:1µs) by the noise simulator				
Dielectri	c strength	1,000VAC 50/60Hz for 1minute				
Vibration		1.5mm amplitude at frequency of 10 to	o 55Hz(for 1 mi	n.) in each of X, Y, Z directions for 2 hours	Tacho/ Speed/ Pulse	
Shock		500m/s ² (approx. 50G) in each of X,	Y, Z directions	for 3 times		
F acility a	Ambient illumination	Sunlight: Max. 11,0001x , Incandesc	ent lamp: Max	. 3,0001x (receiver illumination)	Display unit	
ment	Ambient temperature	-25 to 65°C, storage: -25 to 70°C				
	Ambient humidity	35 to 85%RH, storage: 35 to 90%RH	1		Sensor	
Protectio	n	IP67(IEC standard)				
Material		Case: PC			Switching mode power	
Cable		ø3mm, 3-wire, Length: 2m(Emitter of through-beam type: ø3mm, 2-wire, Length: 2m) (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: ø1mm)				
Approva		CE			Stepper motor&	
Unit weig	ght	Approx. 66g			Driver&Controlle	
※The ter	nperature or humidity mention	oned in Environment indicates a non	freezing or con	densation environment.	Graphic/ Logic panel	

Connections



Field network device

Dimensions



(unit: mm)

Small and light, common type [BM Series]

Specifications

Model		BM3M-TDT	BM1M-MDT	BM200-DDT			
Appearan	ices		KMS-5 is sold separately. (MS-2) (MS-5)	CE			
Sensing t	уре	Through-beam	Retroreflective	Diffuse reflective			
Sensing of	listance	3m	0.1 to 1m ^{**1}	200mm ^{**}			
Sensing t	arget	Opaque materials of Min. ø8mm	Opaque materials of Min. ø60mm	Translucent, Opaque materials			
Hysteresi	S	<u> </u>		Max. 10% at rated settingdistance			
Response	e time	Max. 3ms					
Power su	pply	12-24VDC ±10%(ripple P-P: Max.	10%)				
Current c	onsumption	Max. 45mA	Max. 40mA				
Light sour	rce	Infrared LED(940nm)					
Sensitivity	/ adjustment	Fixed	Adjustable VR				
Operation	mode	Dark ON		Light ON(Dark ON: Option)			
Control or	utput	NPN open collector output •Load voltage: Max. 30VDC •Loa	ad current: Max. 100mA • Residual	l voltage: Max. 1V			
Protection	n circuit	Reverse polarity protection					
Indication		Operation indicator: red LED					
Insulation	resistance	Min. 20MΩ(at 500VDC megger)					
Noise res	istance	±240V the square wave noise(pulse width: 1µs) by the noise simulator					
Dielectric	strength	1,000VAC 50/60Hz for 1minute	,000VAC 50/60Hz for 1minute				
Vibration		1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours					
Shock		500m/s²(approx. 50G) in each of X	, Y, Z directions for 3 times				
Environ	Ambient illumination	Sunlight: Max. 11,0001x Incandesc	ent lamp: Max. 3,0001x (receiver illu	mination)			
Environ-	Ambient temperature	-10 to 60°C, storage: -25 to 70°C					
mont	Ambient humidity	35 to 85%RH, storage: 35 to 85%R	RH				
Material		Case: ABS, Sensing part: PC	Case: ABS, Sensing part: Acrylic(R	etroreflective: PC)			
Cable		ø4mm, 3-wire, Length: 2m(Emitter (AWG22, Core diameter: 0.08mm,	of through-beam type: ø4mm, 2-wire Numner of cores: 60, Insulator out d	e, Length: 2m) liameter: ø1.25mm)			
Acce-	Individual	<u> </u>	Reflector(MS-2)	VR adjustment driver			
ssories	Common	Mounting bracket, Bolts/nuts					
Approval		CE					
Unit weig	ht	Approx. 170g	Approx. 105g	Approx. 88g			

X1: It is mounting distance between sensor and reflector MS-2 and it is same when MS-5 is used. It is detectable under 0.1m.

2: It is for Non-glossy white paper(200×200mm)
 **The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.



Madal	INFIN OPEN COllector Output	DIVISSIVI-I DI	DIVISZIVI-IVID I	DIVI3300-DD1	control
Iviodei	PNP open collector output	BMS5M-TDT-P	BMS2M-MDT-P	BMS300-DDT-P	
Appea	rances	C E	CE (MS-2) (MS-2) (MS-5)	CE	Switchi mode p supply Steppe motor& Driver&0
Sensin	g type	Through-beam	Retroreflective	Diffuse reflective	Graphic
Sensin	g distance	5m	0.1 to 2m ^{×1}	300mm ^{×2}	Logic
Sensin	g target	Opaque materials of Min. ø10mm	Opaque materials of Min. ø60mm	Translucent, Opaque materials	
Hysteresis —			Max. 20% at rated settingdistance	Field	
Respo	esponse time Max. 1ms				
Power	supply	12-24VDC ±10%(ripple P-P: Max. 1	0%)		
Curren	t consumption	Max. 50mA	Max. 45mA		
Light s	ource	Infrared LED(940nm)			
Sensiti	vity adjustment	<u> </u>		Adjustable VR	
Operat	ion mode	Selectable Light ON or Dark ON by	control wire		
Contro	l output	NPN or PNP open collector output •Load voltage: Max. 30VDC •Loa •Residual voltage - NPN: Max. 1V,	ad current: Max. 200mA PNP: Max. 2.5V		
Protect	tion circuit	Reverse power polarity, Output sho	rt-circuit(Overcurrent) protection circu	uit	
Indicat	or	Operation indicator: red LED, Powe	r indicator: red LED(BMS5M-TDT1)		

※2: It is for Non-glossy white paper(100×100mm)

Autonics

ntroller

High speed response type with built-in output protection circuit [BMS Series]

Specifications

Madal	NPN o	pen collector output	BMS5M-TDT	BMS2M-MDT	BMS300-DDT			
woder	PNP o	pen collector output	BMS5M-TDT-P	BMS2M-MDT-P	BMS300-DDT-P			
Insulat	ion res	istance	Min. 20MΩ(at 500VDC megger)	-				
Noise r	esista	nce	±240V the square wave noise(pulse width: 1µs) by the noise simulator					
Dielect	ric stre	ength	1000VAC 50/60Hz for 1minute					
Vibratio	on		1.5mm amplitude at frequency of 10	to 55Hz(for 1 min.) in each of X, Y, Z	directions for 2 hours			
Shock			500m/s ² (approx. 50G) in each of X,	Y, Z directions for 3 times				
	Amb	ent illumination	Sunlight: Max. 11,0001x, Incandescent lamp: Max. 3,0001x					
Enviror	I- Amb	ient temperature	-10 to 60°C, storage: -25 to 70°C					
ment	Amb	ent humidity	35 to 85%RH, storage: 35 to 85%RH					
Materia	al		Case: ABS, Sensing part: Acryl (Thr	ough-beam: PC)				
Cable			ø5mm, 4-wire, Length: 2m(Emitter c (AWG22, Core diameter: 0.08mm, N	5mm, 4-wire, Length: 2m(Emitter of through-beam type: ø5mm, 2-wire, Length: 2m) \WG22, Core diameter: 0.08mm, Numner of cores: 60, Insulator out diameter: ø1.25mm)				
Access	ories	Individual	_	Reflector(MS-2), VR adjustment driver	VR adjustment driver			
		Common	Mounting bracket, Bolts/nuts					
Approv	al		(€					
Unit we	eight		Approx. 180g	Approx. 110g	Approx. 100g			
※The t	emper	ature or humidity	mentioned in Environment indicates	a non freezing or condensation envi	ronment.			

Connections



XDark ON mode is on when control line is opened





Photo electric sensor

Fiber optic sensor

Compact, amplifier built-in type with Universal voltage [BEN Series]

Specifications

◎ Free power, Relay contact output type

Model		BEN10M-TFR	BEN5M-MFR	BEN3M-PFR	BEN300-DFR	Door/Area sensor	
Appeara	nces	CE	CE		CE	Proximity sensor	
			a la	(MS-4) (MS-2) XMS-4 is sold separately.		Pressure sensor	
Sensing	type	Through-beam	Retroreflective (Standard type)	Retroreflective (Built-in polarizing filter)	Diffuse reflective	Rotary encoder	
Sensing	distance	10m	0.1 to 5m ^{**1}	0.1 to 3m ^{×1}	300mm ^{**2}		
Sensing target		Opaque materials of Min. ø16mm	Opaque materials of Min.	ø60mm	Translucent, Opaque materials	Connector/ Socket	
Hysteresis		Max. 20% at ratedsetting distance					
Respons	e time	Max. 20ms					
Power su	ipply	24-240VAC ±10% 50/60Hz	z, 24-240VDC ±10%(ripple	P-P : Max. 10%)		SSR/ Power	
Power co	onsumption	Max. 4VA			1	controller	
Light sou	irce	Infrared LED(850nm)		Red LED(660nm)	Infrared LED(940nm)	Counter	
Sensitivity adjustment — Adjustment VR							
Operation mode Selectable Light ON or Dark ON by VR					Timer		
Control output Relay contact output Relay contact capacity: 30VDC 3A of resistive load, 250VAC 3A resistive load Relay contact composition: 1c							
Relay lifetime Mechanically: Min. 50,000,000 operation, Electrically: Min. 100,000 operation					Panel meter		
Light rec	eiving element	Photo IC				Tacho/	
Indicator		Operation indicator : red, Stability indicator : green (The red lamp on Emitter of transmitted beam type is for power indication)					
Insulation	n resistance	Min. 20MΩ(at 500VDC megger)					
Insulation	n type	Double or strong insulation (Mark : , Dielectric voltage between the measured input and the power: 1kV)					
Noise res	sistance	±1,000V the square wave noise(pulse width : 1µs) by the noise simulator					
Dielectric	c strength	1000VAC 50/60Hz for 1minute					
Vibration	Mechanical	1.5mm amplitude at freque	ency of 10 to 55Hz(for 1 min	.) in each of X, Y, Z direction	ns for 2 hours	Switching	
VIDIATION	Malfunction	1.5mm amplitude at freque	ncy of 10 to 55Hz(for 1 min	.) in each of X, Y, Z direction	ns for 10 minutes	mode power supply	
Shock	Mechanical	500m/s²(approx. 50G) in ea	ach of X, Y, Z directions for	3 times		Stepper	
SHOCK	Malfunction	100m/s²(approx. 10G) in ea	ach of X, Y, Z directions for	3 times		motor& Driver&Controlle	
L	Ambient illumination	Sunlight : Max. 11,0001x , I	ncandescent lamp : Max. 3	,0001x (Receiver illumination)	Graphic/	
Environ-	Ambient temperature	-20 to 65°C, storage : -25 to	o 70°C			Logic	
	Ambient humidity	35 to 85%RH, storage : 35	to 85%RH				
Protectio	n	IP50(IEC standard)				Field network device	
Material		Case, Case cover: Heat r	esistant ABS • Sensing pa	rt: PC(with polarizing filter: F	PMMA)		
Cable		ø5mm, 5-wire, Length: 2m (AWG22, Core diameter: 0	(Emitter of through-beam ty .08mm, Number of cores: 6	pe: ø5mm, 2-wire, Length: 2 60, Insulator out diameter: ø1	?m) I.25mm)		
A0000000	Individual	—	Reflector(MS-2)				
Accessory	Common	VR adjustment driver, Mou	nting bracket, Bolts/nuts				
Unit weig	Jht	Approx. 354g	Approx. 208g		Approx. 195g		

X1: The sensing distance is specified with using the MS-2 reflector and same as the MS-4 reflector. Sensing distance is setting range of the reflector. The sensor can detect under 0.1m.

Autonics

%2: It is for Non-glossy white paper(100×100mm).

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Compact, amplifier built-in type with Universal voltage [BEN Series]

Specifications

◎ DC power, Solid state output type

Model		BEN10M-TDT	BEN5M-MDT	BEN3M-PDT	BEN300-DDT			
Appeara	nces	ce	CE	IS-2) (MS-4) sold separately.	CE			
Sensing	type	Through-beam	Retroreflective	Retroreflective (with polarizing filter)	Diffuse reflective			
Sensing	distance	10m	0.1 to 5m ^{×1}	0.1 to 3m ^{**1}	300mm ^{**2}			
Sensing	target	Opaque materials of Min. ø16mm	Opaque materials of Min. ø	960mm	Translucent, Opaque materials			
Hysteres	is				Max. 20% at ratedsetting distance			
Respons	e time	Max. 1ms						
Power su	upply	12-24VDC ±10%(ripple P-F	P: Max. 10%)					
Current o	consumption	Max. 50mA						
Light sou	irce	Infrared LED(850nm)		Red LED(660nm)	Infrared LED(940nm)			
Sensitivit	ty adjustment	Adjustment VR						
Operatio	n mode	Selectable Light ON or Dar	k ON by VR					
Control output		NPN open collector / PNP o • Load voltage: Max. 30VD	open collector simultaneous C •Load current: Max. 200r	output mA •Residual voltage - NPl	N: Max. 1V, PNP: Max. 2.5V			
Protection circuit		Reverse polarity protection	, Short-circuit protection					
Light rec	eiving element	Photo IC						
Indicator		Operation indicator : Red, Stability indicator : Green (The red lamp on Emitter of transmitted beam type is for power indication)						
Insulation	n resistance	Min. 20MΩ(at 500VDC megger)						
Noise res	sistance	±240V the square wave noise(pulse width: 1µs) by the noise simulator						
Dielectric	c strength	1000VAC 50/60Hz for 1minute						
Vibration		1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours						
Shock		500m/s²(approx. 50G) in ea	ach of X, Y, Z directions for 3	3 times				
	Ambient illumination	Sunlight : Max. 11,0001x Inc	candescent lamp : Max. 3,00	001x (Receiver illumination)				
Environ-	Ambient temperature	-20 to 65°C, storage : -25 to	o 70°C					
	Ambient humidity	35 to 85%RH, storage : 35	to 85%RH					
Protectio	n	IP50(IEC standard)						
Material		• Case, Case cover: Heat r	esistant ABS • Sensing par	t: PC(with polarizing filter: P	MMA)			
Cable		ø5mm, 4-wire, Length: 2m((AWG22, Core diameter: 0.	Emitter of through-beam typ 08mm, Number of cores: 60	be: ø5mm, 2-wire, Length: 2), Insulator diameter: ø1.25r	m) nm)			
A	Individual	_	Reflector(MS-2)		_			
Accessory	Common	VR adjustment driver, Mour	nting bracket, Bolts/nuts					
Approval		CE						
Unit weig	jht	Approx. 342g	Approx. 200g		Approx. 187g			

 \times 1: The sensing distance is specified with using the MS-2 reflector and same as the MS-4 reflector.

Sensing distance is setting range of the reflector. The sensor can detect under 0.1m.

%2: It is for Non-glossy white paper(100×100mm)

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.



Terminal type and Long sensing distance type [BX Series]

Specifications

© Free power type, Relay contact output type

	1-1	Standard type	BX15M-TFR	BX5M-MFR	BX3M-PFR	BX700-DFR			
	lei	With Timer	BX15M-TFR-T	BX5M-MFR-T	BX3M-PFR-T	BX700-DFR-T			
Appearances		ices		CE XMS-4 is sold separately. (MS-2) (MS-4)	C (((MS-3)	CE			
Sen	ising t	уре	Through-beam	Retroreflective (Standard type)	Retroreflective (Built-in polarizing filter)	Diffuse reflective			
Sen	ising c	listance	15m	0.1 to 5m(MS-2) ^{×1}	0.1 to 3m(MS-3) ^{*2}	700mm ^{**3}			
Sen	ising t	arget	Opaque materials of Min. ø15mm	Opaque materials of Min. ø	60mm	Translucent, opaque material			
Hys	teresi	s				Max. 20% at rated setting distance			
Res	ponse	e time	Max. 20ms						
Pov	ver su	pply	24-240VAC ±10% 50/60Hz, 2	4-240VDC ±10%(ripple P-P:	Max. 10%)				
Pov	ver co	nsumption	Max. 3VA						
Ligh	nt sour	rce	Infrared LED(850nm)		Red LED(660nm)	Infrared LED(940nm)			
Sen	sitivity	/ adjustment	Built-in the adjustment VR						
Ope	eration	mode	Selectable Light ON or Dark ON by switch						
Control output		utput	Relay contact output(Contact	capacity: 30VDC 3A, 250VA	C 3A at resistive load, Conta	act composition: 1c) ^{**4}			
Rela	ay life	cycle	Mechanically: Min. 50,000,00	0, Electrically: Min. 100,000					
Self	-diagr	nosis output	Green LED turns on at stable operation						
Tim	er fun	ction	Selectable ON Delay, OFF Delay, One Shot Delay by slide switch [Delay Time: 0.1 to 5sec.(Adjustable VR)]						
Indi	cator		Operation indicator: yellow LED, Self-diagnosis indicator: green LED						
Insu	lation	resistance	Min. 20MΩ(at 500VDC megger)						
Insu	lation	type	Double or strong insulation(Mark: , bielectric voltage between the measured input and the power: 1.5kV)						
Noi	se res	istance	±1,000V the square wave noise(pulse width: 1µs) by the noise simulator						
Diel	ectric	strength	1500VAC 50/60Hz for 1minute						
Vibr	otion	Mechanical	1.5mm amplitude at frequenc	y of 10 to 55Hz(for 1 min.) in	each of X, Y, Z directions for	r 2 hours			
	allon	Malfunction	1.5mm amplitude at frequenc	y of 10 to 55Hz(for 1 min.) in	each of X, Y, Z directions for	r 10 minutes			
She	ck	Mechanical	500m/s ² (approx. 50G) in eacl	n of X, Y, Z directions for 3 tir	nes				
	ICK .	Malfunction	100m/s ² (approx. 10G) in eacl	n of X, Y, Z directions for 3 tir	nes				
ent	Ambie	ent illumination	•Sunlight: Max. 11,0001x •Ir	ncandescent lamp: Max. 3,00	001x (receiver illumination)				
ironm	Ambie	ent temperature	-20 to 55°C, storage: -25 to 7	O°C					
Ē	Ambie	ent humidity	35 to 85%RH, storage: 35 to	85%RH					
Pro	tectior	1	IP66(IEC standard)						
Mat	erial		•Case, Lens cover: PC •Ser	nsing part: Acrylic					
1	0000	Individual		Mirror(MS-2)	Mirror(MS-3)	—			
Acc	C3501	Common	VR adjustment driver, Mounti	ng bracket, Bolts, Nuts					
App	oroval		CE						
Unit	weigl	ht	TFR: Approx. 225g TFR-T: Approx. 226g	MFR: Approx. 130g MFR-T: Approx. 131g	PFR: Approx. 148g PFR-T: Approx. 149g	DFR: Approx. 115g DFR-T: Approx. 116g			

 \times 1: It is same when using the MS-4 reflector (sold separately). The sensor can detect under 0.1m.

%2: When using the MS-2 reflector, the sensing distance is 0.1 to 2m. The sensor can detect under 0.1m.

X3: It is for Non-glossy white paper(200×200mm)

%4: Relay contact output 1a type is option.

%Relay contact output 1a type is option.

%The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.



23

Selection Guide

Photo lectric

◎ DC power type, Solid state output type

Madel	Standard type	BX15M-TDT	BX5M-MDT	BX3M-PDT	BX700-DDT		
wodei	With Timer	BX15M-TDT-T	BX5M-MDT-T	BX3M-PDT-T	BX700-DDT-T		
		((CE MS-4 is sold	CE	CE		
Appear	ances						
			(MS-2) (MS-4)	(MS-3)			
Sensing	g type	Through-beam	Retroreflective (Standard type)	Retroreflective (Built-in polarizing filter)	Diffuse reflective		
Sensing	g distance	15m	0.1 to 5m(MS-2) ^{×1}	0.1 to 3m(MS-3) ^{**2}	700mm ^{**3}		
Sensing	g target	Opaque materials of Min. ø15mm	Opaque materials of Min. ø	60mm	Translucent, opaque material		
Hystere	esis				Max. 20% at rated setting distance		
Respor	nse time	Max. 1ms					
Power	supply	12-24VDC ±10%(ripple P-P	:Max. 10%)				
Current	consumption	Max. 50mA					
Light so	ource	Infrared LED(850nm)		Red LED(660nm)	Infrared LED(940nm)		
Sensitivity adjustment Built-in VR							
Operation mode Selectable Light ON or Dark ON by switch							
Control output NPN or PNP open collector output							
Relay life cycle Mechanically: Min. 50,000,000, Electrically: Min. 100,000							
Self-dia	ignosis output	is output Green LED turns on at unstable operation and output(transistor output) turns on					
Timer fi	unction	Selectable ON Delay, OFF I	Delay, One Shot Delay by slid	e switch [Delay Time: 0.1 to	5sec.(Adjustable VR)]		
Indicato	or	Operation indicator: yellow I	LED, Self-diagnosis indicator:	green LED			
Insulati	on resistance	Min. 20MΩ(at 500VDC meg	iger)				
Noise r	esistance	±240V the square wave noi:	se(pulse width: 1µs) by the no	ise simulator			
Dielectr	ric strength	1500VAC 50/60Hz for 1min	ute				
Vibratio	Mechanical	1.5mm amplitude at frequer	ncy of 10 to 55Hz(for 1 min.) ir	n each of X, Y, Z directions	for 2 hours		
• IDI auto	Malfunction	1.5mm amplitude at freque	ncy of 10 to 55Hz(for 1 min.) i	n each of X, Y, Z directions	for 10 minutes		
Shock	Mechanical	500m/s²(approx. 50G) in ea	ach of X, Y, Z directions for 3 t	imes			
	Malfunction	100m/s²(approx. 10G) in ea	ach of X, Y, Z directions for 3 t	imes			
Am	bient illumination	Sunlight: Max. 11,0001x	Incandescent lamp: Max. 3,00	001x (receiver illumination)			
Am	bient temperature	-20 to 55°C, storage: -25 to	70°C				
Am 🖞	bient humidity	35 to 85%RH, storage: 35 to	o 85%RH				
Protect	ion	IP66(IEC standard)					
Materia	ll	Case, Lens cover: PC Second	ensing part: Acrylic				
Access	Individual	<u> </u>	Mirror(MS-2)	Mirror(MS-3)	-		
	Common	VR adjustment driver, Moun	ting bracket, Bolts, Nuts				
Approv	al	CE		I			
Unit we	eight	TDT: Approx. 211g	MDT: Approx. 123g MDT-T: Approx. 124g	PDT: Approx. 141g PDT-T: Approx. 142g	DDT: Approx. 116g DDT-T: Approx. 117g		

% 1: It is same when using the MS-4 reflector (sold separately). The sensor can detect under 0.1m.

×2: When using the MS-2 reflector, the sensing distance is 0.1 to 2m. The sensor can detect under 0.1m.

%3: It is for Non-glossy white paper(200×200mm)

%The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.



Connections



© Retroreflective type / Retroreflective type with polarizing filter

- BX5M-MFR, BX5M-MFR-T(Standard type)
- BX3M-PFR, BX3M-PFR-T(Built-in polarizing filter)



- BX5M-MDT, BX5M-MDT-T(Standard type)
- BX3M-PDT, BX3M-PDT-T(Built-in polarizing filter)



◎ Diffuse reflective type



O Cable

(unit: mm)



 \times To connect the wires on the terminal, follow as above figures.

Select the round wire with the size of ø6 to 10mm for the waterproof and tighten the cable holder by torque of 1.0 to 1.5N·m.
To connect the wires on the terminal, tighten screws by torque of 0.8N·m.



(unit: mm)

Counter



Upgraded cylindrical(Ø18mm) type [BR Series]

Specifications

Specifications Specifications With '-C' is connector type.												
	NPN open collector	BRP100- DDT	BR100- DDT	BRP400- DDT	BR400- DDT	BRP200- DDTN	BR200- DDTN	BRP3M- MDT	BR3M- MDT	BR4M-TDTD BR20M-TDTD	BR4M-TDTL BR20M-TDTL	Timer
lel	output	BRP100- DDT-C	BR100- DDT-C	BRP400- DDT-C	BR400- DDT-C	BRP200- DDTN-C	BR200- DDTN-C	BRP3M- MDT-C	BR3M- MDT-C	BR4M-TDTD-C BR20M-TDTD-C	BR4M-TDTL-C BR20M-TDTL-C	Panel meter
Mo	PNP open collector	BRP100- DDT-P	BR100- DDT-P	BRP400- DDT-P	BR400- DDT-P	BRP200- DDTN-P	BR200- DDTN-P	BRP3M- MDT-P	BR3M- MDT-P	BR4M-TDTD-P BR20M-TDTD-P	BR4M-TDTL-P BR20M-TDTL-P	
	output	BRP100- DDT-C-P	BR100- DDT-C-P	BRP400- DDT-C-P	BR400- DDT-C-P	BRP200- DDTN-C-P	BR200- DDTN-C-P	BRP3M- MDT-C-P	BR3M- MDT-C-P	BR4M-TDTD-C-P BR20M-TDTD-C-P	BR4M-TDTL-C-P BR20M-TDTL-C-P	Tacho/ Speed/ Pulse meter
		CE	-	Ia A		r	»	MS-5 is sold		a r		Display unit
Appearances		Tal		-ila (Ê	>>			A			Sensor controller
			A A A A A A A A A A A A A A A A A A A			(1	13-2)	(MS-5)			Connector type	Switching mode power supply
S	ensing type	Diffuse re	eflective			Narrow bea	am reflective	Retroreflect	ive	Through-beam		Stepper
S	ensing distance	100mm*	1	400mm*	2	200mm ^{*2}		0.1 to 3m ^{**3}		4m / 20m		motor& Driver&Controlle
S	ensing target	Transluc	ent, Opac	que mater	ials			Opaque mat ø60mm	terials of min.	Opaque material	ls ofmin. ø15mm	Graphic/
Н	ysteresis	Max. 20%	% at rated	I setting d	istance			—				Logic
R	esponse time	Max. 1m	s.									panel
Ρ	ower supply	12-24VD	C ±10%(ripple P-P	: Max. 10)%)						Field
С	urrent consumption	Max. 45r	mA									network
Li	ght source	Infrared LE	ED(940nm)	Infrared I	LED(850r	חm)		Red LED(66	60nm)	Infrared LED(850	Onm)	device
S	ensitivity adjustment	Adjustab	le(built-in	the adjust	stment VF	R)				Fixed		
0	peration mode	Selectab	le Light C	N or Darl	k ON by c	control cab	le(white)			Dark ON	Light ON	
С	ontrol output	 NPN or F Load volume 	PNP oper oltage: M	ax. 30VD	°output C ●Load	current: M	lax. 200m/	• Residual	voltage - NPI	N: Max. 1V, PNP:	Max. 2.5V	
P	rotection circuit	Reverse	polarity p	rotection	circuit, O	utput short	t-circuit pro	tection circu	it			
In	dicator	Operatio	n indicato	or: red LEI	D, Power	indicator:	red LED(o	nly for emitte	r of through-t	peam type)		
In	sulation resistance	Min. 20N	1Ω(at 500	VDC meg	ger)							
Ν	oise resistance	±240V th	e square	wave noi	se(pulse	width: 1µs) by the no	ise simulator				
D	ielectric strength	1000VA0	C 50/60Hz	z for 1 mir	nute							

%1: Non-glossy white paper 50×50mm %2: Non-glossy white paper 100×100mm

*3: The sensing distance is specified with using the MS-2 reflector. Sensing distance is setting range of the reflector.

The sensor can detect under 0.1m.

Upgraded cylindrical(Ø18mm) type [BR Series]

Specifications

(unit: mm)

	NPN c	open collector	BRP100- DDT	BR100- DDT	BRP400- DDT	BR400- DDT	BRP200- DDTN	BR200- DDTN	BRP3M- MDT	BR3M- MDT	BR4M-TDTD BR20M-TDTD	BR4M-TDTL BR20M-TDTL
del	output		BRP100- DDT-C	BR100- DDT-C	BRP400- DDT-C	BR400- DDT-C	BRP200- DDTN-C	BR200- DDTN-C	BRP3M- MDT-C	BR3M- MDT-C	BR4M-TDTD-C BR20M-TDTD-C	BR4M-TDTL-C BR20M-TDTL-C
ъ	PNP o	pen collector	BRP100- DDT-P	BR100- DDT-P	BRP400- DDT-P	BR400- DDT-P	BRP200- DDTN-P	BR200- DDTN-P	BRP3M- MDT-P	BR3M- MDT-P	BR4M-TDTD-P BR20M-TDTD-P	BR4M-TDTL-P BR20M-TDTL-P
	output		BRP100- DDT-C-P	BR100- DDT-C-P	BRP400- DDT-C-P	BR400- DDT-C-P	BRP200- DDTN-C-P	BR200- DDTN-C-P	BRP3M- MDT-C-P	BR3M- MDT-C-P	BR4M-TDTD-C-P BR20M-TDTD-C-P	BR4M-TDTL-C-P BR20M-TDTL-C-P
Vil	oration		1.5mm a	mplitude	at frequer	ncy of 10	to 55Hz(fo	r 1 min.) ir	n each of X, א	, Z directions	for 2 hours	
Sh	lock		500m/s²(approx. 5	0G) in ea	ch of X, Y	/, Z direction	ons for 3 ti	mes			
lent	Ambie	nt illumination	Sunlight:	Max. 11,	000lx, In	candesce	nt lamp: N	ax. 3,000	x (receiver ill	umination)		
	Ambie	nt temperature	-10 to 60°C, storage: -25 to 75°C									
EN.	Ambie	nt humidity	35 to 859	%RH, sto	age: 35 t	o 85%RH						
Pr	otectio	n	IP66(IEC	standard	1)							
Material			• Case - BRP: PA(black) BR: Brass, Ni-plate • Sensing part - PC • Case - BRP3M: PA(black) BR3M: Brass, Ni-plate • Sensing part - Acrylic • Case - Br					Case - Brass, N Sensing part - I	Ni-plate BR4M: Glass BR20M: PC			
Cable			•BR(P):	ø5mm, 4 Length: 2 C: M12 co	wire, Len m) (AWG onnector	gth:2m(E 22, Core	mitter of th diameter:	rough-bear 0.08mm, l	m type: ø5mr Number of cc	n, 2-wire, Len pres: 60, Insu	gth: 2m / Receive lator out diameter	er: ø5mm, 3-wire, : ø1.25mm)
Ac	ce-	Individual	VR adjus	stment dri	ver				VR adjustme Reflector(M	nt driver, S-2)	—	
55	UIY	Common	BR: Fixir	ig nuts, V	/asher / B	RP: Fixin	g nuts					
Ap	proval		Œ									
Ur	nit weig	ght	BRP Series: Approx. 100g, BR Series: Approx. 120g BRP-C Series: Approx. 30g, BR-C Series: Approx. 50g						• BR Series: App • BR-C Series: A	rox. 300g oprox. 110g		

%Tightening torque for connector is 0.39 to 0.49N.m.

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Dimensions

- BR100-DDT / BR100-DDT-P
- BR400-DDT / BR400-DDT-P

• BR200-DDTN / BR200-DDTN-P

• BR3M-MDT / BR3M-MDT-P (※)



• BRP100-DDT / BRP100-DDT-P • BRP200-DDTN / BRP200-DDTN-P

• BRP400-DDT / BRP400-DDT-P • BRP3M-MDT / BRP3M-MDT-P (※)



Autonics

BR4M-TDTD / BR4M-TDTD-P / BR4M-TDTL / BR4M-TDTL-P BR20M-TDTD / BR20M-TDTD-P / BR20M-TDTL / BR20M-TDTL-P



• BR100/200/400/3M-DDT(N)-C(-P)

ø29

24



• BRP100/200/400/3M-DDT(N)-C(-P)



• BR4M-TDTD(L)-C(-P)



<Receiver>



• BR20M-TDTD(L)-C(-P)



Fiber optic sensor Door/Area sensor Proximity sensor

Photo electric

Pressure sensor

Rotary encoder

Connector/ Socket

Temp. controller

SSR/ Power controller

Counter

Timer

Panel meter

Tacho/ Speed/ Pulse meter

Display unit

Sensor controller

Switching mode power supply

Stepper motor& Driver&Controlle

Graphic/ Logic panel

.....

Field network device

Autonics

Connections



Connections for connector part



 Connector cable(sold separately) XPlease refer to the 148 page for connector cable.

M12 Connector pin

зC

2

Easy mounting(one push), small	sized and long	sensing	distance
through beam type [BRE Series]			

Specifications

Model	BRE5M-TDTL	BRE5M-TDTD	BRE10M-TDTL	BRE10M-TDTD
Appearances	NEW CE		O B	
Sensing type	Through-beam			
Sensing distance	5m		10m	
Sensing target	Opaque materials of min.	10mm		
Response time	Max. 1ms			
Power supply	12-24VDC ±10%(ripple P-F	P: Max. 10%)		
Current consumption	Emitter: Max. 20mA, Recei	ver: Max. 16mA		
Light source	Infrared LED(850nm)			
Sensitivity adjustment	Sensitivity adjustment by c	onnecting external resistance	ce on control cable(3kΩ to 10)kΩ variable)
TEST function	Connecting output pin of cont	rol output cable to GND to enti	er into TEST mode.[Power indi	cator(green) of emitter flashes]
Operation mode	Light ON	Dark ON	Light ON	Dark ON
Control output	NPN open collector output	Load voltage: Max. 24VDC	Load current: Max. 100mA	• Residual voltage: Max. 1.6V
Protection circuit	Reverse polarity protection	circuit, Output short-circuit	protection circuit	
Indicator	Operation indicator: red LE	D, Power indicator: green L	ED	
Insulation resistance	Min. 20MΩ(at 500VDC me	gger)		

Model		BRE5M-TDTL BRE5M-TDTD BRE10M-TDTL BRE10M-TDTD							
Noise re	esistance	±240V the square wave not	±240V the square wave noise(pulse width: 1μs) by the noise simulator						
Dielectri	c strength	1000VAC 50/60Hz for 1 mi	000VAC 50/60Hz for 1 minute						
Shock		500m/s²(approx. 50G) in ea	ach of X, Y, Z direction	s for 3 times			Fiber optic		
Ambient illumination Sunlight: Max. 50,0001x (receiver illumination)							sensor		
Environ- ment	Ambient temperature	25 to 55°C, storage: -40 to 70°C							
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH							
Protecti	on	IP66(IEC standard)	P66(IEC standard)						
Material		Case: PC(black) Sensi	• Case: PC(black) • Sensing part: Acrylic						
Cable		ø3mm, 3-wire, Length: 5m(A	ø3mm, 3-wire, Length: 5m(AWG 22, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: ø1.0mm)						
Approval		CE	(6						
Unit weight		Approx. 130g					3611301		

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.



Reinforced plastic case U-Shaped type [BUP Series]

Specifications

						1		
Model	NPN open collector output	BUP-30	BUP-30S	BUP-50	BUP-50S	Display		
	PNP open collector output	BUP-30-P	BUP-30S-P	BUP-50-P	BUP-50S-P	unit		
Appearances		CE						
						Switching mode power		
Sensing	g type	Through-beam				supply		
Sensing target		Opaque materialsof min. ø4mm	Opaque materialsof min. ø1.5mm	Opaque materialsof min. ø4mm	Opaque materialsof min. ø1.5mm	Stepper motor& Driver&Controlle		
Operati	ion mode	Selectable Light ON or Da	ark ON by control wire					
Sensing distance		30mm 50mm				Graphic/		
Response speed		Max. 1ms						
Power	supply	12-24VDC ±10%(ripple P-	-P: Max. 10%)			Field		
Current	t consumption	Max. 30mA				network device		
Light so	ource	Infrared LED(940nm)						
Sensitiv	vity adjustment	Fixed	Adjustment VR	Fixed	Adjustment VR			
Control	output	NPN or PNP open collecto • Load voltage: Max. 30VI • Residual voltage - NPN:	or output DC ●Load current: Max. 2 Max. 1V, PNP: Max. 2.5V	00mA				
Protect	ion circuit	Reverse polarity protection	n, Output short-circuit prote	ection]		
Indicati	on	Power indicator: green LE	D, Operation indicator: red	LED]		
Insulati	on resistance	Min. 20MΩ(at 500VDC me	egger)					
Noise s	strength	±240V the square wave n	oise(pulse width: 1µs) by th	ne noise simulator]		
Dielect	ric strength	1,000VAC 50/60Hz for 1 n	ninute]		



Panel meter

Tacho/ Speed/ Pulse meter

Reinforced plastic case U-Shaped type [BUP Series]

Specifications

Madal	NPN	l open collector output	BUP-30	BUP-30S	BUP-50	BUP-50S			
Model	PNP open collector output		BUP-30-P	BUP-30S-P	BUP-50-P	BUP-50S-P			
Vibration			1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours						
Shock			500m/s²(approx. 50G) in e	ach of X, Y, Z directions fo	r 3 times				
		Ambient illumination	Sunlight: Max. 11,0001x In	candescent lamp: Max. 3,0	0001x (Receiving illuminatio	n)			
Environn	nent	Ambient temperature	-25 to 65°C[BUP-30S(-P)	5 to 65°C[BUP-30S(-P) & BUP-50S(-P): -10 to 60°C], storage: -25 to 70°C					
		Ambient humidity	35 to 85%RH, storage: 35 to 85%RH						
Protecti	on		IP66(IEC standard)	IP50(IEC standard)	IP66(IEC standard)	IP50(IEC standard)			
Materia	I		Case: ABS, Cap: PC						
Cable			ø4mm, 4-wire, Length: 2m (AWG22, Core diameter: 0). 0.08mm, Number of cores:	60, Insulation out diameter	: ø1.25mm)			
Access	ory		—	VR adjustment driver	—	VR adjustment driver			
Approval			CE						
Unit weight			Approx. 90g						
×/ TI 1									

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Dimensions

• BUP-30, BUP-30-P, BUP-30S, BUP-30S-P

(unit: mm)



• BUP-50, BUP-50-P, BUP-50S, BUP-50S-P



Connections



%1: Load connection for NPN open collector output%2: Load connection for PNP open collector output

Photo electric

Fiber

Liquid level sensor for mounting pipe (through-beam) [BL Series]

Specifications

	NPN open collector output	BL13-TDT	\neg	optic sensor		
Model	PNP open collector output	BL13-TDT-P				
	<u></u>	NEW		Door/Area sensor		
Appeara	nces					
Sensing type		Through-beam		Pressure		
Applicat	le pipe	ø6 to 13mm(thickness: 1mm) transparent pipe (FEP(fluoroplastic) or with equivalent transparency)		sensor		
Standar	d sensing target	Liquid in a pipe ^{×1}		Rotary encoder		
Respons	se time	Max. 2ms				
Power s	upply	12-24VDC ±10%(ripple P-P: Max. 10%)		Connector/		
Current	consumption	Max. 30mA	Socket	Socket		
Light sou	urce	Infrared LED(950nm)				
Operatio	on mode	Light ON/Dark ON switching by operation mode switching button		controller		
Control output		NPN or PNP open collector output •Load voltage: Max. 30VDC •Load current: Max. 100mA •Residual voltage: Max. 1V		SSR/		
Protection circuit		Reverse polarity protection circuit, output short-circuit protection circuit		Power controller		
Indicator	•	Operation indicator: Red LED, Operation mode indicator: Green LED				
Insulatio	n resistance	Min. 20MΩ(at 500VDC megger)		Counter		
Noise re	sistance	±240V the square wave noise(pulse width: 1µs) by the noise simulator				
Dielectri	c strength	1,000VAC 50/60Hz for 1 minute(between all terminals and case)				
Vibration	ו	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours		Timer		
Shock	-	500m/s ² (approx. 50G) in each of X, Y, Z directions for 3 times				
Environ	Ambient illumination	Sunlight/Incandescent lamp: Max. 3,0001x for each(receiver illumination)		Panel		
ment	Ambient temperature	10 to 55°C, storage: -25 to 65°C		meter		
mont	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH				
Protectio	on	IP64(IEC standards)		Tacho/ Speed/ Puls		
Material		Case: PC		meter		
Cable		ø2.5mm, 3-wire, Length: 1m (AWG28, Core diameter: 0.08mm, Number of cores: 19, Insulator diameter: ø0.9mm)		Display unit		
Accessory		Binding band 2EA, Anti-slip tube 2EA				
Approva		(6		Sensor		
Unit wei	ght	Approx. 30g		controller		
※1: This ※The te	may not detect the liquid mperature or humidity me	with low transparent, with high viscosity, or with floating matters. ntioned in Environment indicates a non freezing or condensation environment.	-	Switching mode power supply		

Connection

(blue)

0V

1



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