TAKEX

- Wide range of amplifiers
- Manual or automatic settings
- Digital display versions
- Slim profile, only 9mm
- Vast array of fibre optic heads

TAKEX

F70 SERIES FIBRE OPTIC AMPLIFIER

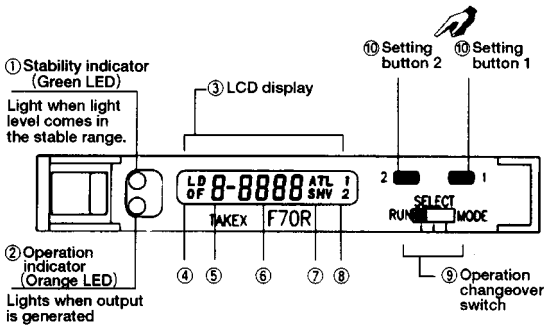
- LCD display
- Multifunction timer
- Touch to teach setting
- Remote setting
- Self diagnostics
- Red, blue green & white light
- Light on/dark on
- NPN/PNP
- Alarm output
- Ultra slim design
- Twin output version

CE

ELECTRICAL SPECIFICATIONS

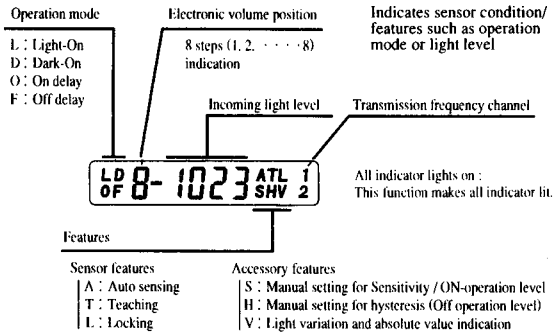
Model		F70R-NPN F70R-PNP	F70G-NPN F70G-PNP	F70B-NPN F70B-PNP	F70W-NPN F70W-PNP	F70TW-NPN F70TW-PNP
Detection		Through-beam/Reflection (By fibre unit)				
Range		Depending on fibre unit				
Power Supply		12–24VDC ± 10% Ripple 10% or less				
Current consumption		NPN type : 39mA or less PNP type : 50mA or less				
Output mode	Output	Open collector				
	Output	NPN/PNP 100mA (30VDC)				NPN/PNP (30VDC) CH1:100mA, CH2:50mA
	Stability Output	Open collector				None
	Stability Output	NPN/PNP 50mA (30VDC)				None
Operation mode		Light-On/Dark-On selectable				
Timer		On delay/Off delay/On-Off delay/non-delay selectable Timer time: 10/20/40/60/80/100/120ms. selectable.				
External teaching input		Non voltage (contact/non-contact)				
Response time		Transmission frequency Channel 1: 500µs. or less Channel 2: 600µs. or less				
Light source (wave length)		Red LED (660nm)	Green LED (565nm)	Blue LED (470nm)	White LED (450 ~ 750nm)	White LED (450 ~ 750nm)
Indicator		Operation indicator : Orange LED,Stability indicator : Green LED				
Display		LCD with back light				
Switch		Setting button : 2 Operation changeover switch:RUN/SELECT/MODE				
Teaching system		Full auto teaching/Auto teaching				
Teaching input		Setting button/External input				
Features		• Sensor feature: Auto sensing/Teaching/Locking • Accessory feature: S-Manual setting for sensitivity/ON-operation level H-Manual setting for hysteresis V-Light variation indication mode/Absolute value indication mode • Interference protection built-in • Self-diagnostic built-in • Short circuit protection built-in				
Material		Polycarbonate				
Wiring		Cable (outer dimension:dia.4.8) 0.2sq. 5 core 2m length				
Weight		Approx.80g (including mounting bracket)				
Ambient illumination		Incandescent lamp: 10,000lx or less Sun light: 20,000lx or less				
Ambient temperature		–25~+55°C (storage:–40~+70°C) in case of multiple installations 1-4pcs: –25~ +55°C 5pcs or more:–25~+45°C				

FEATURES



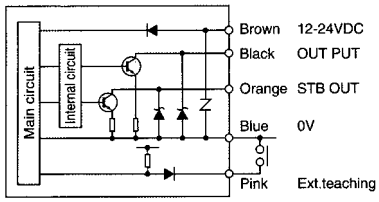
1 Stability indicator
2 Operation indicator
4 Operation mode indicator
5 Electronic volume position indicator
6 Incoming light level indicator
7 Features indicator
8 Transmission frequency channel indicator
9 Operation changeover switch

LCD display description

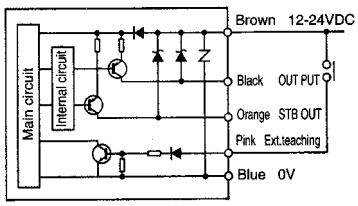


CONNECTION DIAGRAM

NPN Output F70

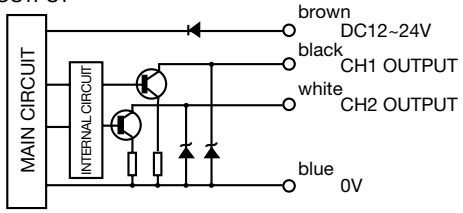


PNP Output

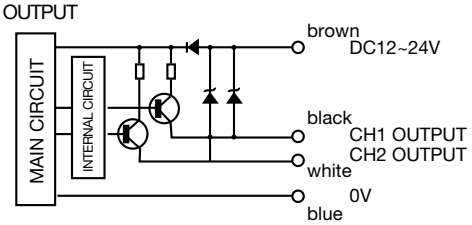


F70T

NPN OUTPUT

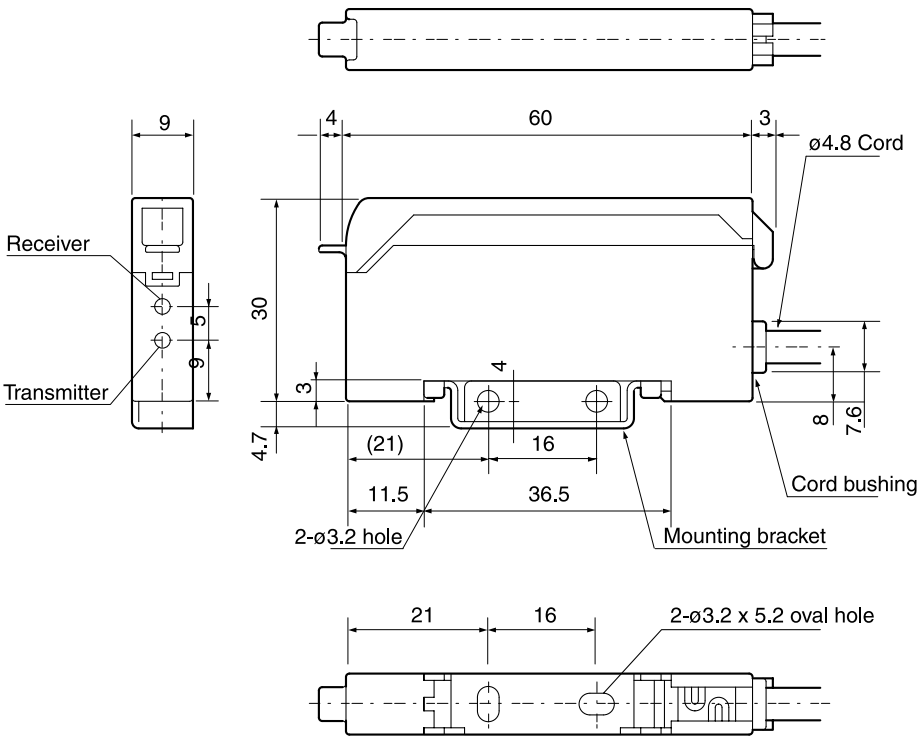


PNP OUTPUT



Note: If the load is inductive (relay coil, solenoid) or if there are inductive loads in parallel with the load, connect a diode (N4002) in parallel with the coil.

DIMENSIONS



F71 SERIES FIBRE OPTIC AMPLIFIER

- Ultra slim design
- High gain
- Anti mutual interference to 8 sensors
- Fast 30 µsec response time available
- Light on/dark on selectable
- Stability output
- Available in red, green, blue & white LED

CE

ELECTRICAL SPECIFICATIONS

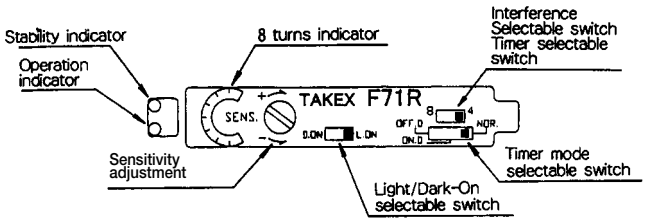
Model	F71R-NPN	F71R-PNP	F71RH-NPN	F71RH-PNP
Detection method	Through-beam, Reflection (By fibre unit)			
Power supply	12—24VDC ± 10%, Ripple 10% (Max.)			
Current consumption	35mA (Max.)	40mA (Max.)	35mA (Max.)	40mA (Max.)
Output mode	NPN	PNP	NPN	PNP
Rating	Open collector: 100mA (DC30V) Max. residual Voltage 1V (Max.)			
Operating mode	Light-ON/Dark-ON Selectable			
Timer	Timer function selectable			
Interference function	Built-in			
Response time	250µs: Selectable switch “4” side (Turbo Function: OFF) 500µs: Selectable switch “8” side (Turbo Function: ON)		30µs (Max.)	
Light source	Red LED (660nm)			
Indicators	Operation: Orange LED, Stability: Green LED			
Sensitivity adj.	8 Turns potentiometer with indicator			
Operation	Light/Dark-On selectable			
Timer	40msec ON or OFF delay			
Short circuit protection	Built-in short circuit protection (Normal/Stability output)			
Material	Case/Case cover: Polycarbonate			
Connection	Flying lead			
Weight	80g Max. (Mounting bracket included)			

OTHER VERSIONS AVAILABLE

Model	Light Source
F71G-NPN	Green LED (565nm)
F71G-PNP	
F71GH-NPN	
F71GH-PNP	
F71B-NPN	Blue LED (470nm)
F71B-PNP	
F71BH-NPN	
F71BH-PNP	
F71W-NPN	White LED (450~750nm)
F71W-PNP	
F71WH-NPN	
F71WH-PNP	

Rest of specification as per table above

FEATURES

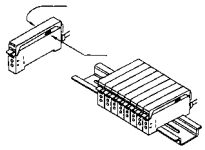


Turbo function

- When the turbo mode changeover switch is set to "8", the turbo function will operate. When the turbo function operates, the response time will be 500μ sec, but the detection distance will be increased by approx. 30% from when the turbo function is OFF ("4").

Anti Mutual Interference

- This product has an Anti Mutual Interference function that uses optical transfer. For the optical transfer there is a window on the side of the unit which is the optical path. There are transmitter and receiver windows. Therefore, install the units on a DIN rail and match the transfer windows of the amplifier units next to each other, as shown in the drawing, in order to ensure the function of the Anti Mutual Interference.



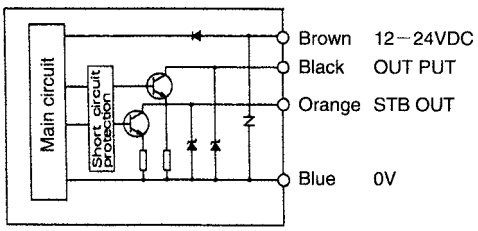
Interference selectable switch

8	⇨	4	4 units do not interfere (Response time : 250μs)
8	⇦	4	8 units do not interfere (Response time : 500μs)

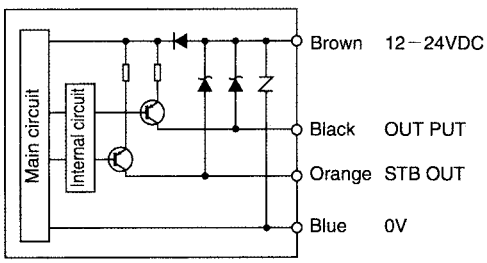
Cautions: If the amplifier units are mounted next to each other and they are not aligned, or if the gaps between the amplifier units are too large, or if the light path between the transfer window is blocked, the optical transfer will become impossible and malfunction will occur.

CONNECTION DIAGRAM

NPN output

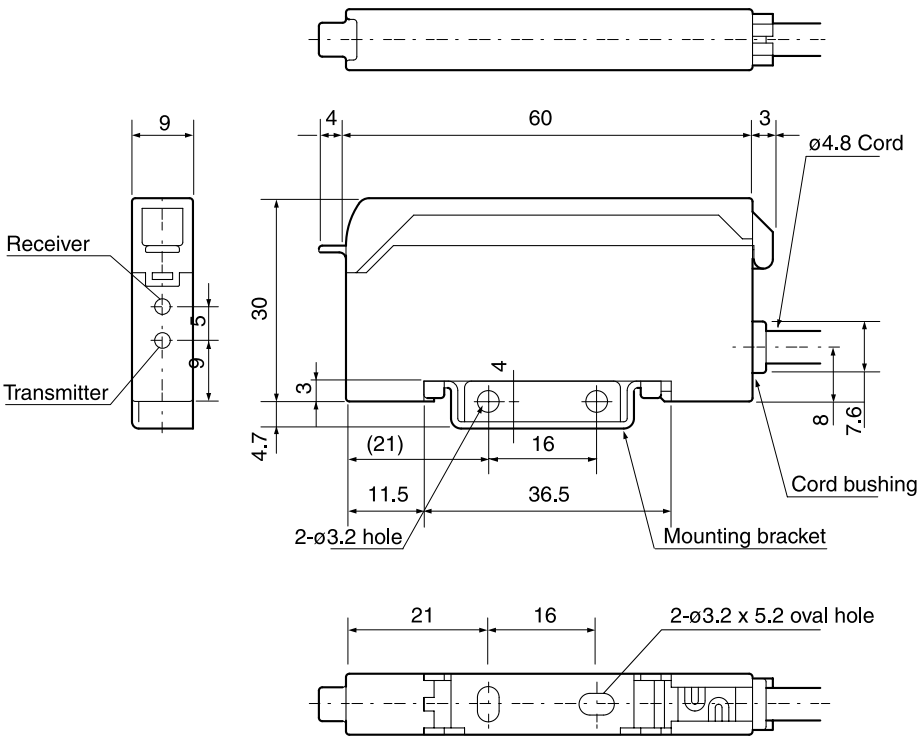


PNP output



- Loaded short circuit or overload shuts off the output transistor.
- Turn the power back on after checking the loaded condition.

DIMENSIONS



F2 SERIES FIBRE OPTIC AMPLIFIER

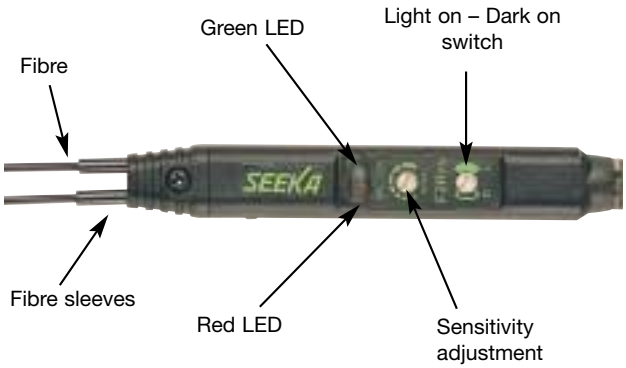
- Unique compact design
- Response time 0.5ms
- 0.03mm minimum object size detection
- IP65 sealed
- Sensitivity adjustment (Dual LED setting)
- Light On/Dark On selectable
- NPN or PNP types available
- Mounting by screws or DIN rail
- Wide selection of available fibres
- Choice of connector or flying lead types

CE

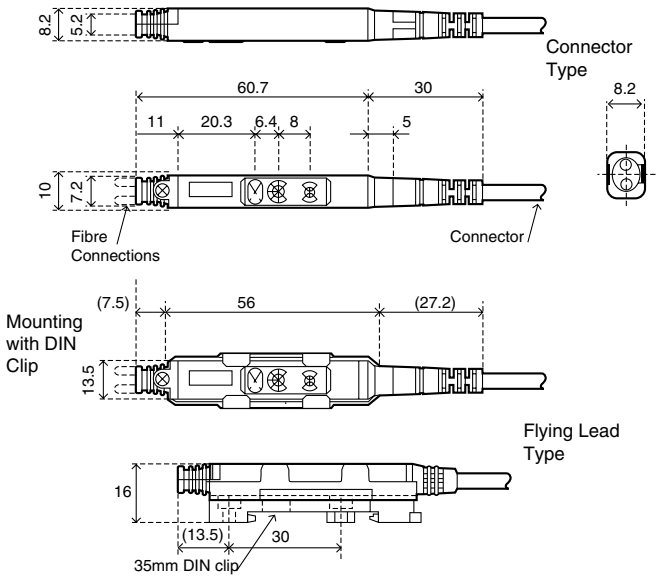
TECHNICAL DATA

Type No.	All types
Light source (Wavelength)	Red visible light (660nm)
Power supply	12V to 24VDC ±10% max ripple 10%
Current cons.	25mA max
Operating Mode	Light on - dark on selectable
Output	NPN or PNP Open Collector: 100mA 30VDC max
Response time	0.5ms
Ambient light	3,000 lux maximum
LED indication	Red LED - detection, Green LED - stability
Sensitivity	Set by potentiometer
Operating temp.	-25°c to +55°c
Housing	ABS plastic sealed to IP65
Connection	By flying lead 3x0.2mm² x2m or by connector (See below)

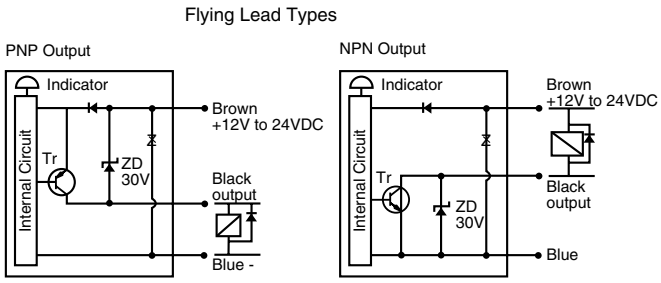
TECHNICAL DATA



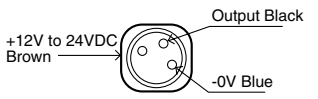
DIMENSIONS



CONNECTION DIAGRAMS



PIN - arrangement (J) -connector type



M8, 3 pole connector

Cable colour for connectors	
Brown	+12V 24VDC
Blue	-0V
Black	Output

ORDERING GUIDE

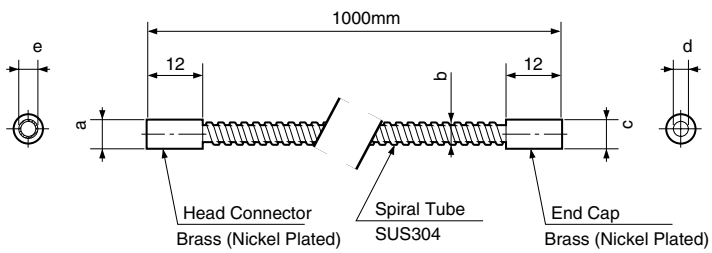
Type No.	Description	Output
F2R-PNP-J	Amplifier (Connector type)	PNP
F2R-NPN-J	Amplifier (Connector type)	NPN
F2R-PNP	Amplifier (Flying lead)	PNP

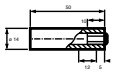
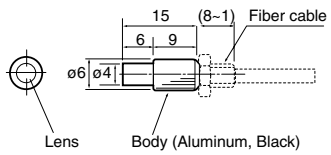
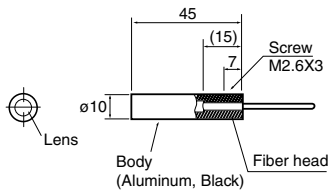
Type No.	Description	Output
F2R-NPN	Amplifier (Flying lead)	NPN
503000E02M050	Connector - straight - 5m long	
503001E02M050	Connector - 90° - 5m long	

FIBRE ACCESSORIES

FIBRE PROTECTION

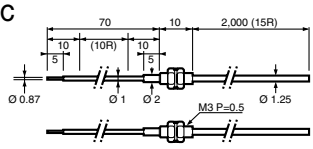
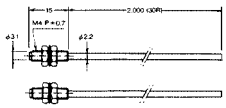
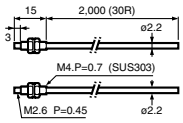
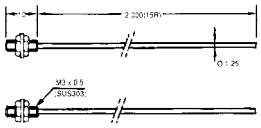
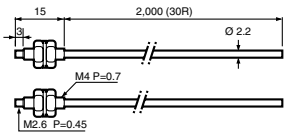
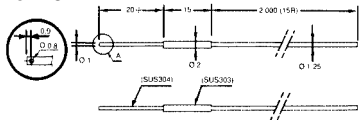
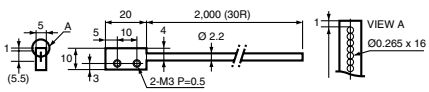
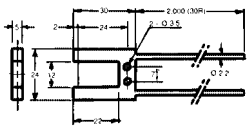
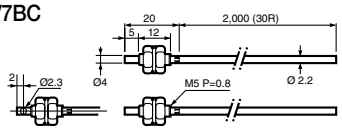
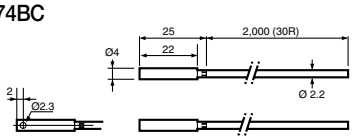
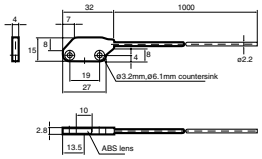
	FA3SP10	FA4SP10	FA6SP10
Dimensions			
a	6mm		8.5mm
b	4.8mm		7mm
c	6mm		8.5mm
d	3mm		5mm
e	M3 x 0.5	M4 x 0.7	M6 x 0.75
Applicable fibres	FT8BC FTS88BC	FT5BC, FTS5BC FTSV5BC, FT7BC	FR7BC
Bending radius	30mm		



ACCESSORY	PART NUMBER	TO BE USED WITH	EFFECTIVE RANGE	MINIMUM OBJECT RESOLUTION	DIMENSION (mm)
Focusing head* 	FA200	FX210J FX8401BC	10~11mm	0.3~0.5mmØ	
	FA240	FX210J FX8401BC	7~16mm	0.5 ~1.7mmØ	
	FA250	FX210J FX8401BC	18~25mm	0.4 ~0.7mmØ	

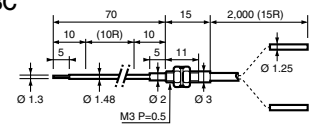
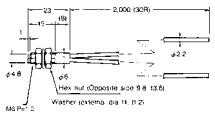
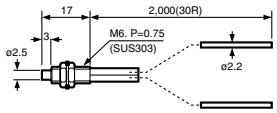
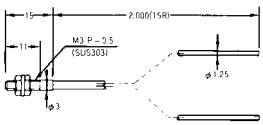
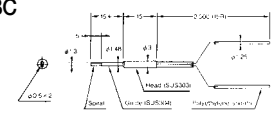
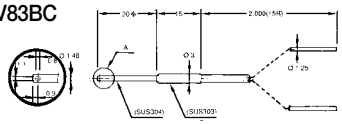
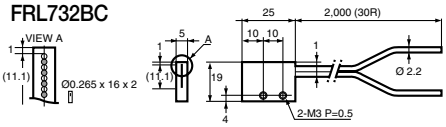
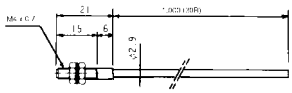
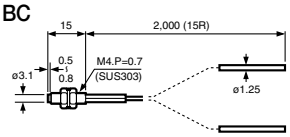
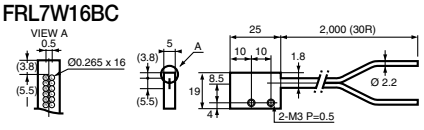
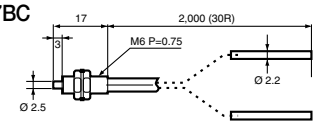
THROUGHBEAM FIBRES

CE

FIBRE TYPE	Length	Material		Temp.	Fibre	Min. Bending	Min. Obj.	Range with amps. (mm)		
		Inner	Outer	Range	Diam. (mm)	Radius (mm)	Res.	F70R	F71R	F2
FTS8BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.5	10R (Top) 15R (Fibre)	Ø 0.5	130	75	30
FT5BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø1	30R	Ø 1	460	270	80
FT7BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 1	30R	Ø 1	460	270	80
FT8EBC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.75	20R	Ø 0.7	260	150	60
FTH7BC 	2m	Plastic	Polyethylene	-30°c to +115°c	Ø 1	30R	Ø 1	460	270	80
FTSV82BC  90°	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.5	Do Not Bend Nose Fibre - 15R	Ø 0.5	70	40	15
FTL716BC 	2m	Plastic	Polyethylene	-30°c to +70°c	0.267X16	30R	-	400	220	80
FU712BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 1	30R	Ø 1	12	12	12
FTV7BC  90°	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 1	30R	Ø 2	460	270	80
FTV74BC  90°	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 1	30R	Ø 2	460	270	80
FTVW7YBC 	1m	Plastic		-30°c to +70°c	Ø 1	1R	Ø 0.2	1000	-	-

DIFFUSE REFLECTION FIBRES

CE

FIBRE TYPE	Length	Material		Temp.	Fibre	Min. Bending	Min. Obj.	Range with amps.(mm)		
		Inner	Outer	Range	Diam. (mm)	Radius (mm)	Res.	F70R	F71R	F2R
FRS8BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.5 x 2	10R (Top) 15R	Ø 0.03 (Fibre)	50	30	9
FR5BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø1 x 2	30R	Ø 0.03	180	100	35
FR7BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 1 x 2	30R	Ø 0.03	180	100	35
FR8EBC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.75 x 2	15R	Ø 0.03	110	65	20
FRS83BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.5 x 2	Do Not Bend S.S. Nose Fibre - 15R	Ø 0.03	50	30	9
FRSV83BC  90°	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.5 x 2	Do Not Bend Nose Fibre - 15R	Ø 0.03	20	10	4
FRL732BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.265 x 16 x2	30R	Ø 0.1	100	55	25
FX210 FX210-J 	1m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.5 x 1 Ø 0.25 x 9	30R	Ø 0.03	80	45	-
FX8401BC 	2m	Plastic	Polyethylene	-30°c to +70°c	Ø 0.5 x 1 Ø 0.25 x 4	15R	Ø 0.03	44	25	7
FRL7W16BC 	1m	Plastic	Polyester	-30°c to +70°c	Ø 0.265 x 16 x 2	30R	Ø 0.05	100	55	25
FRH7BC 	2m	Plastic		-30°c to +115°c	Ø 1 x 2	30R	Ø 0.03	180	100	35

TAKEX

- Wide range of photoelectric sensors
- Diffuse, retro reflective
  & throughbeam versions
- Background suppression,
  colour & clear bottle detection
- Wide range of voltage options
- Solid state or relay outputs

TAKEX

UM SERIES

- Ultra Miniature size. Three types
  - i (19.5x18x3.5mm)
  - ii (20x9x7mm)
  - iii (18x12.5x3.5mm)
- Throughbeam, diffuse or convergent beam
- Sensitivity adjustment option
- Response time 0.5ms
- IP64 sealed
- 80mA, open collector output
- Short circuit protected

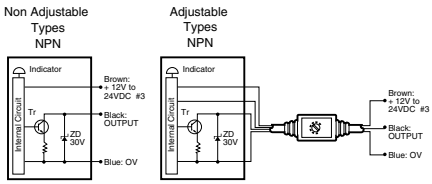
CE

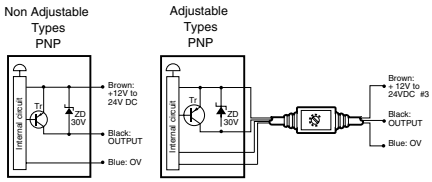
TECHNICAL SPECIFICATIONS V-Suffix models=Adjustable sensitivity

Type		UM T15DT	UM T15DTV	UM T50DT	UM T50DTV	UM T50DS	UM R3T	UM R3TV	UM R5T	UM R5TV	UM Z3SV
Function		Throughbeam					Diffuse				Convergent
Range(max)		15cm		50cm			3cm #1		5cm#1		3cm
Object Res.		Ø3mm (min) Opaque object					-				
Power Supply		24VDC ± 10% Max ripple # 2					12V to 24VDC ± 10% max ripple				
Current Cons.	TRNS	15mA					20 mA	27 mA	20 mA	27 mA	27 mA
	RCVR	15mA	22mA	15mA	22mA	15mA					
Output		NPN or PNP, 80mA, 30VDC (max) Open collector									
Operating Mode		Dark On					Light On				
Response Time		0.5ms (max)									
Light Source		Red LED (660nm)									
Indication		Red LED: Activated output, Green LED: Stability									
Sensitivity Adjustment		-	Yes	-	Yes	-	-	Yes	-	Yes	Yes
Connection		Transmitter: 0.3mm² x2 (2m Black) Receiver: 0.3mm² x3 (2m Grey)					0.3mm² x3 (2m Black)				
Ambient Light		3,000 Lux (Maximum)									
Operating Temp		-25°c to +55°c									
Protection		IP64									

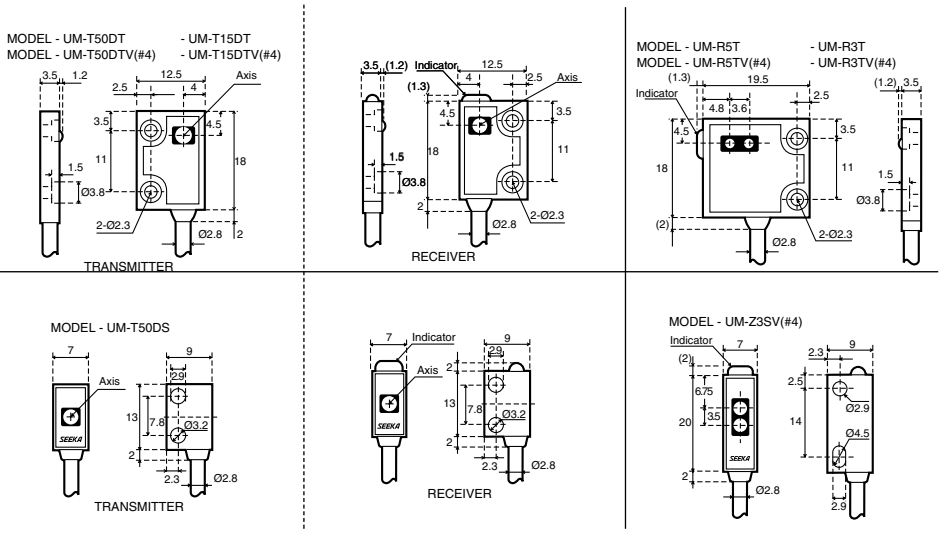
#1 - 5x5cm White Paper #2 - 12VDC Type available

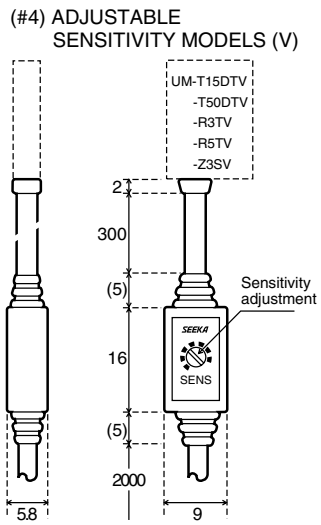
CONNECTION DIAGRAMS





#3 Throughbeam Types 12 or 24VDC only
Throughbeam Transmitter: Brown + 24VDC, Blue 0V





ORDERING GUIDE

Throughbeam types	UMT15DT	UMT15DTV	UMT50DT	UMT50DTV	UMT50DS
Diffuse types	UMR3T	UMR3TV	UMR5T	UMR5TV	
Convergent types	UMZ3SV				

Please specify NPN or PNP output when ordering.

TAKEX

MINI G SERIES

- Sub miniature 10.3 x 15 x 25.4mm
- Housing sealed to IP67
- Light On/Dark On selectable
- Long range (up to 7m) throughbeam
- Brackets, reflector & pinhole masks supplied (where applicable)
- Response time 0.35ms
- Stability output (only NPN types)

CE

TECHNICAL DATA

Models											
Basic	GT1	GT3	-	-	-	GS5	-	GS20	-	-
Side-On	GT1S	-	GT3RS	GT7S	GSM2RS	GS5S	GS20RS	GS20S	GSZ3S	GSZ3RS
Function	Throughbeam				Retro-ref	Diffuse reflection			Convergent beam	
Range	1m	3m	5m	7m	2m*	5cm	20cm	30cm	40mm	30mm
Target	-					5x5cmW.paper	10cm x10cm White paper			
Object Resolution	Ø6mm (min)					-	-			
Light Source Wavelength	Infrared LED 950nm		Red LED 700nm	Infrared LED 900nm	Red LED 660nm	Infrared LED 950nm	Red LED 700nm	Infrared LED 900nm		Red LED 660nm
Lens Material	Polycarbonate	Polyarylate				Polycarbonate	Polyarylate		Polycarbonate	Acrylic

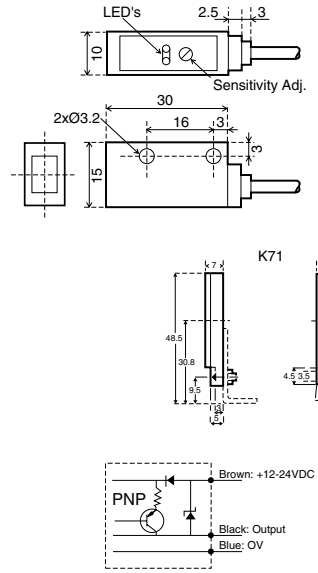
* Using included K71 reflector. Range can be extended to 4m by using K7 reflector.

- Power supply: 12V - 24VDC ±10%, 10% max ripple
- Power consumption: Throughbeam transmitter - 23mA (max)
  Throughbeam receiver - 18mA (max)
  Other types - 25mA (max)
- Output: NPN or PNP open collector, 100mA - 30V (max)
- Stability Output: NPN open collector only, 50mA - 30V (max)
- Protection: Short circuit (not PNP type)
- Operating mode: Light On/Dark On. Selectable by switch
- Response time: 0.35mS
- LED Indication: Detection - red, Stability - green.
  (Throughbeam transmitter power on - red LED)
- Sensitivity adjustment: Potentiometer
- Housing: Polycarbonate sealed to IP67
- Connection: Flying lead 3x0.5mm² 2m long
  (Throughbeam transmitter 2x0.5mm² 2m long)
- Temperature range: -25°c to +55°c
- Max ambient light: 5,000 lux

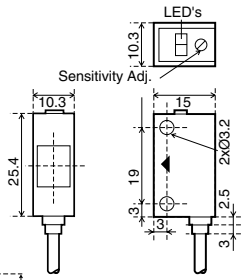
Note: GTI and GTIS Throughbeam units are supplied with pinhole masks that can be fitted to improve object resolution.

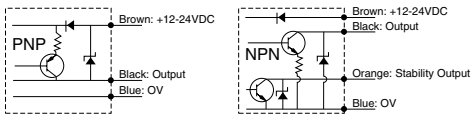
DIMENSIONS

Basic type



Side-On type





ORDERING GUIDE

Type No.	Description	Light Source	Range
GT1	Throughbeam - Basic	Infrared	1m
GT1S	Throughbeam - Side On	Infrared	1m
GT3	Throughbeam - Basic	Infrared	3m
GT3RS	Throughbeam - Side On	Red	5m
GT7S	Throughbeam - Side On	Infrared	7m
GSM2RS	Retro reflective - Side On	Red	2m
GS5	Diffuse - Basic	Infrared	5cm
K71	Reflector (included)		
K7	Reflector		

Type No.	Description	Light Source	Range
GS5S	Diffuse - Side On	Infrared	5cm
GS20RS	Diffuse - Side On	Red	20cm
GS20	Diffuse - Basic	Infrared	30cm
GS20S	Diffuse - Side On	Infrared	30cm
GSZ3S	Convergent beam - Side On	Infrared	40mm
GSZ3RS	Convergent beam - Side On	Red	30mm

Please specify NPN or PNP output when ordering.

MINI DL SERIES

- Close range background suppression
- Detects objects of any colour, size, or shape, but ignores background
- Light-on, Dark on Switchable
- Response time 0.35ms
- IP67 sealed
- NPN or PNP types available

CE

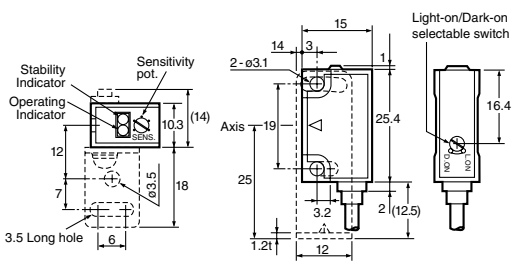
TECHNICAL SPECIFICATION

Type No.	DL-S5-NPN/PNP	DL-S5R-NPN/PNP	DL-S10R-NPN/PNP	DL-S20-NPN/PNP	GR100R-NPN/PNP
Detection method	Convergent beam				Colour mark
Range	50mm*	50mm*	100mm**	200mm**	100mm
Power supply	12-24VDC +/- 10% Max ripple 10%				
Current cons	27mA max		30mA max		25mA max
Operating mode	Light on/Dark on selectable by switch				
Output rating	NPN/PNP open collector 100mA at 30VDC***				
Alarm rating	NPN/PNP open collector 50mA at 30VDC***				
Protection	short circuit protection (output only)				
Response time	0.35msec				
Light source	Infa red LED (880nm)	Red LED (700nm)	Red LED (700nm)	Infra red LED (880nm)	Red LED (700nm)
LED indication	Output red LED : Stability green LED				
Sensitivity adjustment	By potentiometer				
Housing	Polycarbonate sealed to IP67				
Cable	4 x 0.15mm, 2m long, Ø 3mm		4 x 0.2mm, 2m long, Ø 4mm		
Ambient light	5000 lux max				3000 lux max
Operating temp.	-25 to +55 ° C				-10 to +55 ° C
Humidity	Withstands 85% RH				

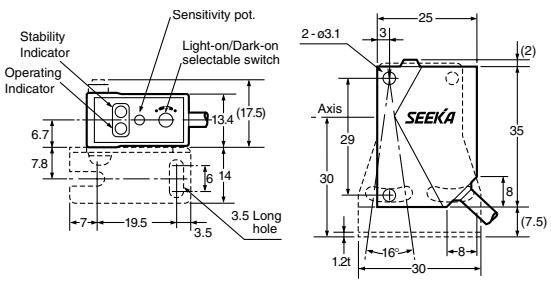
* 50 x 50mm white paper with sensitivity set to max. ** 100 x 100mm white paper with sensitivity set to max.
*** PNP types do not have stability output.

DIMENSIONS

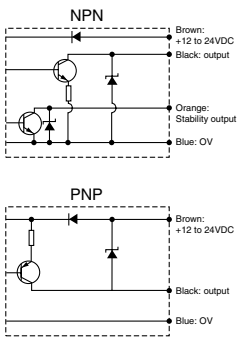
DL-S5/DL-S5R



DLS10R/DL-S20/GR100R



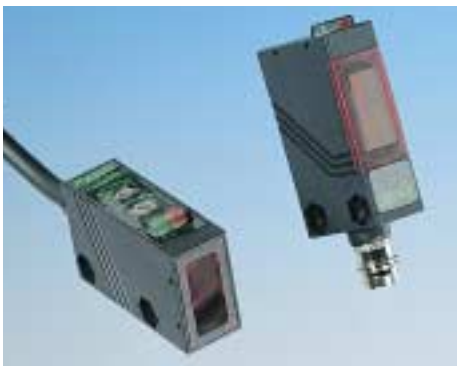
CONNECTION



ORDERING GUIDE

Output	Type Number	Description
DLS5-NPN	Convergent beam, infra red light source, 50mm range	NPN
DLS5-PNP	Convergent beam, infra red light source, 50mm range	PNP
DLS5R-NPN	Convergent beam, red light source, 50mm range	NPN
DLS5R-PNP	Convergent beam, red light source, 50mm range	PNP
DLS10R-NPN	Convergent beam, red light source, 100mm range	NPN
DLS10R-PNP	Convergent beam, red light source, 100mm range	PNP
DLS20-NPN	Convergent beam, infra red light source, 200mm range	NPN
DLS20-PNP	Convergent beam, infra red light source, 200mm range	PNP
GR100R-NPN	Colour mark sensor, red light source, 100mm range	NPN
GR100R-PNP	Colour mark sensor, red light source, 100mm range	PNP

TAKEX



MIDI G SERIES

- Miniature 11.5 x 20 x 36mm
- Polarised lens
- Housing sealed to IP67
- Light On/Dark On switchable
- Response time 0.5ms
- Brackets and reflector included
- Cabled or Connector types

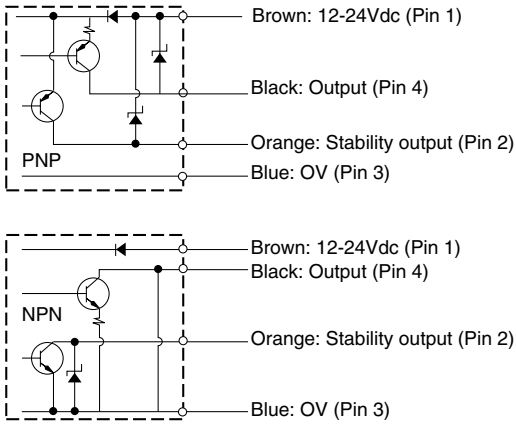
CE

SPECIFICATIONS

Type No. Side On	GT5RS	GMR2RS	GMR2RS-NF	GSR05RS
Basic	GT5R	GMR2R	–	GSR05R
Function	Throughbeam	Polarised Retro-reflective	Retro-reflective	Diffused
Range	7m	1.5m*	4m**	0.5m***
Response Time	<0.5ms			
Current Consumption	Transmitter 20mA Receiver 15mA	<35mA		
Hysteresis	-	-		Maximum 10%

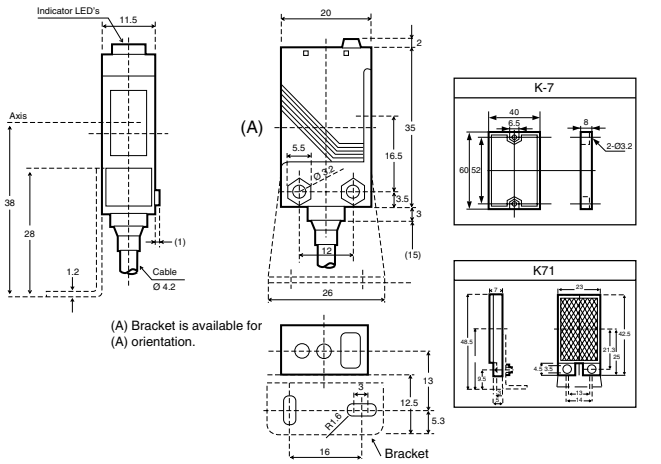
- Light source: Red LED (700nm)
- Power supply: 12-24VDC ± 10% max ripple 10%
- Output: 100mA at 30VDC max
- Max. ambient light: 5,000 lux
- Indication: Throughbeam; Transmitter: power on - red LED. Receiver: detection - red LED stability - green LED Diffuse & Retro-reflective; Detection-red LED, stability - green LED
- Sensitivity adjustment: Potentiometer
- Temp. range: -25°c to +55°c
- Protection: IP67
- Housing: Polycarbonate
- Connection: Flying lead 3x0.5mm², 2m long (Transmitter 2x0.5mm², 2m long) or M8 4 Pin Connector

WIRING

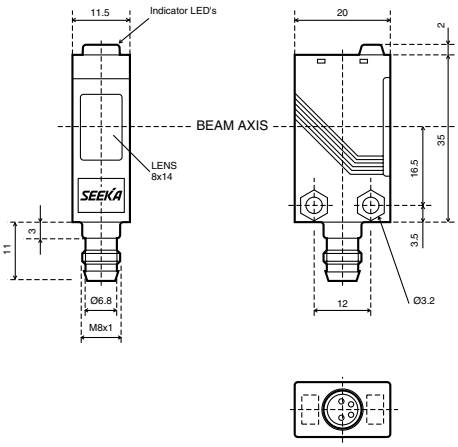


* Using K-71 reflector (0.03-2.5m with K-7 reflector) ** Using K-71 reflector (0.03-6m using K-7 reflector) *** Using 100x100mm white paper.

DIMENSIONS (CABLED VERSION)



DIMENSIONS (CONNECTOR VERSION)



ORDERING GUIDE

Type Number	Description	Output	Range	Type Number	Description	Output	Range
GT5RS-NPN-N	Throughbeam side on	NPN	7m	GMR2R-PNP-N	Retro-reflective	PNP	1.5m
GT5RS-PNP-N	Throughbeam side on	PNP	7m	GSR05RS-NPN-N	Diffused side on	NPN	0.5m
GT5R-NPN-N	Throughbeam	NPN	7m	GSR05RS-PNP-N	Diffused side on	PNP	0.5m
GT5R-PNP-N	Throughbeam	PNP	7m	GSR05R-NPN-N	Diffused	NPN	0.5m
GMR2RS-NPN-N	Retro-reflective side on	NPN	1.5m	GSR05R-PNP-N	Diffused	PNP	0.5m
GMR2RS-PNP-N	Retro-reflective side on	PNP	1.5m	K-71	Reflector (included)		
GMR2RS-NF	Retro-reflective side on	NPN	4m	K-7	Reflector		
GMR2R-NPN-N	Retro-reflective	NPN	1.5m				

*For Connector types add -J to the part number. e.g. GSR05RS-NPN-NJ

CX SERIES M18 BARREL TYPE DC

- Short body
- Flat lens
- Easy mounting
- Housing sealed to IP66
- LED indication
- Plug in types available (J- suffix)

CE

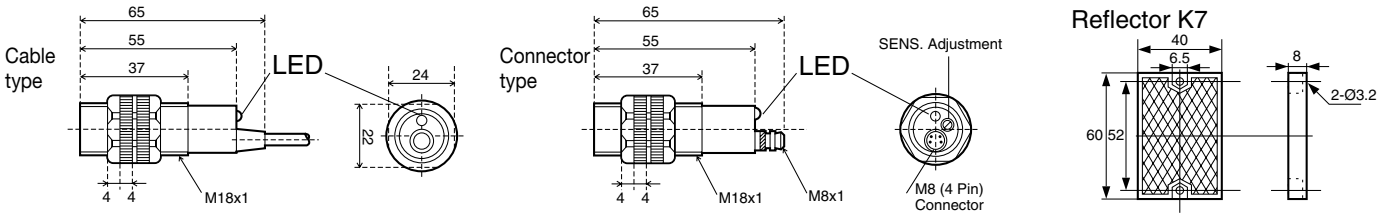
GENERAL SPECIFICATIONS

Type No.		CXM2RD	CXR01	CXR03V
Function		Polarised Retro Reflective	Diffuse	Diffuse Adjustable
Range		2m*	100mm**	300mm***
Current	NPN	18 mA	17 mA	20 mA
Consumption	PNP	24 mA	23 mA	26 mA
Operating Mode		Dark on	Light on	
Light Source Wavelength		Red LED 700nm	Infrared LED 950nm	
Material		Lens: Acrylic Body: Polycarbonate	Body + Lens Polycarbonate	

- Power Supply: 12 - 24VDC ±10%
- Control output: PNP or NPN, 100 mA at max 30VDC short circuit protected
- Response time: 0.35mS max
- Ambient light: max 10000 lux
- Indication: Red LED when output is activated
- Temperature range: -25°c to + 55°c
- Housing: Polycarbonate sealed to IP66
- Connection: 3 x 0.2mm² flying lead length 2m or connector (-J version)

* With included K7 reflector. ** Using 50x50mm white paper, range will vary depending on target size and surface.
*** Using 100x100mm white paper, range will vary depending on target size and surface.

DIMENSIONS



ELECTRICAL CONNECTIONS

Wiring

Pin/Wire Colour	
1/ brown	12 to 24VDC
2/ white	
3/ blue	0V
4/ black	Output

If the load is inductive (relay coil, solenoid) or if there are inductive loads in parallel with the load, connect a diode (IN4002) in parallel with the coil

ORDERING GUIDE

Type No.	Description	Output	Range
CXM2RD-NPN	Retro-reflective 2m cable	NPN	2m
CXM2RD-PNP	Retro-reflective 2m cable	PNP	2m
CXM2RD-NPN-J	Retro-reflective M8 Connector	NPN	2m
CXM2RD-PNP-J	Retro-reflective M8 Connector	PNP	2m
CXR01-NPN	Diffuse 2m cable	NPN	100mm
CXR01-PNP	Diffuse 2m cable	PNP	100mm
CXR01-NPN-J	Diffuse M8 Connector	NPN	100mm
CXR01-NPN-J	Diffuse M8 Connector	NPN	100mm

Type No.	Description	Output	Range
CXR01-PNP-J	Diffuse M8 Connector	PNP	100mm
CXR03V-NPN	Diffuse 2m cable adjustable	NPN	300mm
CXR03V-PNP	Diffuse 2m cable adjustable	PNP	300mm
CXR03V-NPN-J	Diffuse M8 Connector adjustable	NPN	300mm
CXR03V-PNP-J	Diffuse M8 Connector adjustable	PNP	300mm
K7	Reflector (Included with Retro-reflective sensor)		

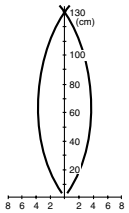
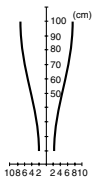
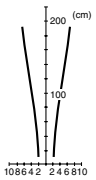
TAKEX

CX SERIES M18 BARREL TYPE AC

- 2 - wire 90 - 260VAC
- Flat polarised lens (R - version)
- LED indication
- Easy mounting
- Housing sealed to IP66
- Plug in type available (J - suffix)

CE

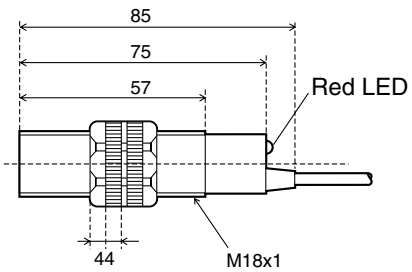
SPECIFICATIONS

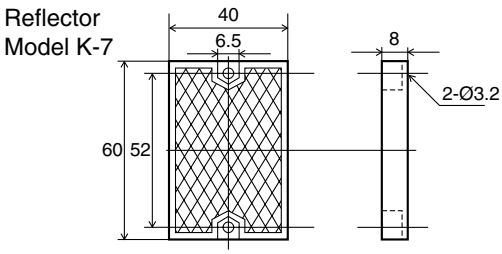
Type No.	CXM1RDTW(J)	CXM2DTW(J)	CXS01TW(J)
Function	Retro-reflective Polarised	Retro-reflective	Diffused
Range	min 1m*	min 2m	100mm**
Operation Mode	Dark on	Dark on	Light on
Lens	Acrylic	Polycarbonate	Acrylic
Light source	Red LED	Infrared LED	Red LED
			

- Power supply: 90 - 260VAC
- Output mode: 2 wire 7-200mA
- Residual voltage: 10V
- Current consumption: 1.5mA (max)
- Response time: 30ms (max)
- Indication: Red LED when output is activated
- Ambient light: max 5000 lux
- Temperature range: -25°c to +55°c
- Housing: Polycarbonate sealed to IP66
- Connection: 4mm diameter 2 wire 2m long or by connector (-J version)

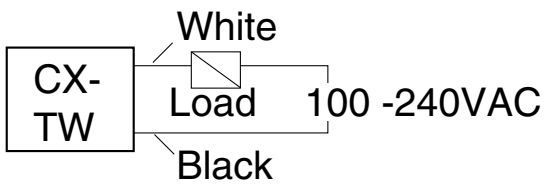
* With included K-7 reflector. ** Using 50x50mm white paper, range will vary depending on target size and surface.

DIMENSIONS





ELECTRICAL CONNECTIONS



NOTE: The product is not short-circuit protected. A load of the min 7mA max 200mA is required in the circuit.

ORDERING GUIDE

Type No.	Description	Connection	Range	Type No.	Description	Connection	Range
CXM1RDTW	Retro-reflective polarised	Cable	1m	CXM2DTW-J	Retro-reflective	Connector	2m
CXM1RDTW-J	Retro-reflective polarised	Connector	1m	CXS01TW	Diffuse	Cable	100mm
CXM2DTW	Retro-reflective	Cable	2m	CXS01TW-J	Diffuse	Connector	100mm
				K-7	Reflector		

NE DC SERIES

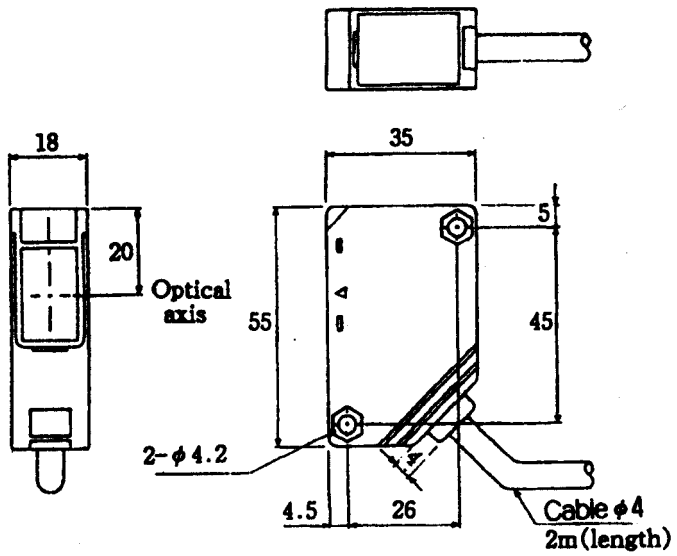
- High power photosensor
- Compact Housing
- 30m through beam
- 5m polarised retro reflective
- 1m diffuse
- 2 outputs NPN and PNP
- External transmit inhibit input (throughbeam only)

CE

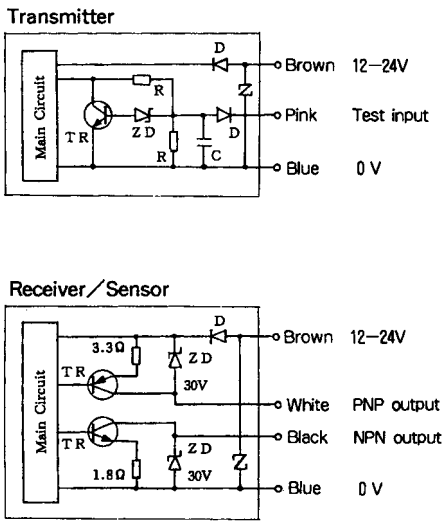
ELECTRICAL SPECIFICATIONS

Models	NET10RD-DC	NET30D-DC	NEM5RD-DC	NER10-DC
Detection	Throughbeam		Polarised Retro-reflection	Diffuse reflection
Range	10m (Max.)	30m (Max.)	0.03~5m (Max.)	1m (Max.)
Light source	Red LED (700nm)	Infrared (880nm)	Red LED (700nm)	Infrared (880nm)
Power supply	12—24VDC ± 10%, Ripple 10% (Max.)			
Consumption (Max.)	Trns : 5mA (Max.) Rcvr : 15mA (Max.)	Trns : 20mA (Max.) Rcvr : 15mA (Max.)	22mA (Max.)	20mA (Max.)
Operating mode	Dark-ON			Light-ON
Output mode Rating	NPN/PNP Open collector 2 outputs 100mA (30VDC) Max.			
Obj. resolution	Min. 20mm Dia		—	
Response time	1 msec (Max.)		0.5msec (Max.)	
Ambient light	Withstands 10,000 Lux			
LED indicators	OP.L : Red, Stability : Green			
Sensitivity	—		Potentiometer	
Operating temp.	-25°C to + 55°C			
Humidity	Withstands 85% RH			
Case protection	IP66			
Vibration	10~55Hz, 1.5mm Amplitude, 2HR, 3 Directions			
Connection	Flying lead 2m			
Other options	Light on type MODEL : NET10R-DC	Light on type MODEL : NET30-DC	Light on type MODEL : NEM5R–DC	Dark on type MODEL : NER10D-DC

DIMENSIONS



ELECTRICAL CONNECTION



TAKEX

NE AC/DC SERIES

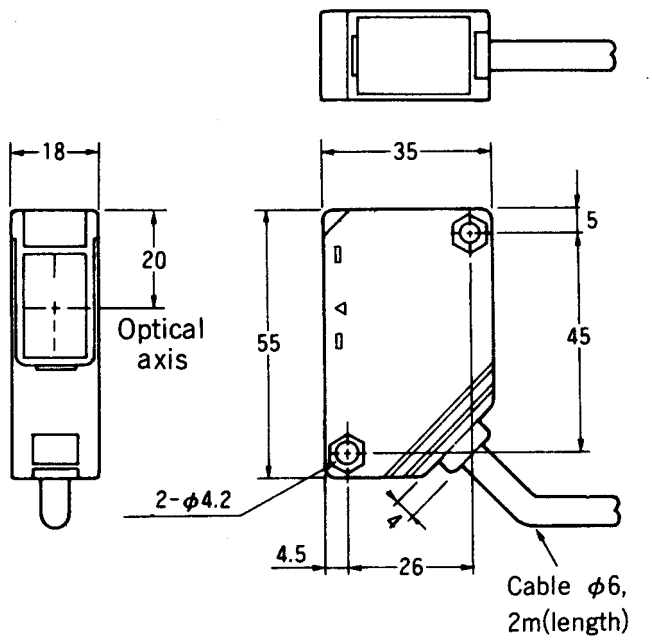
- High Power Photosensor
- Compact Housing
- Multivoltage 24 - 240 VAC/DC
- N/O N/C Relay Outputs
- Polarised Retro Reflective
- 30 Metre Throughbeam Range

CE

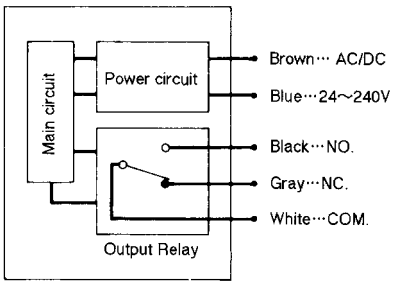
ELECTRICAL SPECIFICATIONS

Model	NET10RD	NET30D	NEM5RD	NER10
Detection	Throughbeam		Polarised Retro-reflection	Diffuse reflection
Range	10m (Max.)	30m (Max.)	0.03~5m (Max.)	1m (Max.)
Light source	Red LED (700nm)	Infrared (880nm)	Red LED (700nm)	Infrared (880nm)
Power supply	24V to 240V AC/DC ± 10%, 50/60Hz			
Consumption (Max.)	Trns : 1.5W Rcvr : 2W (Max.)	Trns : 1.8W Rcvr : 2W (Max.)	2W (Max.)	
Operating mode	Dark-ON			Light-ON
Output Relay	1A 250VAC MAX Resistive Load, 1A 30VDC MAX Resistive Load			
Obj. resolution	Min. 20mm Dia		—	
Response time	5msec. (Max.)			
Ambient light	Withstands 10,000 Lux			
LED indicators	OP.L : Red, Stability : Green, Power : Red (Only NE-TL30)			
Sensitivity	—	—	Potentiometer	
Operating temp.	-25°C to +55°C			
Humidity	35~85% RH			
Case protection	IP66			
Vibration	10~55Hz, 1.5mm Amplitude, 2HR, 3 Directions			
Connection	Flying lead 2m			

DIMENSIONS

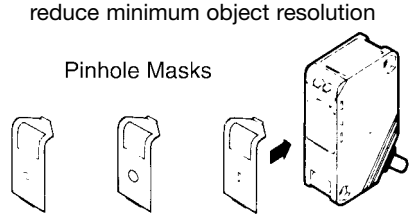


ELECTRICAL CONNECTION



Pinhole masks are available to reduce minimum object resolution

Pinhole Masks



NE-P3 (φ3mm) NE-P5 (φ5mm) NE-P5X1 (5X1mm)

Detection distances when the pinhole masks are attached onto both the transmitter and the receiver.

Model	Pinhole		
	NE-P3	NE-P5	NE-P5X1
NE-T10R (D)	1m	3m	0.7m
NE-T30 (D)	3m	7m	2m

Reflector	Range
K-7	0.03~5m
K-71	0.03~2m
K-2	0.1 ~3m
S-510G	0.1 ~3m

NA SERIES INDUSTRIAL

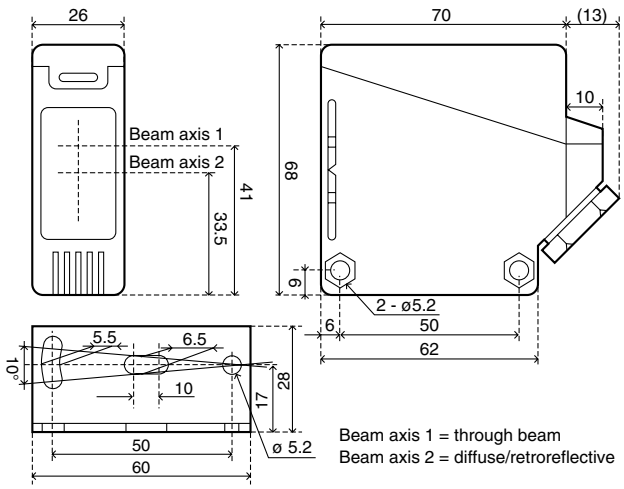
- Compact Housing
- Retro reflective uses polarised light
- Multivoltage 24-240Vac/dc
- Large screw terminals
- Optional connector adaptor
- SPST Output Relay
- Multifunction timer (F-versions)
- Housing sealed to IP66

CE

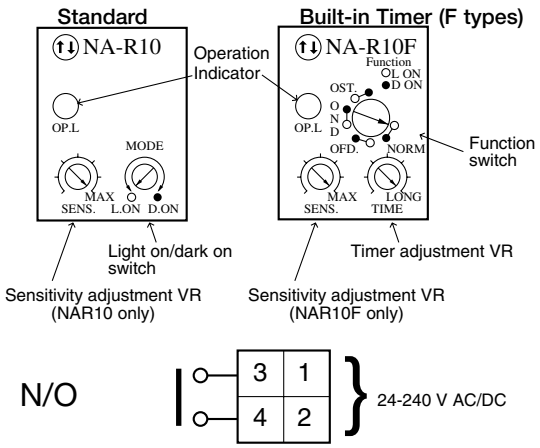
TECHNICAL SPECIFICATION

Model	NAT20R/NAT20RF	NAM7R/NAM7RF	NAR10/NAR10F
Function	Throughbeam	Retro-Reflective with polarised light	Diffuse reflection
Range	20m (max)	0.03 to 7m*	1m (max)**
Light source	Red LED (700nm)	Red LED (700nm)	Infrared LED (880nm)
Power supply	24 to 240Vac/dc ± 10% 50/60Hz		
Power consumption	Tx: 1.5W Rx: 2W	2W	2W
Operating mode	Light-on Dark-on Selectable		
Output	Relay SPST (3A @ 250Vac 750VA/3A @ 30Vdc 90W)		
Response time	10mS max.		
Max. ambient light	10,000lux		
LED indicator	operation (RED)		
Sensitivity Adj.	None	None	By potentiometer
Operating temp.	-25°C to +55°C		
Humidity	Withstands 85% RH		
Case Protection	IP66		
Connection	Via screw terminals (Connector Adaptor Option)		
Timing functions (F)	Delay on make, delay on break, one shot, no timer, switch selectable		
Timing ranges (F)	0.1 to 5 seconds		
Case material	Lens & cover: acrylic, Case: Heat resistant ABS		
	*Using supplied K7 reflector **Using 200m x 200m white paper		

DIMENSIONS



TIMER/SENSITIVITY SETTING AND ELECTRICAL CONNECTIONS



Note: For throughbeam transmitter connect power to terminals 1 and 2.

ORDERING GUIDE

Type Number	Description	Range	Type Number	Description	Range
NAR10	Diffused	1m	NAT20R	Throughbeam	20m
NAR10F	Diffused + timer	1m	NAT20RF	Throughbeam + timer	20m
NAM7R	Retro-reflective	7m	BG11553X	Connector adaptor M12*	
NAM7RF	Retro-reflective + timer	7m	AP35	Pinhole mask	

*For Connector type add -J to the part number. e.g. NARI0-J. Refer to page 194 for connection details.

TAKEX

NAL SERIES INDUSTRIAL

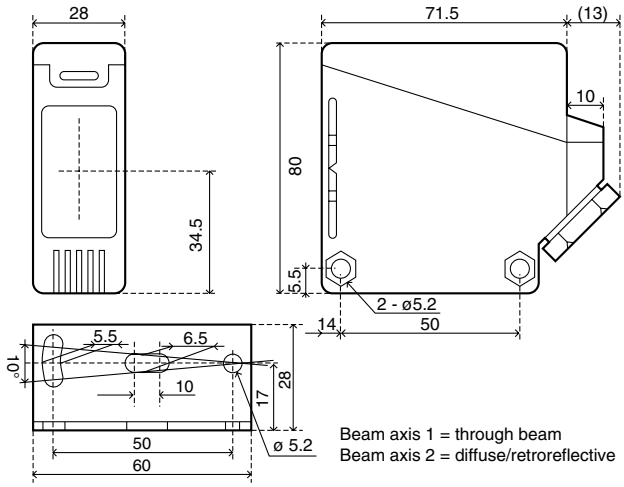
- Long range retro reflective
- Polarised light
- Multivoltage version
- Solid state or relay output
- Large screw terminals
- Housing to IP67

CE

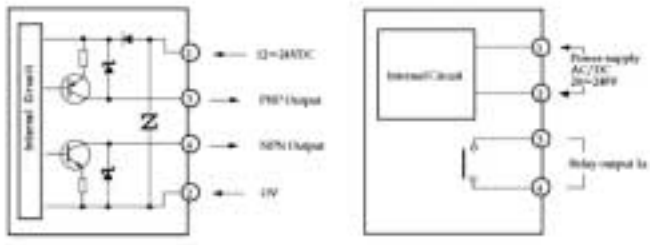
TECHNICAL SPECIFICATION

Model	NALM10RP	NALM10RTC
Type	AC/DC supply, relay output	DC supply, NPN & PNP output
Function	Polarised retro reflective (K-77 reflector supplied)	
Range	0.5 - 10m	
Light source	Red LED (670nm)	
Power supply	24 to 240Vac/dc ±10% 50/60Hz	12 to 24Vdc±10% ripple
Power/current consumption	2W	30mA
Operating mode	Light-on dark-on selectable	
Output	Relay SPST (3A @ 250Vac, 30Vdc)	NPN & PNP open collector (100mA @ 30Vdc)
Output protection	-	Short circuit protection
Response time	15ms max.	0.5ms max.
Max. ambient light	10000lux sunlight, 3000lux incandescent	
LED indication	Operation indicator orange, stability indicator green	
Operating temp.	-25°C to +55°C	
Humidity	35% to 85% RH	
Case Protection	IP 67	
Connection	Via screw terminals (M3.5 screw), connector adapter version	
Case material	Case & Cover: polycarbonate, lens: acrylic	
Vibration protection	10 to 55Hz, double amplitude 1.5mm, 2 hours in each direction (x,y,z)	
Shock protection	500 m/s², 3 times in each direction (x,y,z)	

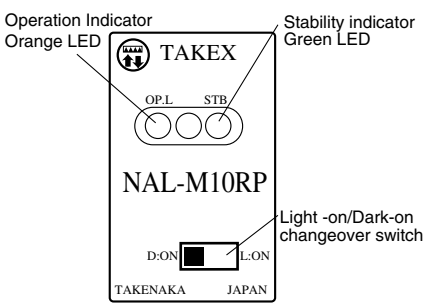
DIMENSIONS



ELECTRICAL CONNECTIONS



FRONT PANEL DESCRIPTION



ORDERING GUIDE

Type Number	Description	Range
NALM10RP	Retro-reflective relay output	10M
NALM10RTC	Retro-reflective NPN/PNP O/P	10M
BG11553X	Connector adaptor M12 see page 194	

J SERIES INDUSTRIAL

- Slim bodied side ways looking
- Quick change sensor head
- Multi voltage 24-240VAC/DC (Relay models)
- Polarised lenses to eliminate false triggering
- Housing sealed to IP66
- Multifunction timer (0.1-10sec) F - versions

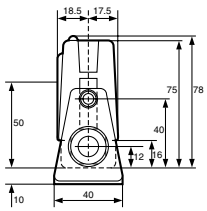
CE

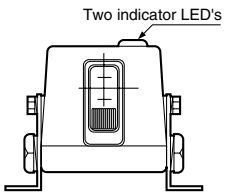
GENERAL SPECIFICATIONS

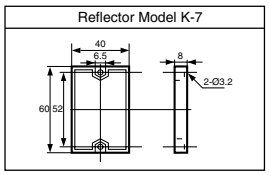
Model	JT10R/JT10RF	JRM3R/JRM3RF	JR07/JR07F	JNT10R	JNRM3R	JNR05
Function	Throughbeam	Retro-reflective	Diffused	Throughbeam	Retro-reflective	Diffused
Range	10m	0.03 to 3m*	500mm	10m	0.03 to 3m*	500mm
Light source	Red LED	Red LED	Infrared LED	Red LED	Red LED	Infrared LED
Power supply	24V to 240V AC/DC			12V to 24V DC± 10%, max ripple 10%		
Power consumption	2 VA			23mA (max)	23mA (max)	25mA (max)
Operating mode	Light - on or dark - on selectable			Light - on or dark - on selectable		
Output	Relay SPST, N/O 250Vac/dc, 2A,125VA resistive load Max Power: 50VA, 60w (Max 2A) resistive load			PNP/NPN (2 outputs) open collector 100mA 20VDC short circuit protected		
Response time	5mS (max)			0.5mS (max)		
Max amb. light	10,000 lux			10,000 lux		
LED indicators	Red LED - operation indicator, Green LED - stability indicator			Red LED - operation indicator, Green LED - stability indicator		
Sensitivity adj.	None	None	Potentiometer	None	None	Potentiometer
Timing functions**	Delay on make, delay on break, single shot or no time delay			Not applicable		
Timing ranges**	By potentiometer adjustment 0.1 to 1sec or 1sec to 10sec			Not applicable		
Temp. range	-25°c to +55°c			-25°c to +55°c		
Case protection	IP66 (IEC) protection against dust & low jets of water			IP66 (IEC) protection against dust & low jets of water		
Case material	Acrylic			Acrylic		
Assembly & connection	Plug in sensing head to base - screw terminal wiring in base			Plug in sensing head to base - screw terminal wiring in base		

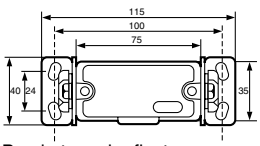
* K7 Reflector used **F - versions only

DIMENSIONS





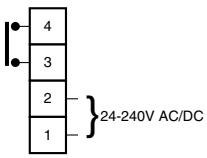




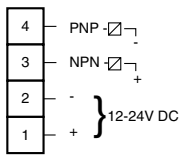
Brackets and reflector-
(retro reflective type only)
included in the box with the device

ELECTRICAL CONNECTIONS

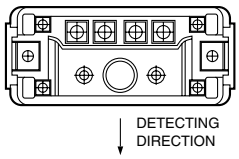
Relay output(multi voltage)



PNP/NPN output (12-24VDC)



NOTE: J Series photosensors may be mounted on their bases in either direction with the exception of NPN/PNP types, these must be mounted in one direction only - as shown below



ORDERING GUIDE

Type Number	Description	Power suppy	Output	Range
JT10R	Throughbeam sensor	24 - 240V AC/DC	Relay	10m
JRM3R	Retro-reflective sensor	24 - 240V AC/DC	Relay	3m
JR07	Diffuse sensor	24 - 240V AC/DC	Relay	500mm
JNT10R	Throughbeam sensor	12 - 24V DC ±10%	PNP/NPN	10m
JNRM3R	Reto-reflective sensor	12 - 24V DC ±10%	PNP/NPN	3m
JNR05	Diffuse sensor	12 - 24V DC ±10%	PNP/NPN	500mm
JT10RF	Throughbeam with timer	24 - 240 AC/DC	Relay	10m
JRM3RF	Retro-reflective with timer	24 - 240V AC/DC	Relay	3m
JR07F	Diffuse with timer	24 - 240V AC/DC	Relay	500mm
K7	Reflector 40x60mm			
R75XDM	Polarised reflective tape 75x750mm			
JB5	Brackets (optional accessories) for wall mounting			
JP37	Pinhole masks for throughbeam models			
BG11553X	Connector adaptor M12 see page 194			

TAKEX

DAS SERIES ZONE SENSOR

- Electronic foreground and background suppression
- Anti cross talk
- Wide voltage range
- Detection up to 2m
- Housing to IP67

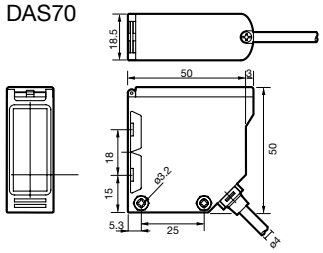
CE

TECHNICAL SPECIFICATIONS

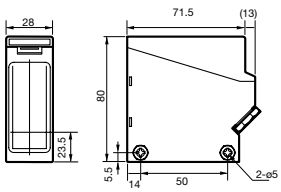
Model	DAS40R-NPN DAS40R-PNP	DAS40R-J	DAS70R-NPN DAS70R-PNP	DAS70-J	DAS100RTC	DAS100RP	DAS200TC	DAS200P
Function	Foreground & background suppression				Foreground & background suppression with timer function			
Range	70-400mm		70-700mm		200-1000mm		200-2000mm	
Adjustable range	100-400mm		100-700mm		400-1000mm		400-2000mm	
Light source	Red LED 650nm		Infrared LED 880nm		Red LED 650nm		Infrared LED 880nm	
Power supply	12 to 24Vdc ±10%, ripple 10%					24 to 24Vac/dc ±10%, 50/60Hz	12 to 24Vdc ±10%,ripple 10%	24 to 24Vac/dc ±10%, 50/60Hz
Pwr/curr consumption	50mA max				45mA max	2.5W max	45mA max	2.5W max
Operating mode	Light-on, dark-on selectable							
Timer mode	-				On-delay / off-delay selectable Time: 0-5s			
Output	NPN or PNP open collector (100mA @ 30Vdc)		NPN and PNP open collector (100mA @ 30Vdc)			Relay SPST (3A @ 250Vac, 30 Vdc)	NPN and PNP open collector (100mA @ 30Vdc)	Relay SPST (3A @ 250Vac, 30Vdc)
Output protection	Short-circuit protection					-	Short-circuit pro	-
Response time	3ms max.				5ms max	20ms max	5ms max	20ms max
Max. ambient light	10000 lux sunlight, 3000 lux incandescent							
LED indication	Operation: orange LED Stability: green LED Error: red LED							
Operating temp	-25˚C to +55˚C							
Humidity	35 to 85%RH							
Case protection	IP67							
Connection	2m flying lead		M8, 4 pole connector		Via screw terminals (M3, 5 screw), connector adapter version			
Housing & terminal cover material	Polycarbonate							
Lens material	Acrylic		Polycarbonate		Acrylic		Polycarbonate	
Vibration protection	10 to 55Hz, double amplitude 1.5mm, 2 hours in each direction (x,y,z)							

DIMENSIONS

DAS40 & DAS70

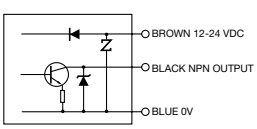


DAS100 & DAS200

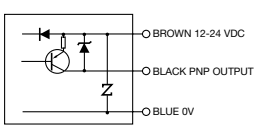


ELECTRICAL CONNECTIONS

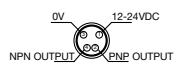
DAS40 & DAS70



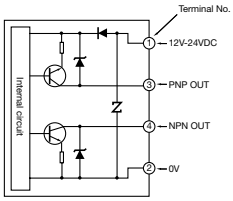
NPN output



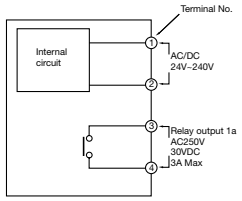
PNP output



Connector type-J



-TC type



-P type

ORDERING GUIDE

DAS40R-NPN
DAS40R-PNP
DAS40R-J
DAS70-NPN
DAS70-PNP
DAS70-J

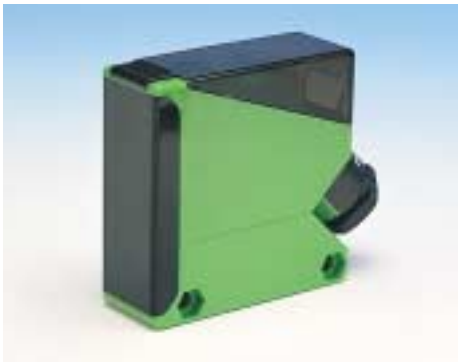
Refer to page 194 for connectors

Refer to page 194 for connectors

DAS100RTC
DAS100RP
DAS200TC
DAS200P
BG11553X

Connector adapter M12*

*For DAS100 & 200 add -J to part number for connector type e.g. DAS100RTC-J, Refer to page 194 for connectors



DLS SERIES INDUSTRIAL

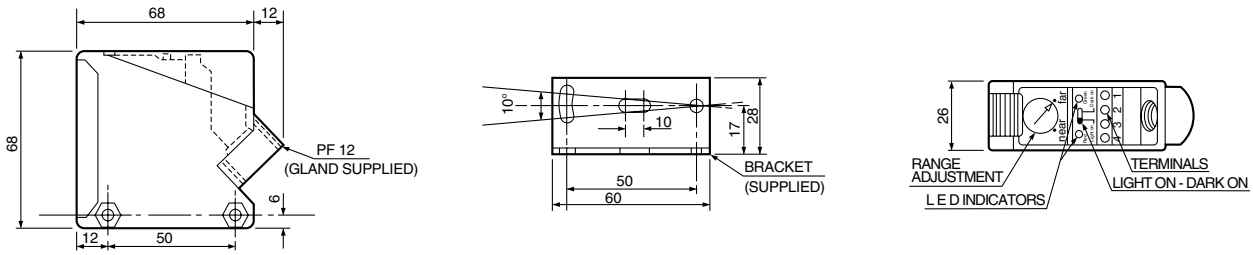
- Background suppression by optical focusing
- Detects objects of any colour, material or shape against similar background
- Powerful beam for good operation even in dirty object, dirty lens conditions
- Relay or solid state output options
- Adjustable range: 0.2m to 1m - DL-S100, 0.2m to 2m - DL-S200, 150mm to 600mm - DL-7050
- IP66 Sealed

CE

TECHNICAL DATA

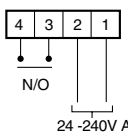
Type	DLS100P	DLS200P	DL7050	DLS100TC	DLS200TC
Detection	Convergent reflection				
Adjustable Range	0.2 - 1m	0.2 - 2m	150mm - 600mm	0.2 - 1m	0.2 - 2m
Power Supply	24V - 240V AC/DC ±10% 50/60HZ			12 - 24V DC±10%, 10% Max ripple	
Current Consumption	30mA (max) AC, 4W (max) DC			50mA Max	
Output Rating	Relay (3A, 250VAC 750VA) (3A, 30VDC 90W)			NPN/PNP Open collector (100mA, 30VDC Max)	
Operating Mode	Light on - Dark on selectable				
Response Time	20ms (Max)			2ms light on 5ms light off	
Light Source	Infrared LED (880nm)				
Sensing Cell	Half dividing photodiode				
LED IND.	Output=red LED Stability=green LED				
Range	Adjustable Mechanically				
Protection	-			Short Circuit	
Housing	Polycarbonate/Acrylic sealed to IP66				
Connection	Screw Terminals				
Ambient Light	10,000 Lux (Max)				
Operating Temp	-25°C To +55°C				

DIMENSIONS

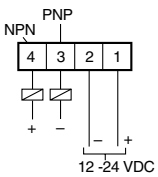


ELECTRICAL CONNECTIONS

Relay Output Types
DL - S100P
DL - S200P
DL-7050



PNP/NPN Output Types
DL - S100TC
DL - S200TC



NOTE: Do not use a mirror or reflector as a background

ORDERING GUIDE

Type Number	Description	Range	Output	Type Number	Description	Range	Output
DLS100P	Convergent Reflection	0.2 - 1M	Relay	DLS100TC	Convergent Reflection	0.2 - 1M	PNP/NPN
DLS200P	-	0.2 - 2M	Relay	DLS200TC	-	0.2 - 2M	PNP/NPN
DL7050	-	150 - 600mm	Relay	BG11553X	Connector adaptor M12*		

*For Connector types add -J to the part number. e.g. DLS100P-J. Refer to page 194 for connection details.

TAKEX

DLS100R/DLS202

- Background suppression by optical focusing
- Detects objects of any colour material or shape against similar background
- Detection to 2 metres
- 5 turn distance adjustment
- 2 outputs NPN and PNP

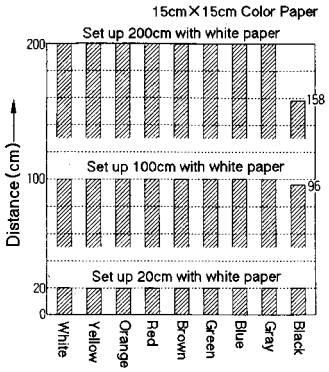
CE

ELECTRICAL SPECIFICATIONS

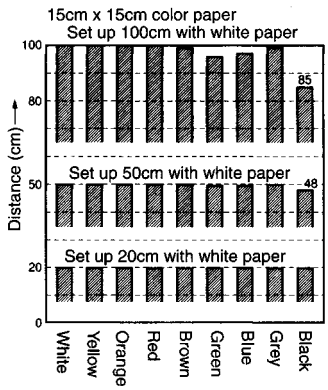
Model	DL-S202	DL-S100R
Detection method	Distance convergent beam	
Adjustable detecting Range	0.2~2m (200X200 white paper)	0.2~1m (200X200 white paper)
Detecting range	0.1~2m	0.1~1m
Power supply	12—24VDC ± 10%, Ripple 10% (Max.)	
Current consumption	30mA (Max.)	
Output mode	NPN/PNP open collector 2 Output Rating: 100mA (DC30V) Max.	
Operating mode	Light/Dark-On selectable (By exclusive switch)	
Response time	2ms. (Max.)	
Hysteresis	10% (Max.)	
Light source wave length	Infrared LED (880nm)	Red LED (650nm)
LED indicator	Operating LED···Red LED Stability LED···Green LED	
Range Set	NEAR-FAR: Optical distance adjustment	
Circuit protection	Built-in short circuit protection	
Material	Case, Lens : Polyarylate	
Sensing cell	Half-dividing photodiode	
Connection	Flying lead 2m length	
Weight	100g (Max.) 100g (Max.)	
Ambient light	Sunlight: 10,000 lx (Max.) Candescent: 3,000 lx (Max.)	
Operating temp.	—25°C to +55°C	
Humidity	35—85% RH	
Protection	IP66	
Vibration	10Hz to 55Hz, 1,5mm Amplitude, 2 hours, 3 direction	
Shock	500m/s² (Approx. 50G) 3 times, 3 direction	
Dielectric withstanding	AC 1,000V, 1 minute	
Insulation resistance	500VDC, 20M Ω (Max.)	

COLOUR PAPER CHARACTERISTICS

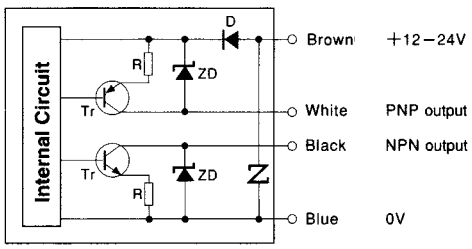
DL-S202



DL-S100R



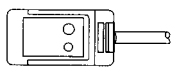
CONNECTION DIAGRAM

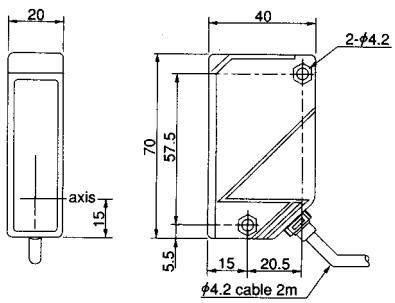


Loaded short circuit or overload shuts off the output transistor.
Turn the power back on after checking the loaded condition.

DIMENSIONS

DL-S100R
DL-S202





DLAS ANALOGUE OUTPUT

- Supply 24V DC
- Proportional DC volt output
- 2 settable switchpoints available
- IP66, (IP40 on DLAS 150)

CE

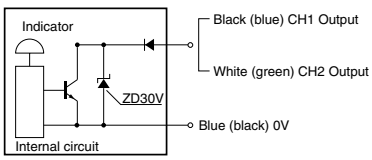
TECHNICAL SPECIFICATIONS

Type	DLAS150	DLAS300	DLAS1000
Function	Diffuse		
Range	50-150mm*	150-300mm*	0.2-1.0m*
Power Supply	24Vdc ±5% (Ripple 10% Max)		
Current Consumption	60mA	70mA	100mA
Output < Analogue	1-10VDC		3-9VDC
Output Set Point	-	2 x NPN 100 mA 30V	
Operating Mode	Distance proportional to output		
Light Source	Infra Red LED (800nm)		
LED Indicator	Power Red LED	Power Green LED Operation Red LED CH1. At front and rear panel CH2. At front and rear panel	
Sensitivity	-	CH1 Switch Point distance setting CH2 Switch Point distance setting	
Connection	Flying lead 2m		
Protection	IP40	IP66	

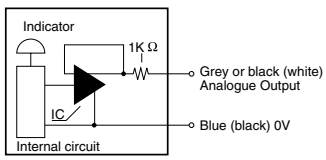
* White and black paper

CONNECTIONS

Comparator Output (DLAS 300/ DLAS 1000)

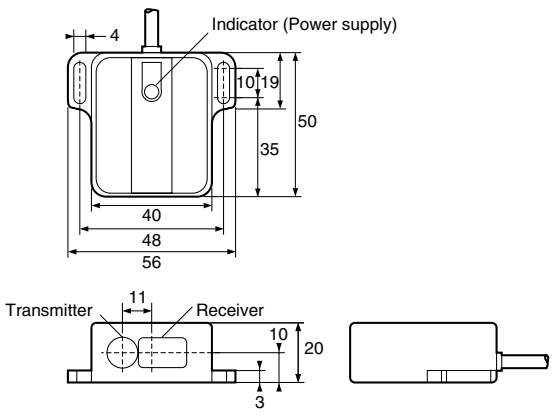


Analogue Output

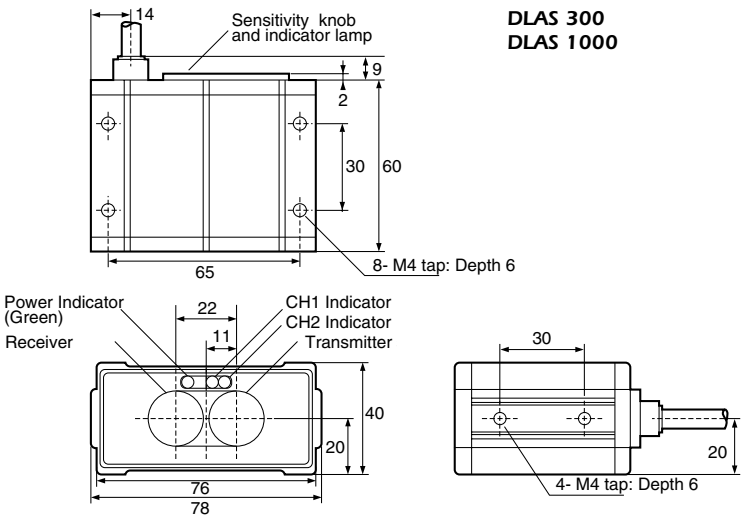


DIMENSIONS

DLAS 150



DLAS 300
DLAS 1000



ORDERING GUIDE

Type No	Description	Range
DLAS150	Analogue O/P 1-10V	50-150mm
DLAS300	Analogue O/P 1-10V	150-300mm
DLAS1000	Analogue O/P 3-9V	0.2-1m

TAKEX

NESMT1

- Transparent bottle detection
- Retro reflective mode
- Auto/remote setting
- 12 - 24V operation
- Protection to IP66
- 1 ms response time (max).

CE

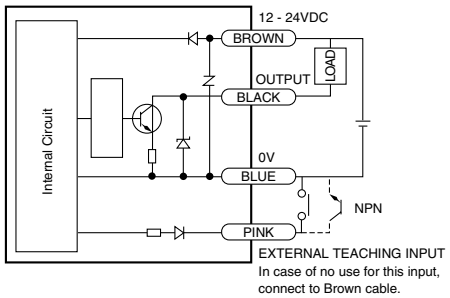
TECHNICAL SPECIFICATION

Model	NESMT1	NESMT1D
Detection method	Polarised retro-reflection	
Range	0.2-1m	
Power supply	12V - 24VDC ± 10%	
Current Consumption	30mA (Max)	
Output mode	NPN/PNP open collector	
Rating	100mA, 30VDC (Max)	
Operating mode	Light-on	Dark-on
External teaching Input	Non Voltage input ON: Close between pink and blue (0V) OFF: Open between pink and blue (0V)	
Response time	1 ms (Max)	
Operating angle	30° (Reflector side)	
Ambient light	10 000 Lux (Max)	
Light source	Red LED (700nm)	

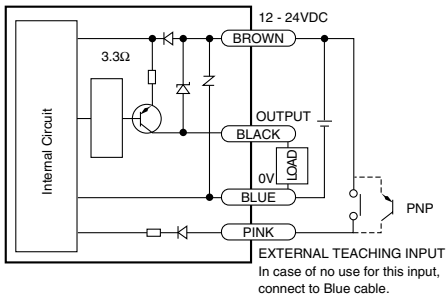
Model	NESMT1 / NESMT1D
LED indicator	Operation: Red LED Stability: Green LED
Sensitivity adjustment	Auto-teaching and Full-auto teaching
Short circuit protection	Built-in short protection
Material	Lens: Acrylic Case: ABS resin Reflector: Acrylic
Wiring	Flying lead 2m
Weight	Sensor: 150g, Reflector: 2g
Operating temperature	-25°C to +55°C
Humidity	35 - 85% RH
Case protection	IP66
Vibration	10Hz to 55Hz 1.5mm Amplitude 2 hours, 3 directions
Dielectric withstanding	AC 1000V 50/60Hz 1 minute

CONNECTIONS

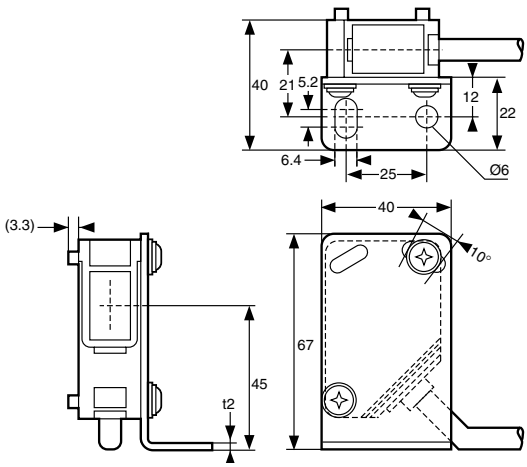
NPN Output



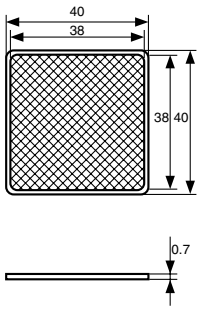
PNP Output

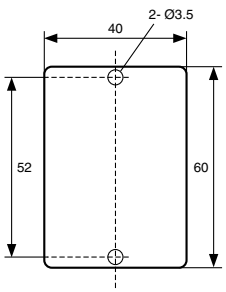


DIMENSIONS



Reflector





Reflector Mounting

ORDERING GUIDE

Type No	Description	Output
NESMT1 - NPN	Retro Reflective Light On	NPN
NESMT1 - PNP	Retro Reflective Light On	PNP
NESMT1D - NPN	Retro Reflective Dark On	NPN
NESMT1D - PNP	Retro Reflective Dark On	PNP

CS-D3 SERIES COLOUR SENSOR

- Auto Set Colour Sensor
- Three Programmable Settings
- Choice of Fibres
- Colour and Brightness Discrimination
- Fast Response Times

CE

ELECTRICAL SPECIFICATIONS

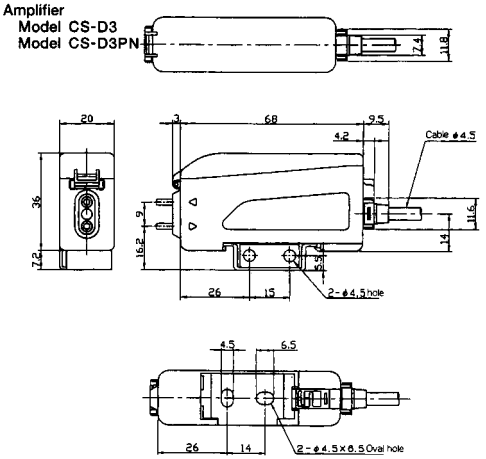
Model	CS-D3
Detection method	Time sharing spectrum measurement by red/green/blue LED
Detection range/spot	Depending on fibre unit
Power supply	12—24VDC ± 10% Ripple 10% or less
Power consumption	1.6W or less
Response time	Normal mode (NML): 1msec or less Average value mode (AVE): 5msec or less
Tolerance range	9 degrees
Teaching	Auto (AUT)/Manual (MAN)/Mix (MiX)
Timer	Non (NON)/Off-delay (OFD) Approx. 50msec
Light source	Red/Green/Blue LED
Circuit protection	Short circuit/Reverse connection of power supply protection built-in
Protection	IP65 (with fibre unit attached)
Materials	Case: Heat-proof ABS Cover: Polycarbonate
Connection	Lead wire (Outer dia. ø 4.5) 0.2 sqx4core 2m length
Weight	100g or less
Operating temperature	—10°C to +55°C (without condensation)
Operating humidity	35 to 85%RH

Fibre unit

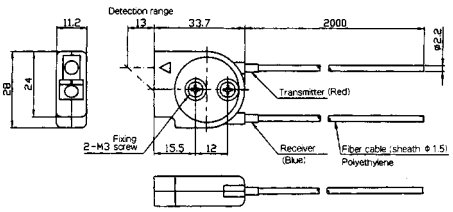
Model	CS-DF10	CS-DF30
Detection range	13mm (10—16mm)	33mm (28—38mm)
Fibre length	2m cuttable	
Spot size (at detection range)	3mm dia. or less	5mm dia. or less
Bending radius	R25mm or more	
Case protection	IP54 (Water-proof optical)	
Weight	40g or less	50g or less
Operating illumination	Receiver, Incandescent light: 5,000lux or less Sun light: 10,000lux or less	
Operating temperature	—25—+55°C (without condensation)	
Operating humidity	35 to 85%RH	

DIMENSIONS

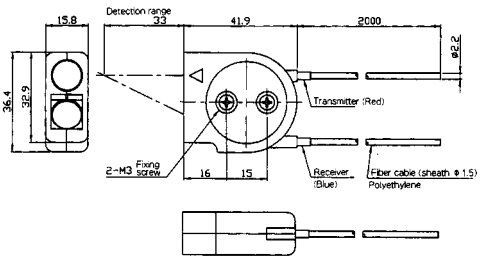
Amplifier
Model CS-D3
Model CS-D3PN



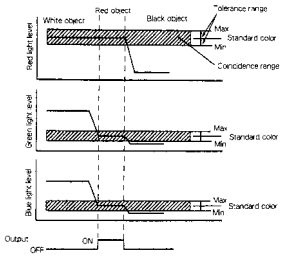
Fiber unit
Model CS-DF10



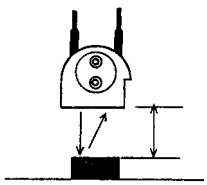
Fiber unit
Model CS-DF30



BASIC OPERATION



- When an initial setting (teaching) for a basic colour is carried out, the Max/Min tolerance value (allowance) toward the standard colour is set according to Tolerance volume position. The sensor recognises it as a coincidence that the incoming light level comes in this range (Max-Min).
- The sensor calculates the basic operation to issue an output according to the programmed mode for 3 colours (red, green and blue).



Stable detection is obtained when the fibre unit is installed at the standard distance, on the other hand, the installation is allowed even at the following distance.

Tightening torque for fixing CS-DF10/CS-DF30 should be 0.6Nm or less.

Installation distance reference

CS-DF30	Standard distance 33mm Allowable distance 28 to 38mm
CS-DF10	Standard distance 13mm Allowable distance 10 to 16mm