

Autonics

PHOTOELECTRIC SENSOR BRE SERIES

M A N U A L



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

- *Please keep these instructions and review them before using this unit.
- *Please observe the cautions that follow;
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- *The following is an explanation of the symbols used in the operation manual.
- ⚠: Injury or danger may occur under special conditions.

Warning

- In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.
It may cause a fire, human injury or damage to property.
- Do not disassemble or modify this unit. Please contact us if it is required.
It may cause a fire or give an electric shock.

Caution

- This unit shall not be used outdoors.
It might shorten the life cycle of the product or cause electric shock.
Use this product inside only. Do not use the product outdoors or location subject to temperatures or humidity outside. (Example: rain, dirty, frost, sunlight, condensation, etc.)
- Do not use this unit in place where there is flammable or explosive gas.
It may cause a fire or explosion.
- Please observe the rated voltage and do not supply AC power.
It may cause damage to this unit.
- Please check the polarity of power and wrong wiring.
It may cause damage to this unit.
- Do not use this unit in place where there is vibration or impact.
It may cause damage to this unit.
- In cleaning the unit, do not use water or an oil-based detergent.
It may cause electric shock or a fire.

Ordering information

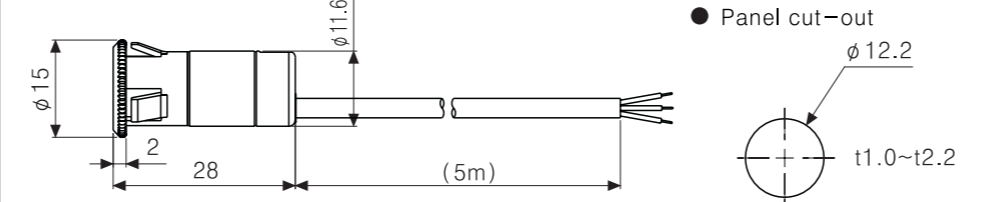
BRE 5M - TDT □ - P	Control output	NPN open collector output P PNP open collector output
	Operation mode	D Dark ON L Light ON
	Output	Solid-state out (TR)
	Power supply	DC Power
	Sensing type	Through-beam
	Sensing distance	10m 5m
	Photo sensor	BRE Series

*The above specifications are subject to change without notice.

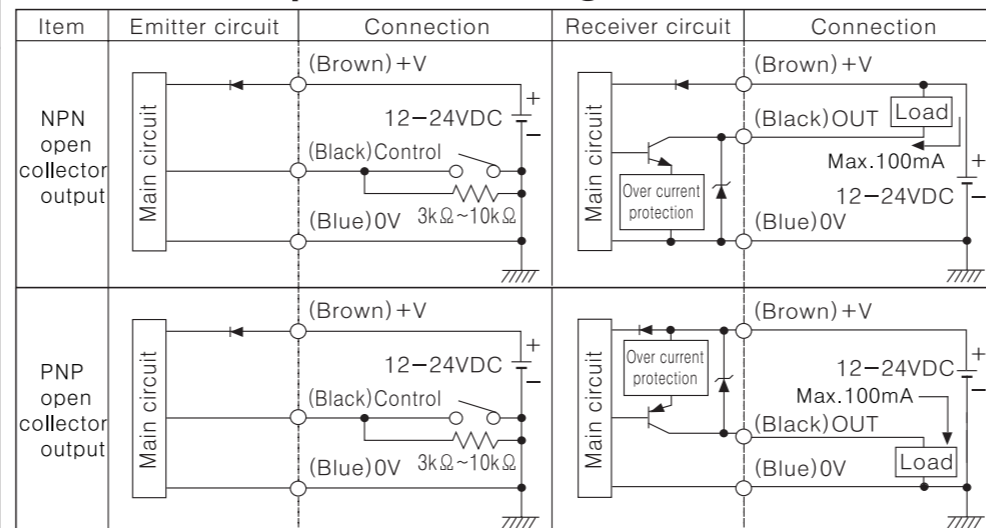
Specifications

Model	BRE5M-TDTL	BRE5M-TDTD	BRE10M-TDTL	BRE10M-TDTD
	BRE5M-TDTL-P	BRE5M-TDTD-P	BRE10M-TDTL-P	BRE10M-TDTD-P
Sensing type	Through-beam			
Sensing distance	5m		10m	
Sensing target	Opaque materials of Min. $\phi 10\text{mm}$			
Response time	Max. 1ms			
Power supply	12-24VDC $\pm 10\%$ (Ripple P-P: Max. 10%)			
Power consumption	Emitter : Max. 20mA, Receiver : Max. 16mA (Max. 30mA when the output is ON)			
Light source	Infrared LED (850nm)			
Operation mode	Light-ON	Dark-ON	Light-ON	Dark-ON
Control output	NPN or PNP open collector output Load voltage: Max. 30VDC Load current: Max. 100mA Residual voltage-NPN: Max. 1.6V, PNP: Max. 2.5V			
Protection circuit	Reverse polarity protection, output short-circuit protection			
Sensitivity adjustment	Controlling emitted Sensitivity using external resistance on Control Line ($3\text{k}\Omega \sim 10\text{k}\Omega$, adjustable)			
TEST function	Connecting control output line to GND in order to enter into TEST mode. (The power indicator on emitter (green) flicker on)			
Indicator	Power indicator: Green LED, Operation indicator: Red LED			
Insulation resistance	Min. 20M Ω (At 500VDC mega)			
Noise strength	The square wave noise by the noise simulator (Pulse width : $1\mu\text{s}$) $\pm 240\text{V}$			
Dielectric strength	1000VAC 50/60Hz for 1minute			
Vibration	0.5mm amplitude or 7.5g at frequency of 10 to 150Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s ² (50G) in X, Y, Z directions for 3 times			
Environment	Ambient illumination	Sunlight: Max. 50,000 lx (Receiver illumination)		
	Ambient humidity	35 ~ 85%RH, storage: 35 ~ 85%RH		
	Ambient temperature	-20~50 $^{\circ}\text{C}$ (a non-freezing condition), storage: -25~80 $^{\circ}\text{C}$		
Protection	IP66 (IEC Standard)			
Material	Case : PC (Black), Sensing part: Acrylic			
Cable	$\phi 3\text{mm}$, 3P, Length : 5m (AWG22 Conductor diameter : $\phi 0.08$, Conductor quantity : 40, Insulation diameter : $\phi 1.0$)			
Approval	CE (Except PNP output product)			
Unit weight	Approx. 130g			

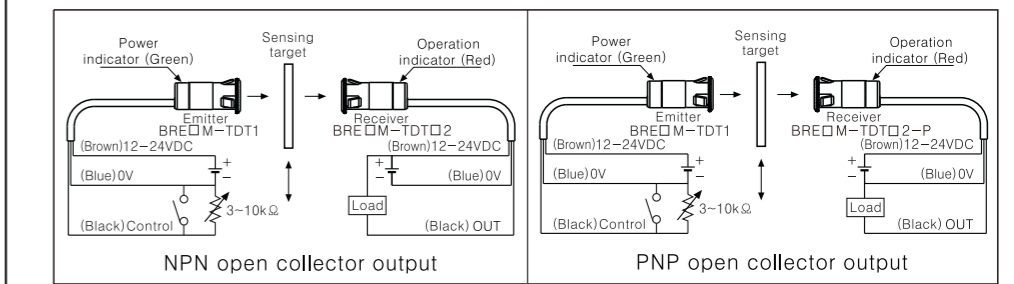
Dimensions



Control output circuit diagram



Connection



Mounting & Sensitivity adjustment

For mounting

- Push the unit into the mounting hole according to panel cut-out dimensions. Install this unit not to make any space between panel and sensor. Sensor is tilted, and optical axis may not coincide.
- Supply the power after setting the emitter and the receiver in opposite each other.
- Move emitter and receiver from side to side and check operating range of operation indicating lamp to adjust the right sensing position.
- Move emitter and receiver up and down to adjust the right sensing position.
- After adjusting the right position, put the object on optical axial to make sure the sensor operates properly. If the sensor operates well, fix the position.

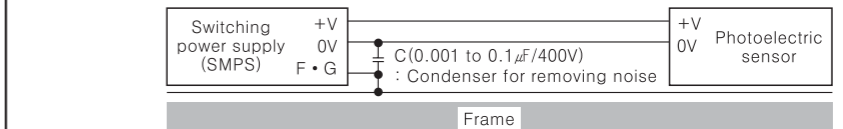
*If sensing object is translucent, or smaller than 10 mm, the sensor might not be able to sense the object.

Further information

- Sensitivity adjustment function
Connect resistance between emitter's control line and GND to adjust sensitivity. ($3\text{k}\Omega$ (10%) ~ $10\text{k}\Omega$ (100%) , adjustable)
- TEST function
When emitter's Control input (black wire) is 0V, emitting will stop and emitter power indicator (Green) will flicker. TEST function is to make possible to check whether the sensor operates properly from external systems while emitter's Control input is 0V. (When emitting stops, if the mode is Light ON, the receiver's output is OFF; or if it is Dark ON, the receiver's output is ON)

Caution for using

- Intercept a strong source of light such as sunlight, spotlight within inclination angle range of photoelectric sensor.
- The photoelectric sensor may cause malfunction under the fluorescent lamp light, so be sure to use cut-off light with panel.
- When more than 2 sets of photoelectric sensor are used closely, it might cause mutual interference. Be sure to put enough space between them in order to avoid malfunction.
- If photoelectric sensor is installed at flat part, it might cause malfunction by reflection light from flat part. Be sure to put space between photoelectric sensor and ground.
- When wire the photoelectric sensor with high voltage line, power line in the same conduit, it may cause malfunction or mechanical trouble. Therefore please wire separately or use different conduit.
- Avoid installing the unit as following place. Corrosive gas, oil or dust, strong flux, noise, sunlight, strong alkali, acid.
- In case of connecting DC relay as inductive load to output, please remove surges by using diode or varistor.
- The photoelectric sensor cable shall be used as short as possible, unless it may cause malfunction by noise through the cable.
- When it is stained by dirt at lens, please clean the lens with dry cloth, but don't use an organic materials such as alkali, acid, chromic acid.
- When use switching power supply as the source of supplying power, F.G terminal shall be good earth ground and condenser for removing noise shall be installed between 0V and F.G terminal.



Installation environment

- It shall be used indoor
 - Altitude Max. 2,000m
 - Pollution Degree 2
 - Installation Category II
- *It may cause malfunction if above instructions are not followed.

Major products

- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- AREA SENSOR
- FIBER OPTIC SENSOR
- DOOR/DOOR SIDE SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- SWITCHING POWER SUPPLY
- TEMPERATURE CONTROLLER
- TEMPERATURE/HUMIDITY TRANSDUCER
- POWER CONTROLLER
- RECORDER
- TACHOMETER/PULSE (RATE) METER
- PANEL METER
- INDICATOR
- SIGNAL CONVERTER
- COUNTER
- TIMER
- DISPLAY UNIT
- GRAPHIC PANEL
- STEPPING MOTOR & DRIVER & MOTION CONTROLLER

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Satisfiable Partner For Factory Automation

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