

Receivers and Emitters for Light Barriers



If you want to create a security perimeter, determine if a vending item dropped, start a compacting cycle when trash reaches a certain level, or stop a conveyor belt when product reaches a certain point, and you want to do it inexpensively and reliably, then you've come to the right place. Using Vishay's infrared emitters to emit light and fixed gain IR receivers to receive light, a light barrier system can be added to any application.

EMITTERS

- Narrow and wide angles of intensity
- Surface-mount or through-hole packages
- Fast rise and fall times
- Broad selection of intensities

RECEIVERS

- Fixed gain so sensitivity is unaffected and repeatable
- High sensitivity with range up to 40 m
- Demodulated output can be directly connected to a μC

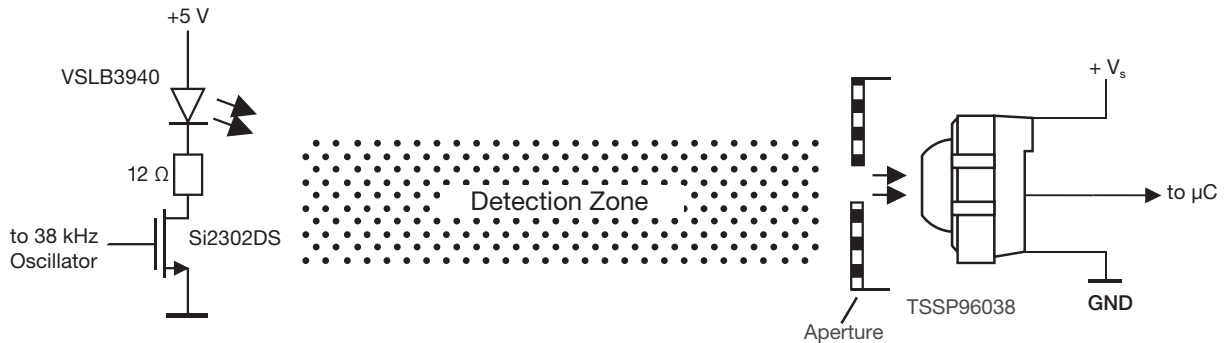
APPLICATIONS

- Garage door safety switch
- Elevator door safety switch
- Revolving door safety switch
- Conveyor systems
- Automatic door activation
- Moving sidewalk activation
- Escalator activation
- Industrial perimeter guards
- Burglar alarm
- Vending machines
- Automatic trash compactors

RESOURCES

- Datasheets: <http://www.vishay.com/ir-receiver-modules/presence-sensor/>
- Video: <http://www.vishay.com/videos/optoelectronics/safety-light-barriers-and-your-garage-door>
- Technical questions: emittertechsupport@vishay.com, IRR@vishay.com

Vishay's TSSP AGC zero products (TSSPxx0xx) feature a fixed gain. This means that the detection threshold and resulting detection distance are fixed. Once such optical parameters as the intensity of the emitter, the aperture in front of the receiver, and the alignment of emitter and detector are determined, the sensor will have stable, repeatable performance under moderate lighting conditions. In high brightness conditions a receiver with reduced sensitivity like the [TSSP93038ZA](#) provides more safety against unwanted output pulses, alternatively an aperture could be used to reduce the sensitivity of a standard TSSP-receiver. The output of the sensor is the demodulated signal of the 940 nm emitter transmitting modulated bursts at 38 kHz or 56 kHz. An example circuit diagram is shown below.



RECEIVERS

Code, Applications	Carrier Freq. (kHz)							
		Belobog 3.95 W x 3.95 H x 0.8 D (mm)	Belobog Shield 4.3 W x 4.3 H x 1.0 D (mm)	Heimdall 6.8 W x 3.0 H x 3.2 D (mm)	Panhead 7.5 W x 5.3 H x 4.0 D (mm)	Mold 6.0 W x 6.95 H x 5.6 D (mm)	Minicast 5.0 W x 6.95 H x 4.8 D (mm)	Minimold 5.4 W x 6.35 H x 4.9 D (mm)
Presence sensor (fixed gain)	38 56	TSSP570..	TSSP570..H	TSSP770.. TSSP950..	TSSP60.. TSSP960..	TSSP40.. TSSP940..	TSSP580.. TSSP980..	TSSP530.. TSSP930..

EMITTERS (940 nm)

Part Number	Package	L x W x H (mm)	Radiant Intensity (mW/sr)	Angle of Half Intensity (±°)	Rise Time (ns)
TSAL6100	T1¼	∅ 5	170	10	15
TSAL6200	T1¼	∅ 5	72	17	15
VSLY3943	T1	∅ 3	70	17	5
VSLB3940	T1	∅ 3	40	22	15
TSAL4400	T1	∅ 3	36	25	15
VSMY14940	Side-View Lens	3.0 x 2.51 x 1.2	90	9	5
VSMB2020X01	Gullwing	2.3 x 2.3 x 2.8	40	12	15
VSMB2943G	Gullwing	2.3 x 2.3 x 2.55	20	25	15
VSMB2943SL	Side-Looker Lens	2.3 x 2.55 x 2.3	20	25	15
VSMY2941GX01	Gullwing	2.3 x 2.3 x 2.8	160	8	5
VSMY2943GX01	Gullwing	2.3 x 2.3 x 2.55	50	28	10

