



Panel Detector

Panel Detector Overview

The Panel Detector is a surface mountable laser detection module that synchronises with your TTL modulated laser to create a beam break system. It achieves this by only detecting laser light modulated at a particular frequency and rejecting ambient light.

Widening the acceptance angle to 160°, an integrated hemispherical optic allows you to mount the Panel Detector in different directions relative to the laser source. A white LED indicator illuminates when the Panel Detector captures a signal with the correct modulation frequency.

An OEM version can be integrated with the surface of an enclosed system or a wall in your production facility. An IP67-certified version is water-, dust- and debris-proof and can therefore be operated in outdoor and harsh environments.

The Panel Detector outputs a TTL logic low signal (“signal out”) upon detection of 400-1100 nm laser light modulated at the same frequency pre-set in the detector. You can then optionally monitor the signal out with a test instrument (e.g. oscilloscope) via a connection lead.

You can also send the detected modulation frequency back to the laser via another connection lead. This generates a feedback loop resulting in an easy-to-use beam break system typically used in motion sensing and event/condition monitoring applications. This also removes the need for a separate signal generator to drive the laser.

Key Features:

- Panel board OEM form factor
- Optional IP67-certified housing for protection from water, dust, and debris
- Detects VIS-NIR laser light modulated at a particular frequency
- High ambient light rejection
- TTL-level DC output
- Visual detection indicator
- Wide angle detection 160°

The Panel Detector is designed for synchronisation with the Panel Laser, Gated Cameo, and TTL versions of the Acculase, Lyte-MV, Firefly, and Imatronic ranges by Global Laser.



Form Factors



OEM

The OEM version of the Panel Detector is used for surface integration. It can be seamlessly attached to the surface of an enclosed system or the exposed wall in your production facility.

You don't need a clamp or holder to mount the Panel Detector. Instead, you can save workspace and reduce adjustment errors by simply fixing the Panel Detector directly to the required surface.

You can link the Panel Detector's 4-pin connector with a number of components including a power supply, a TTL modulated laser, and a test instrument (e.g. oscilloscope) to view the TTL signal out. However, you can still operate the Panel Detector without such a test instrument.



IP67-certified water-, dust-, and debris-proof housing

The IP67 version encases the above OEM Panel Detector in rigid housing that protects the electrical and optical components from water, dust, and debris. A secure transparent lid on the aperture side of the Panel Detector serves as a window that effectively transmits the incident laser radiation.

Recommended for outdoor applications, the IP67-certified housing shields the OEM Panel Detector from harsh environments.

The IP67 Panel Detector can be successfully synchronised with the IP67 Panel Laser for outdoor motion detection, smoke/fog detection, and general event monitoring in security and transport.

Specification

	OEM Panel Laser		IP67 Panel Laser
Mechanical Information			
Weight (grams)	45		250
Diameter (mm)	22.6 x 50 x 50 (L x W x H)		65 x 82 x 80 (L x W x H)
Connector Type	4-pin JST		4-way Binder (male)
Isolated Body	Yes		
Optical Information			
Operating Wavelength Range (nm)	400-1100		
Wavelength of Peak Sensitivity (nm)	900		
Minimum Incident Pulse Powr (uW)	40*		
Acceptance Angle	160		
Environmental Information			
Operating Case Temperature (°C)	-10 to +70		
Storage Temperature (°C)	-10 to +85		
Ingress Protection	-	IP67	
Electrical Specifications			
Input Voltage V+ (Red Lead - pin 1) (Vdc)	5 ±5%		
Input Voltage (Black Lead - pin 2) (Vdc)	0		
Modulation Amplitude (p-p) (V)	4:3		
Modulation Frequency (kHz)	10 (call us for alternative modulation frequency)		
Modulation Duty Cycle (%)	50 (call us for alternative duty cycle)		
System Response Time (ms)	3		
Mark to Space Ratio	1:1		
Minimum Operating Current (mA)	4**		
Maximum Operating Current (mA)	25***		
Reverse Polarity Protection	Yes		
TTL Logic Output	Logic Low = 0 V = Laser of the correct modulation frequency deteted Logic High = 5 V = No laser of the correct modulation frequency deteted		

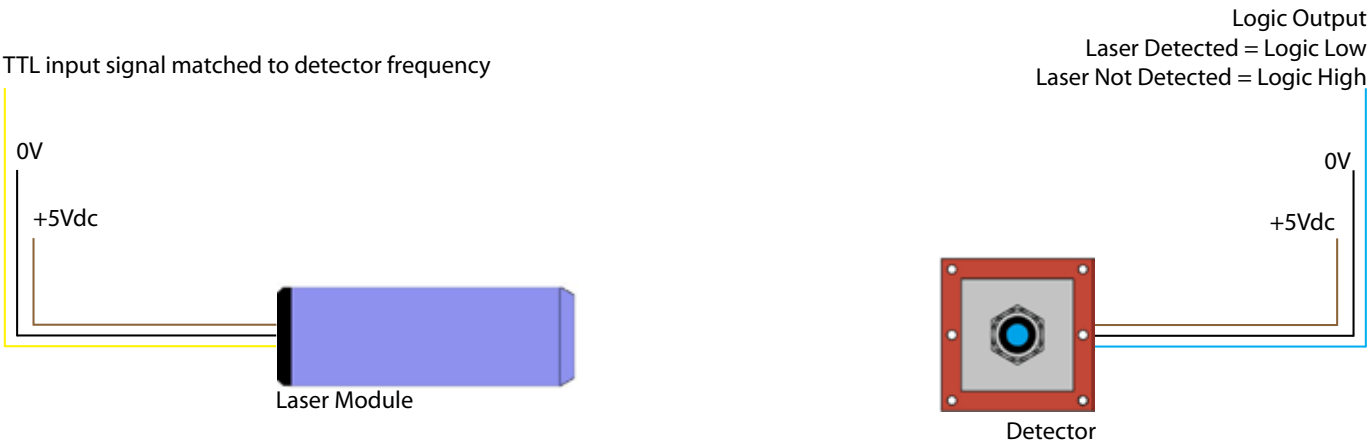
NOTES
* - @ ~900nm. IP67 lid transmission loss = ~20%
** - Minimum current occurs when no laser light of the correct modulation frequency falls on detector
*** - Bmaximum current occurs when laser light of the correct modulation frequency falls on detector
All Specifications are typical @ 25 °C

Pin Configuration

The detector achieves its immunity to ambient light by exclusively detecting light of a pre-set modulation frequency. A white LED indicator illuminates when the Panel Detector captures a signal of the correct modulation frequency, and pin 4 of the detector outputs a TTL logic low signal (0 V). Otherwise, pin 4 of the detector outputs a TTL logic high signal (5 V).

A synchronised system can be configured in two ways:

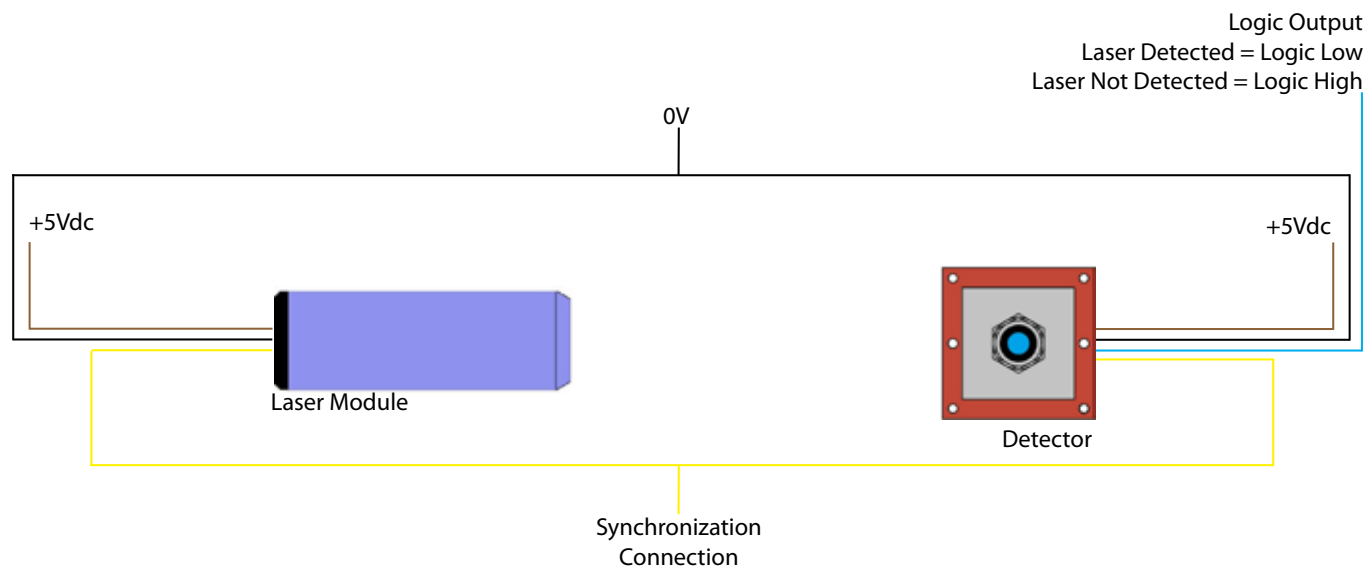
- 1) Modulate the laser with an external TTL source matched to the correct detector frequency (pre-set to 10kHz)



Laser Pin No	Wire	Connection
1	Red Lead	V Supply
2	Black Lead	0 Vdc
3	Yellow Lead	Input TTL Signal
4	Blue Lead	V Supply (if not using as an enable switch)

Detector Pin No	Wire	Connection
1	Red	+5 V Supply
2	Black	0 Vdc
3	Yellow	None (leave floating)
4	Blue	Signal Out

2) Generate a feedback loop between the Panel Detector and your laser

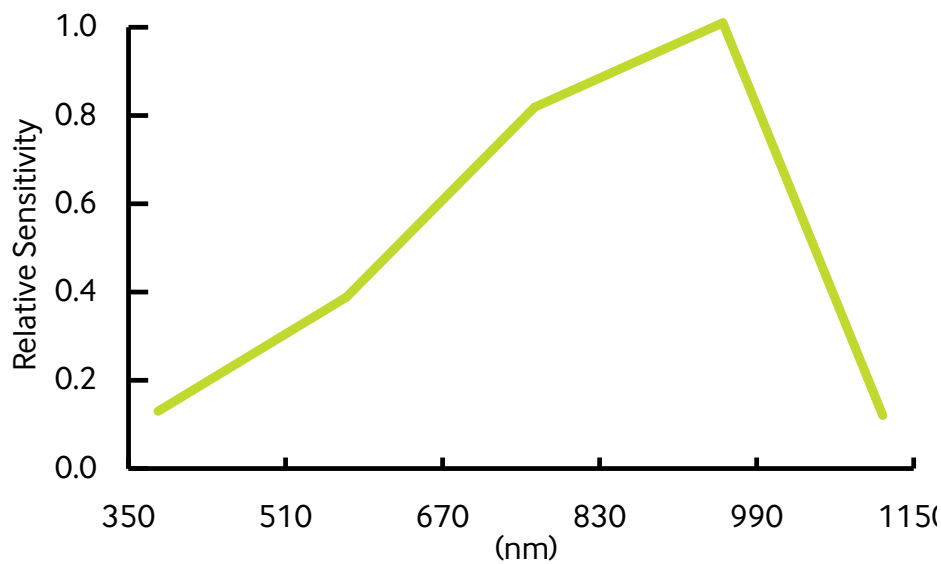


Laser Pin No	Wire	Connection
1	Red Lead	V Supply
2	Black Lead	0 Vdc*
3	Yellow Lead	Panel Detector pin 3
4	Blue Lead	V Supply (if not using as an enable switch)
* 0 Vdc (pin 2) of both the laser and Panel Detector must be common		

Detector Pin No	Wire	Connection
1	Red	+5 V Supply
2	Black	0 Vdc*
3	Yellow	Laser pin 3
4	Blue	Signal Out
* 0 Vdc (pin 2) of both the laser and Panel Detector must be common		

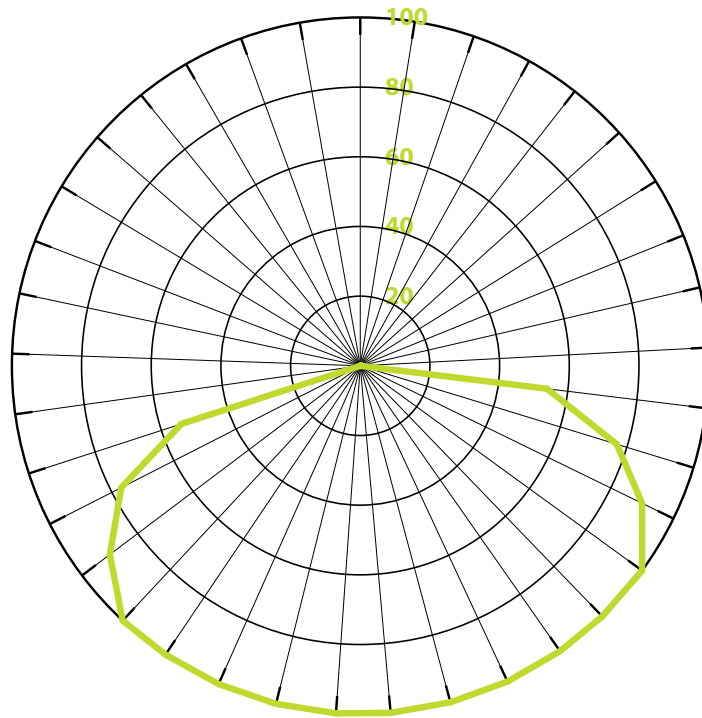
Relative Sensitivity

The graph below shows the sensitivity of the Panel Detector as a function of wavelength.



Input Acceptance Angle

The profile below illustrates the input acceptance angle of the Panel Detector.



Quality, Warranty and Repair

The Panel Detector is supplied with a 12 month parts and labour warranty. Our manufacturing operations are certified to ISO9001.

If your product develops a fault within 12 months from the date of purchase Global Laser will repair/replace your product. If you wish to return a faulty product then please contact your local representative or Global Laser to obtain a RMA code (Return Material Authorisation). Then package your product carefully, including a note of your RMA code, and return to the address below:

Global Laser Ltd

Unit 9-10

Roseheyworth Business Park

Abertillery

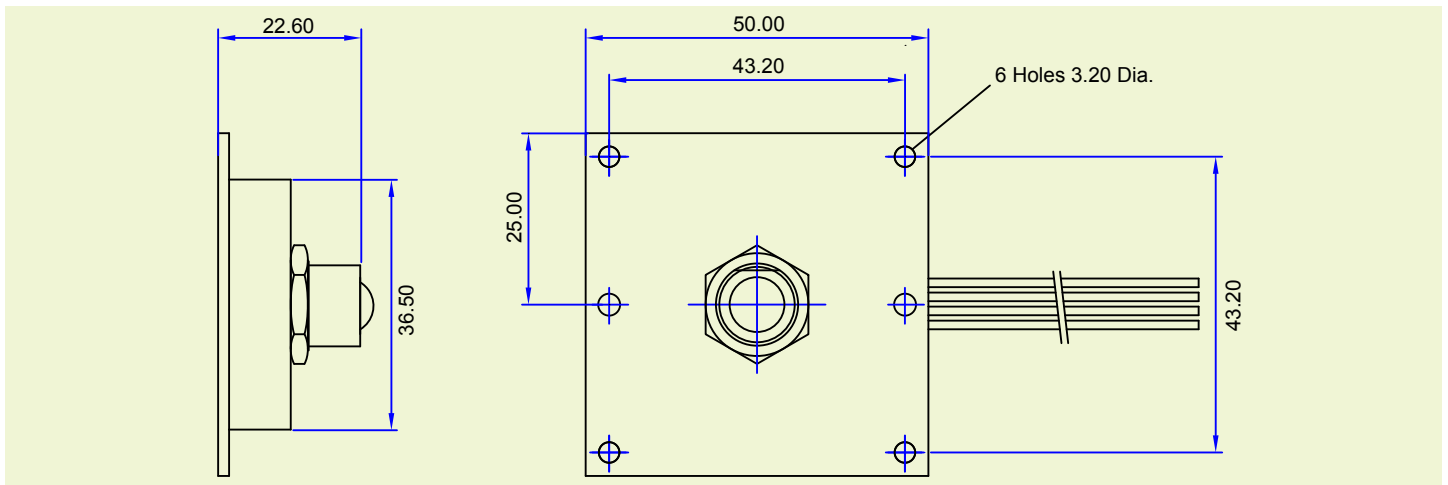
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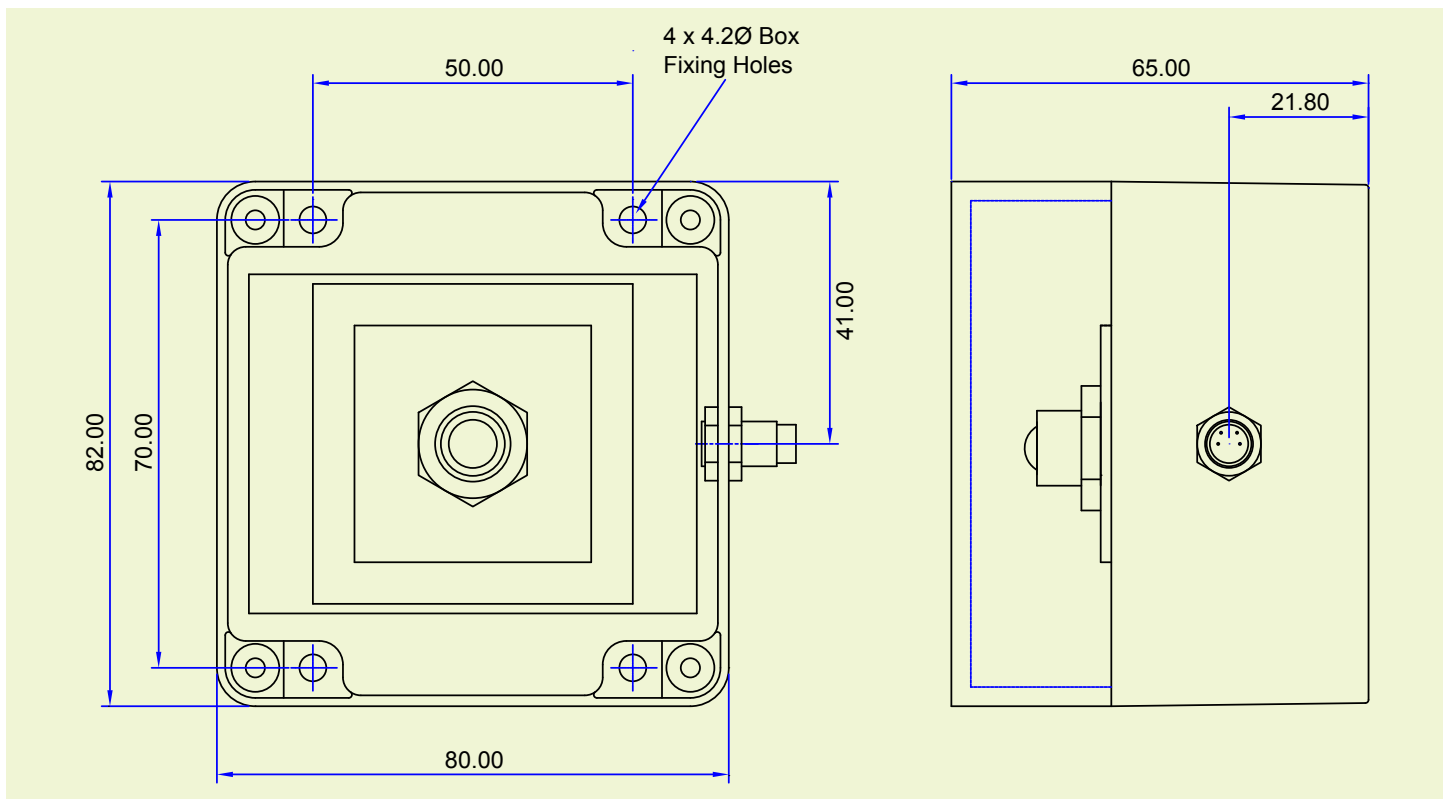
United Kingdom

Mechanical Dimensions

OEM Panel Detector Outline



IP67 Panel Detector Outline



Drawings are not to scale

Please Note: Global Laser reserve the rights to change descriptions and specifications without notice.



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T: +44 (0)1495 212213
F: +44 (0)1495 214004
E: sales@globallasertech.com
www.globallasertech.com

Global Laser Ltd
Unit 9-10
Roseheyworth Business Park
Abertillery, Gwent NP13 1SP UK