

# OptoShield 1000

**LASER LIGHT SAFETY SCANNER**

.....  
..... **Advanced Area Guarding for Today's Workplace**

**With Intrusion Indicators!**



**St Scientific Technologies Inc.**  
® Fremont CA 1-800-438-0623

# OptoShield 3100

..... Eight great

## ***Introducing the most intuitive, easy to use, advanced laser scanner on the market today!***

The new OS3100 OptoShield from STI is an advanced safety laser scanner. It uses harmless laser light to sense an intrusion into a guarded area. It can be configured for multiple irregularly shaped hazardous areas, making it an excellent choice for safeguarding work cells, transfer lines, robot stations, and automated guided vehicles. It's the only laser scanner with

patented intrusion indicators for instant visual feedback. Operators love it for its efficiency, as they can see where the intrusion is and clear it immediately. Best of all, our configuration software is so intuitive, you can learn it today and remember it months from now. Be sure to try it out on the CD provided!

## ***1. Intrusion Indicators... only from STI.***



***They light up when an intrusion is detected!***

***Now, see immediately where the intrusion is!***

***Now, no more guessing where the intrusion is...***

STI's patented Intrusion Indicators light up to let you know **immediately where the intrusion is...and when it is cleared!** The STI OptoShield is the only laser scanner that has this important feature. What ever the obstacle is, you can see where it is and immediately clear it...on both stationary and moving applications. Other scanners leave you in the dark and require you to perform difficult diagnostic searches requiring the use of a laptop computer. The OptoShield enables you to remedy the problem yourself, saving downtime and increasing your productivity.

# reasons why ours is better...

## 2. *Superb, intelligent diagnostics*



*Detailed diagnostics are clearly visible. No computer is necessary!*

### Operating Status Display

Two **7-Segment Displays** provide **constant operating status** of the scanner. The first digit represents the active detection set while the second digit represents the scanner's response time. In addition they will "flash" specific codes when the scanner detects a fault condition or when it is time to clean the front window.

### Scanner Status LEDs

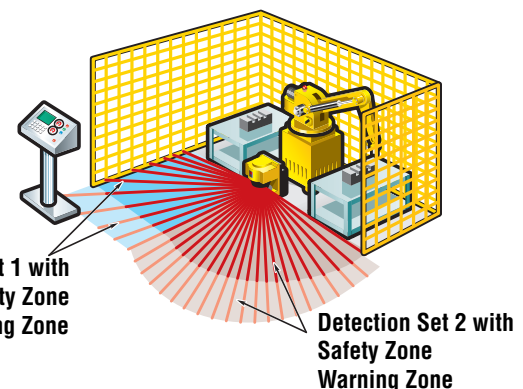
Four **Status-LEDs** constantly **indicate the status of the scanner**, lighting up to indicate Machine Run, Machine Stop, Fault/Interlock state and Warning Zone / Contaminated Window.

## 3. *Change guarded areas quickly on demand!*

Two Differently Shaped Areas... Each with a Safety Zone and a Warning Zone.

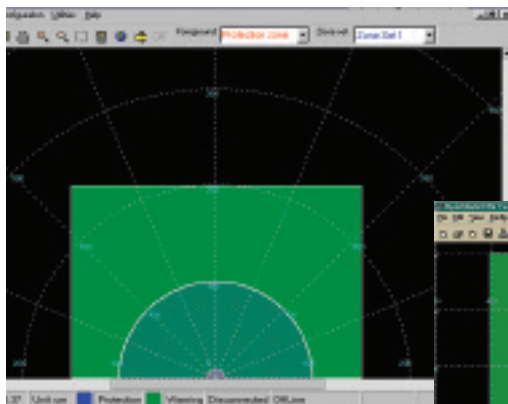
For increased shop efficiency, the OS3100 enables you to have **two completely separate detection sets**. Now you can anticipate the different requirements and simply change your guarding set on demand. Best of all, each detection set has both a safety zone and a warning zone. You decide which set to use and when.

- A **Safety Zone** is used to detect personnel or other objects entering a hazardous area. Upon sensing that the object is within the Safety Zone, the OS3100 will send a stop signal to the guarded machine.
- A **Warning Zone** can be defined to detect objects that are closely approaching the hazardous area of the Safety Zone and can be used to initiate a warning signal for personnel before the actual Safety Zone is encroached.

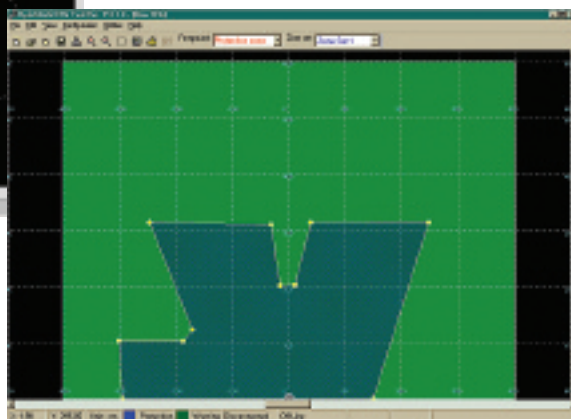


## 4. Easy to use, extremely intuitive configuration tool

*This program is intuitive and easy to use because it has the look and feel of familiar office applications. You can learn it today and remember how to use it months from now!*



Screen shot of Configuration Tool showing a semi-circle layout.



**Be sure to try our sample Configuration Tool program on the attached CD. It's like test driving the real thing!**

(If there is no CD attached, call 888-510-4357 to get yours.)

Actual screen shot showing the configuration tool setting up an irregular shaped area.

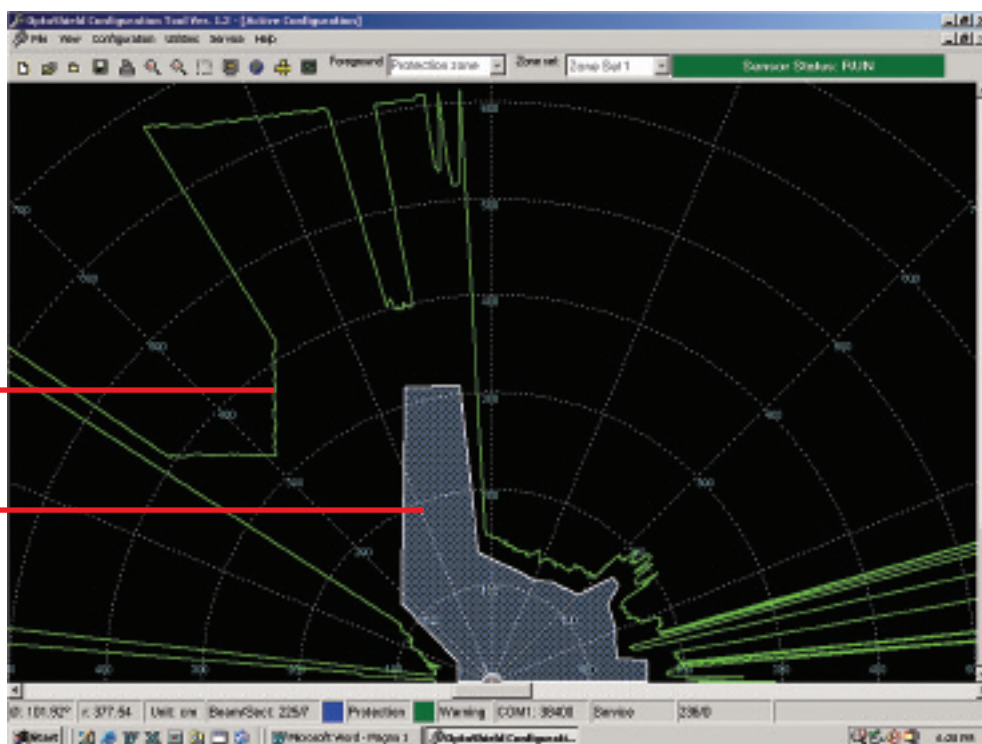
## Configuration Tool

Our configuration tool software makes setting up your guarded zone incredibly easy. This makes the OS3100 safety laser scanner very versatile and configurable to almost any possible guarding configuration.

**Green line shows the live perimeter of the work space.**

**Safety Zone**

Screen shot of Configuration Tool showing the guarded portion of an irregularly shaped area.



## 5. Quick set up

We make it easy...

Our rich combination of features makes the OptoShield intuitively easy to configure and operate. Everything you need is at your fingertips.

## 6. Easy preventive maintenance

We even do windows...

To maintain optimum performance and avoid downtime, our special diagnostic lights tell you when to give the window a quick wipe.

## 7. Robust and self-contained

Real world guarding...

Unlike some safety sensors, the OS3100 does not need any receivers or additional reflectors. This keeps the guarded area freely accessible.

And finally, the OS3100 is designed to withstand today's tough industrial environments, such as automotive manufacturing.



## 8. Proudly designed and manufactured in the USA

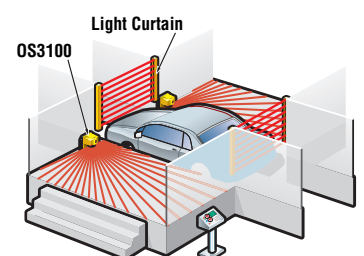
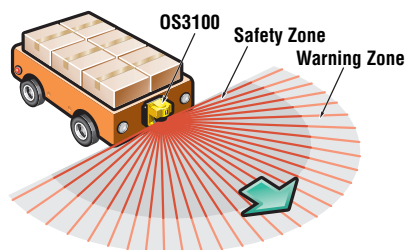
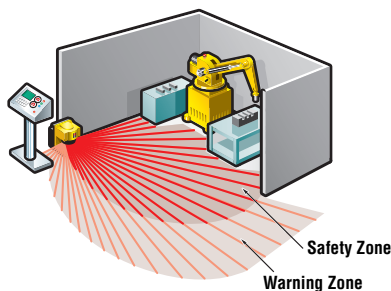
We understand your needs

That means we provide great technical support. When you work with us, you work directly with the engineering and sales staff that knows the product first hand.

With over 30 years of experience in the machine safety market, our product expertise and industry knowledge means we really do understand your industrial safeguarding needs and concerns.



***The OptoShield can be used on either stationary or moving applications.***





## Key Features

- Intrusion indicators
- Easy configuration
- Two user defined detection sets
- Simplifies machine guarding
- External Device Monitoring (EDM) (MPCE monitoring)
- Safety range: 4 meters
- Warning range: 15 meters
- Scan radius: 180 degrees
- CE, TUV, CSA, UL Certified

## Details

- Two 7-segment diagnostic displays.
- 4 LED indicators for status diagnostics.
- The device is configured via easy to use software.
- Two PNP safety outputs can directly switch machine

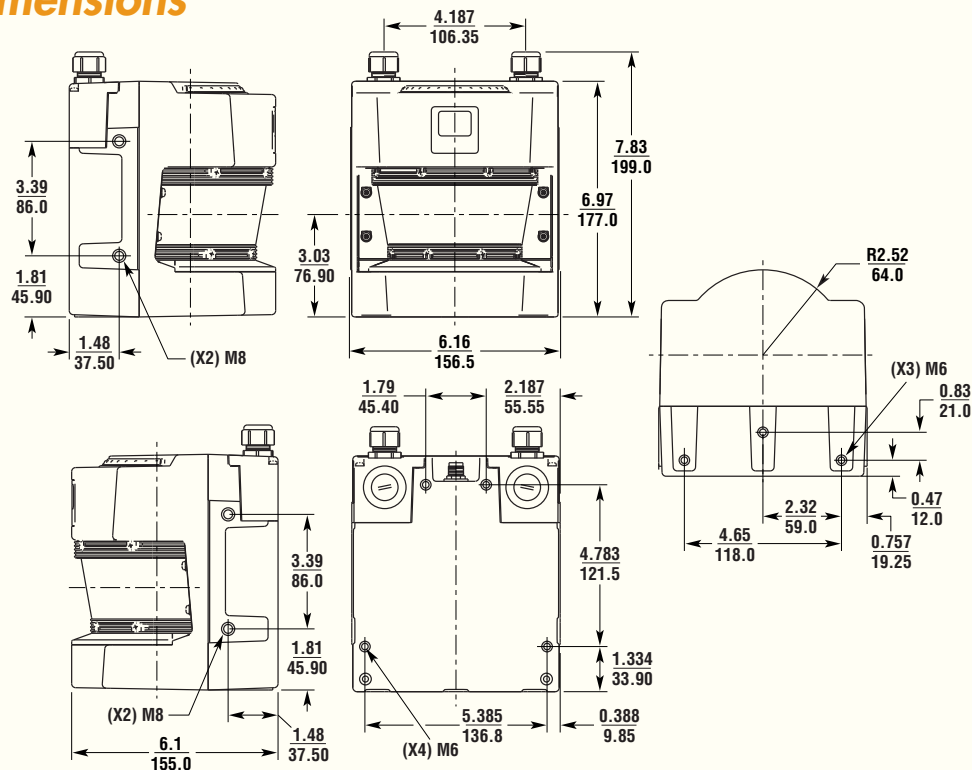
primary control elements at 625 mA, 24 VDC.

- Auxiliary output for warning zone.
- No separate control box required.
- Choice of two configuration formatting modes:
  - Graphic coordinate
  - Sculpting.
- Three operation modes:
  - Automatic Start
  - Start Interlock
  - Start/Restart Interlock
- Compact size 155 x 156 x 177 mm (6.10 x 6.16 x 6.97 inches)

## Options and Accessories

- RM2-AC power supply with relay safety outputs
- Adjustable mounting brackets and stands.
- DeviceNet interface.

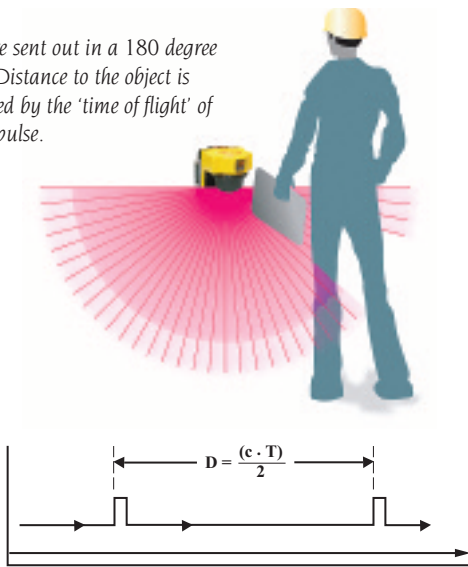
## System Dimensions



## What is a safety laser scanner?

A safety laser scanner is one of the newest technologies to be used for machine area safeguarding. This small optical sensor uses pulsed laser light to scan its surroundings. The scanner then compares the scanned information to its predefined zones. If the scanner detects an intrusion into that area, it sends a stop signal to the machinery being guarded.

*Pulses are sent out in a 180 degree pattern. Distance to the object is determined by the 'time of flight' of the light pulse.*



## How do they work?

Safety laser scanners function by using a 'time of flight' measurement to determine distance. The scanner emits a light pulse, the light then hits the first object in its path and is reflected back to the scanner. Then the scanner compares the distance against the known size of its safety zone. If the scanner senses an intrusion into the safety zone, it sends a stop signal to the guarded machinery. This sequence is repeated as the optical assembly rotates, scanning the guarded area over and over.

## What do they do?

Through user defined settings, they monitor a predetermined area for intrusions, making them a very effective safeguarding device.

## What are they used for?

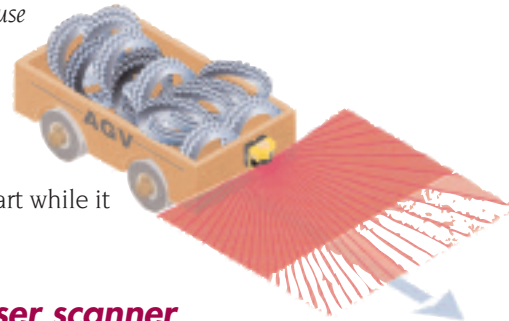
Safety laser scanners are used for safeguarding dangerous areas and access points. Because they are so versatile, they can be used as a safeguard on both stationary and moving equipment.

*Applications for stationary use include:*

- guarding a robotic work cell.
- guarding in front of a press or other hazardous machinery.

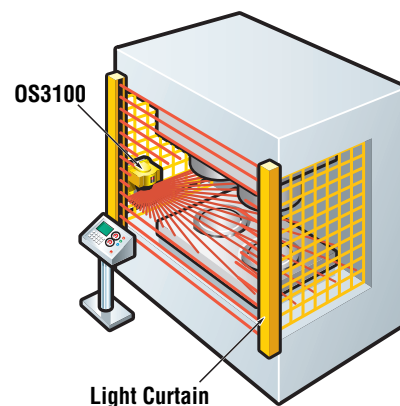
*Applications for mobile use include:*

- guarding the front and rear of an automated guided vehicle or transfer cart while it is in motion



## Why use a laser scanner instead of something else?

One of the main benefits of the laser scanner is its versatility and non-intrusive presence. Unlike hard guards such as fences or safety floor mats, the laser scanner works without physical barriers. Due to its sensing technology, it is perfect for equipment that requires regular maintenance and cleaning. Fewer hard-guards are needed, allowing sweepers, forklifts, and loaders to transit through its protection area.



# Specifications

<b>Performance</b>
<b>Response Time:</b> < 80 ms (2 scans), add 40 ms for each additional scan (up to 15 additional scans max.)
<b>Light Source (Wave Length):</b> Laser diode 905 nm
<b>Detection Sets:</b> 2
<b>Object Resolution:</b> 62 mm @ 4 m
<b>Max. Safety Radius:</b> 4 m
<b>Max. Warning Radius:</b> 15 m
<b>Measurement Angle:</b> 180°
<b>Angle Resolution:</b> 0.36°
<b>Max. Measurement Error:</b> 135 mm
<b>Laser Safety:</b> Class 1 per IEC-60825.1 (2001) and CFR 21 1040.10 & 1040.11
<b>Min. Object Reflectivity:</b> 1.8% (diffuse) @ 4 m
<b>Electrical</b>
<b>Power Supply (<math>V_{in}</math>):</b> 24 VDC $\pm$ 20% The rating depends on the current requirements of the loads attached to the outputs (see note 3). The power supply must meet the requirements of IEC 60204-1 and 61496-1. STI part number 40128 or equivalent.
<b>Input Power:</b> 20 watts (without load on the outputs)
<b>Safety Output Ratings:</b> Two PNP outputs sourcing 625 mA max @ $V_{in}$ (see note 1). Short circuit protected.
<b>Auxiliary (Non-Safety) Output Ratings:</b> One NPN output sinking 100 mA max @ $V_{in}$ or one PNP output sourcing 100 mA @ $V_{in}$ (see notes 1 and 2)
<b>Warning Zone (Non-Safety) Output Ratings:</b> One NPN output sinking 100 mA max @ $V_{in}$ or one PNP output sourcing 100 mA @ $V_{in}$ (see notes 1 and 2)

<b>Inputs</b>
<b>EDM/MPCE Monitor:</b> 50 mA @ 24 VDC
<b>Start/Restart:</b> 20 mA @ 24 VDC
<b>Zone Select 1 &amp; 2:</b> 20 mA @ 24 VDC
<b>Status Indicators:</b> Machine Run, Machine Stop, Interlock
Two 7-segment displays for diagnostics
16 Intrusion Indicator LEDs
<b>Data Interface</b>
<b>Serial Port:</b> RS-232 or RS-422 (optional); 9.6 K, 19.2 K, and 38.4 K Baud Rates
<b>DeviceNet:</b> For diagnostic data only
<b>Environmental</b>
<b>Operating Temperature:</b> 0 to 50°C
<b>Storage Temperature:</b> -25 to 70°C
<b>Enclosure Rating:</b> IP65
<b>Relative Humidity:</b> 95% max., noncondensing
<b>Enclosure:</b> Polyester powder painted die cast aluminum
<b>Dimensions:</b> 155 x 177 x 156 cm
<b>Vibration:</b> 5 to 60Hz maximum on all 3 axes in accordance with IEC 60028-2-6
<b>Shock:</b> 10g for 0.016 seconds, 1,000 shock for each axis on two axes in accordance with IEC 60028-2-29
<b>Weight:</b> 4.35 kg.
<b>Maximum Cable Lengths</b>
<b>RS-232:</b> 15 m
<b>RS-422:</b> 100 m
<b>DeviceNet:</b> 6 m
<b>Controls and Outputs:</b> 30 m
<b>Approvals/Conformities</b>
<b>Approvals:</b> CE, TUV, UL, and CSA
<b>Conformities:</b> Category 3 EN954-1, Type 3 IEC 61496-3, UL 508

Note 1: Voltage available at the outputs is equal to  $V_{in}$  - 2.0 VDC.

Note 2: Total current required by the two solid-state outputs, aux. output and the warning output should not exceed 1.45 A.

Note 3: Total system current requirement of the OptoShield is 2.3 A max. (scanner 850 mA + OSSD1 load + OSSD2 load + aux. output load + warning zone output)

Specifications are subject to change without notice.

**We are the industry experts!**

**www.sti.com**

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