



Advanced Ergonomic Engineering

*UltraTouch*®

The safest and only “control reliable”  
ergonomic zero force palm button  
that can be used as a two hand  
control device for operator safety.



SCAN ME



Press Control  
UL 508

LISTED  
42EL

UL Subject 491

# The Industrial Problem of Cumulative Trauma Disorders (CTDs) and Carpal Tunnel Syndrome (CTS)

Cumulative Trauma Disorders (CTDs) is the most common term used to refer to the diseases related to the upper limbs. Similar terms used to describe these problem areas are:

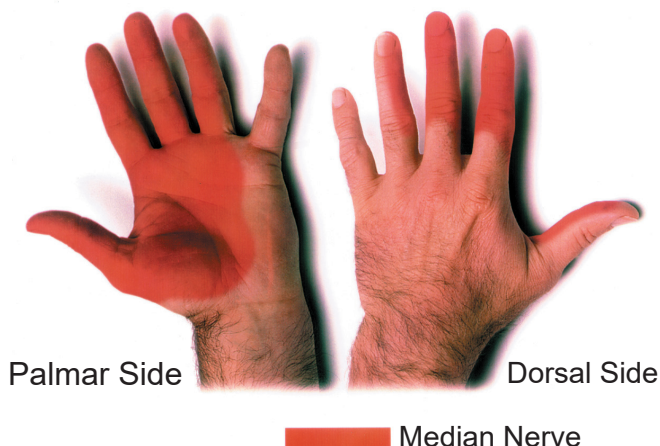
- repetitive strain injuries
- occupational cervicobrachial disorders
- occupational overuse syndromes

Cumulative Trauma Disorders are caused by repetitive stresses on a particular body part after periods of job related micro-trauma. Basically there are three types of injuries to the machine operator. These injuries include nerve disorders, tendon disorders or neuro-vascular disorders.

Nerve Disorders-Carpal Tunnel Syndrome (CTS)

Common Tendon Disorders-Tendinitis, Tenosynovitis, DeQuervain's disease, Stenosing Tendosynovitis, Stenosing Tenosynovitis Crepitans.

Neurovascular Disorders-Thoracic outlet syndrome.



## What *UltraTouch®* Does For You

The patented sound ergonomic design criteria of *UltraTouch®* advances machine cycle initiation into the 21st century. The *UltraTouch* system has been designed so the machine operator can initiate the machine cycle with their hand and wrist area in the neutral position and with no exertion of force or pressure.

This minimizes hand, wrist, and arm stresses related to the potentially harmful extension and flexion positions of the hand required to activate conventional spring-loaded palm buttons. No flexing of the wrist is necessary with *UltraTouch®*.

Wrist and hand positions are most important as contributing elements of Carpal Tunnel Syndrome. Wrist position is important because it affects the length and tension relationship of contracting muscles. As the angle of the joint (wrist) increases or decreases beyond its midpoint (neutral position), there is a proportional decrease in the machine operators effective strength. This means that more exertion or tendon tension is required to do a task with a bent wrist than the same task with the wrist in the neutral position. Hand and wrist posture along with force required are base contributing elements to Carpal Tunnel Syndrome.

## Benefits

### Human Factor Engineering (Ergonomics)

*UltraTouch®* has been designed to interact with the operator, machine operation, and the work place in a safe and efficient way. This effective design of equipment will be most helpful in the controlling of Carpal Tunnel Syndrome and other Cumulative Trauma Disorders.

### Productivity Increases

Increases in productivity are achieved by a reduction in operator fatigue and operator injury along with basic production line cycle time decreases.

### Employee Morale

Easier job related actions and movements with both work methods analysis and ergonomic checklist analysis provide a healthier and more positive work environment.

### Fatigue Control

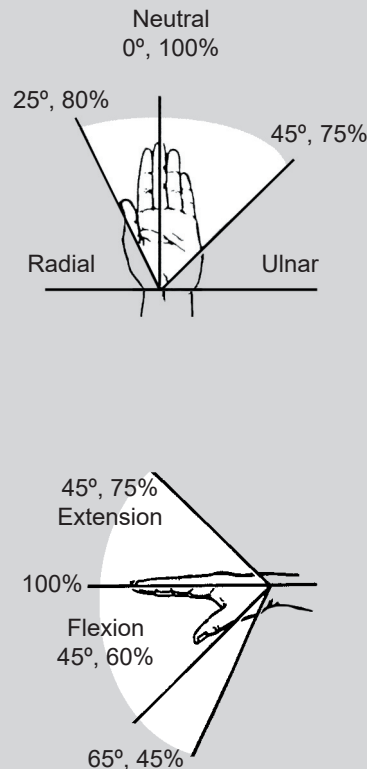
Ease of safe machine activation enables the machine operators to utilize their energy for more productive efforts. The reduction of fatigue is an essential element when trying to control Cumulative Trauma Disorders such as Carpal Tunnel Syndrome.



The *UltraTouch*® system negates these problems by permitting the machine operator to activate the machine with no force or pressure and with the operator's hand and wrist in the premier ergonomic position of neutral, 0° deviation and 100% hand power position.

*UltraTouch*® eliminates the normal pressure required for machine activation with conventional palm buttons of the median, ulnar and radial nerve at the wrist and hand area.

*UltraTouch*® also permits the machine operator to activate the machine cycle with or without hand protection devices such as splints and even heavy metal fabrication work gloves.



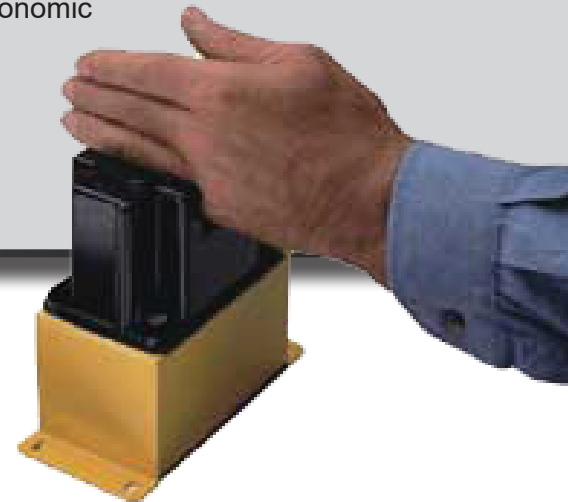
## Reference - Hand and Wrist Positions

The machine operator's reference hand and wrist positions illustrate the degree of wrist deviation (bending) expressed as a percentage of hand power grip as measured in the neutral (natural) position. The *UltraTouch*® system utilizes the premier ergonomic position of neutral, 0° deviation and 100% hand power for the machine operator.

The photo shows an operator's hand actuating the *UltraTouch*® module with the correct ergonomic hand position.

The hand is at rest with no angle or bending at the wrist joint and the hand is at the "thumbs up" position. This is the same natural hand and wrist position that is maintained when one's arms are at rest hanging at their side. There is no need to cup and curl the fingers or to roll the wrist to actuate the *UltraTouch*® system.

This further illustrates the total advanced ergonomic engineering displayed by the *UltraTouch*® design.



### Economic Justification

There are substantial costs related to Carpal Tunnel Syndrome versus the costs and benefits to prevent them. Various factors that can be incorporated into the analysis are reduced overhead costs, employee morale, reductions in non-productive time, and improved productivity. Factors involved with overhead expense may include: medical costs, compensation costs, lost productivity due to injuries, absenteeism, and labor turnover.

### Workman's Compensation Cost Control

*UltraTouch*® can reduce the costs related to Cumulative Trauma Disorders in relation to Workman's Compensation Insurance claims. Both medical and disability costs can be reduced with the control of Carpal Tunnel Syndrome.

The actual costs of Cumulative Trauma Disorders and Carpal Tunnel Syndrome are actually higher than those covered by Workman's Compensation Insurance. Insurance does not cover medical treatments rendered directly by the employer, and many employees supplement the disability coverage provided by the insurance carrier. Additional costs are incurred when expenses are paid for by the injured worker or by comprehensive health insurance, which may be provided by the employer as a fringe benefit.

### Reduced Maintenance

The solid state design of *UltraTouch*® assures long life when compared to conventional spring-loaded mechanical palm buttons. The only component with a moving part is the industrial grade captive contact safety relay, and it is rated for an excess of 10 million cycles and is easily replaceable.

The *UltraTouch*® module is designed to be a direct replacement into existing operator run bar stations which is a true maintenance and installation time saver.

### Applications

The *UltraTouch*® system is designed to activate electric, pneumatic, air clutch, and hydraulic equipment such as punch presses, press brakes, molding machines, assembly equipment, tube benders, compacting presses, riveters, etc. Virtually any machine that is currently using conventional mechanical spring-loaded palm buttons can now utilize the sound ergonomic design of *UltraTouch*®.

## UltraTouch® Design

The patented *UltraTouch*® system has been designed as a direct replacement for standard spring-loaded mechanical palm buttons and is designed to fit into existing operator palm button stations without modification.

The *UltraTouch*® enclosure is a molded high strength NEMA 4 polycarbonate module designed to meet the high impact and vibration requirements of industry. The solid state electronics of the *UltraTouch*® switch incorporates an advanced redundant diverse sensor design. This means that each module has two different sensors with isolated circuits along with a monitoring redundant circuit. The circuitry of *UltraTouch* is also designed to provide second-order failure protection. This gives the *UltraTouch*® an unparalleled level of safety and assurance against inadvertent actuation, or failing in the "on" or conducting mode, which is a common problem found throughout industry with competitive ergonomic switch replacements. The *UltraTouch*® design is so safe against inadvertent actuation that two *UltraTouch*® modules when spaced and located properly in accordance to OSHA and ANSI hand control distance formulas (the same formula is used for mechanical palm buttons), permit its use as

an operator safety two-hand control device. The *UltraTouch*® dual dissimilar sensor format is designed for the machine operator to actuate the switch, and that no inadvertent foreign objects such as sleeves, insects, broomsticks, playing cards, rags, mists or droplets can activate or trigger the switch. This gives *UltraTouch* an unparalleled level of safety while giving the operator the benefit of using the correct ergonomic hand position of neutral, 0° deviation and 100% hand power.

## UltraTouch® Configuration

The *UltraTouch*® dual dissimilar sensor ergonomic palm switch is configured in the following manner: A U-shaped sensors actuation channel (shown below) provides a triggering point for the machine operators hand. This is where the invisible infrared light beam is located and is crossing the channel. There is also a unique U-shaped location sensor mounted on the inside of the *UltraTouch*® enclosure that hugs the sensor channel and is insulated by the enclosure itself. When the machine operator inserts their hand into the sensor actuation tunnel, both the infrared sensor and the location sensor must be satisfied in order to energize an electromechanical relay to send a cycle

# UltraTouch®

NEMA 4 Sealed Housing

Location, Sensor Field

Green Status Indicator

Red Status Indicator

Sensors Actuation Tunnel

Infrared Beam Sensor

Mounting Holes (4)





## UltraTouch® Design Cont.

start signal to the machine. Both individual sensors within each module are time interlocked, and if both sensors are not triggered concurrently by the operator's hand, the *UltraTouch*® output will be inhibited to the machine control. The module also contains two visible LED indicators which informs the status of the *UltraTouch*® module to the operator. A green LED indicates that the relay contacts are closed, both sensors have been activated, and no failures have been detected. The red LED indicates that the relay contacts are open and no satisfactory conditions were detected on both sensors. This advanced patented *UltraTouch*® design is not available on any competitive unit and gives the *UltraTouch*® user an unparalleled level of safety when using ergonomic zero force actuation devices. Additionally, the operator will be activating the machine properly by using the correct ergonomic hand position of neutral, 0° deviation, and 100% hand power.

### Easy to Install

*UltraTouch*® installs with ease and comes with complete installation instructions.

Simple module design permits direct exchange for existing spring-loaded mechanical palm buttons and even utilizes the existing screw holes on the run bar. All systems have normally open (N.O.) and normally closed (N.C.) contacts, and are also available in a four pole wiring configuration depending on the machine control requirements. The ultimate in versatility!

New installations and retrofit projects are completely installed in minutes by a qualified electrician. Also supplied is a toll free 800 number if any questions should arise by your installation personnel.

### UltraSafe Design

Each *UltraTouch*® switch module incorporates the following safety design features:

- Two dissimilar sensors
  - a) Infrared sensor
  - b) Positive location sensor
- Redundant circuitry
- Chatterfree design circuit
- Anti-noise circuit
- No false trip on power up circuit
- Captive contact safety relays
- Operator status indicators
- Interlock circuit between the diverse sensors
- Immune to EMI and RFI noise
- Immune to weld field interference
- Control reliable design

### OSHA, ANSI & CSA Standards

The mounting locations of *UltraTouch*® must conform to all State, Province, and Federal codes and all regulations pertaining to the subject machine on which the *UltraTouch*® is to be applied.

### Point of Operation Guarding

The *UltraTouch*® system is a machine cycle initiation component that is designed to be a two-hand control device for the machine operator. If a point of operation guarding device is desired or required, please contact your local distributor or the factory for devices to comply with ANSI B11.1 or the various OSHA regulations.

## Additional Information on the *UltraTouch*® Ergonomic Palm Buttons

Visit our website [www.pinnaclesystems.com](http://www.pinnaclesystems.com) for complete details on

- Design Criteria
- Additional UltraTouch Models Available
- Specifications
- Dimensions
- Ordering Procedure
- and much more!



# Ergonomic Palm Button Replacement Grid Checklist

## “Compare the Difference”

## UltraTouch

### Design Criteria

- Diverse dual sensor design
- *Control reliable* design of sensor circuits
- Redundant circuitry
- Incorporates second-order circuit failure protection
- Internal self-checking of infrared sensor and system circuits
- Built-in timed interlock within each module for the two diverse sensors
- Utilizes captive contact safety relays
- Diagnostics of sensor circuits and diverse sensors interlock circuit
- Not affected by external infrared light sources
- Built-in hysteresis
- No false trip on power up
- Anti-noise circuitry built-in
- Chatter free design built in
- Weld field immune
- EMI and RFI immune
- Completely self-contained unit, requires no additional relays or interface boards
- Operator status indicator lights—
  - A. Red – Ready to cycle
  - B. Green – Cycle initiated
- Fast reacting—Less than 20 ms
- NEMA 4 enclosure
- Designs available for all machines:
  - 110 VAC – 2 pole or 4 pole configuration
  - 24 VDC – 2 pole or 4 pole configuration
- Directly interchangeable with existing mechanical palm buttons:
  - A. Electrically
  - B. Mechanically
- Requires correct ergonomic hand position for zero force machine actuation of neutral, 0° deviation, and 100% hand power
- Cannot be actuated by screwdrivers, playing cards, rags, sleeves, broomsticks, mists or droplets
- Tactile feedback feel requires the operator to have the proper hand location for both safety and ergonomics
- Cannot be actuated by the operator's elbows
- Can be used as an operator two-hand safety control device\*
- Complies with all applicable sections of OSHA, ANSI and CSA standards for operator two-hand control devices
- Repairable unit—not a disposable design
- Captive screws and gaskets supplied to ease installation
- Complies to EN ISO 13849-1
- Two-year warranty
- Made in USA

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES

YES



Press Control  
UL 508  
Subject 491

**LISTED**  
42EL

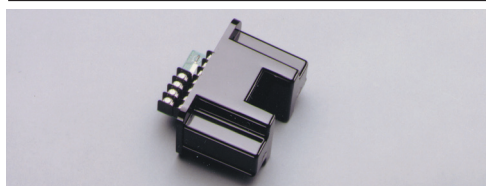
\* Requires two *UltraTouch* modules spaced and mounted in accordance with current OSHA and ANSI standards. OSHA and ANSI standards also require machines to have “control reliable” control circuitry.



# UltraTouch® Models

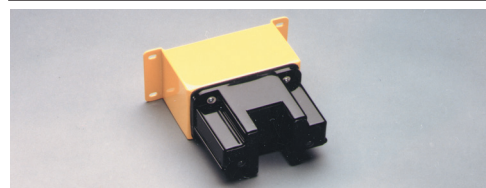
## Model #

## Description



### UL-101-2P

One *UltraTouch* module--Direct replacement into most existing operator stations into existing mechanical palm buttons space and screw configurations. Excellent for retrofit projects.



### UL-102-2P

One *UltraTouch* module with a complete self-contained NEMA 12 enclosure. Dimensional configuration of NEMA 12 enclosure of 3.50" (89mm) x 6.375" (162mm) x 2.95" (75mm). Excellent for installations when the *UltraTouch* system must be mounted individually due to space limitations.



### UL-301-2P

Two *UltraTouch* modules mounted on a NEMA 12 operator station run bar. The *UltraTouch* modules are mounted in accordance to OSHA, ANSI, and CSA standards in regards to run button spacing.



### UL-401-2P

Two *UltraTouch* modules mounted on a NEMA 12 operator station run bar with a red mushroom emergency stop button located in the center. Excellent for installations requiring an emergency stop button for the operator. All the modules are mounted in accordance to OSHA, ANSI, and CSA standards in regards to run button spacing.



### UL-501-2P

Two *UltraTouch* modules mounted on a NEMA 12 operator station run bar with a red mushroom emergency stop button located in the center and a yellow mushroom top button located off center. Ideal for the metal stamping/metal fabrication industry. All the modules are mounted in accordance to OSHA, ANSI, and CSA standards in regards to run button spacing.



### UL-601 Specify AC or DC as suffix to Model Number

Anti-tie down/concurrent operation module. This assembly supplies the control that, when added to two *UltraTouch* devices, assures that the operator occupies both hands and must initiate both *UltraTouch* devices within a preset period of time. The anti-tie down/concurrent module comes in a NEMA 12 enclosure and can be added to any of the styles. NEMA 12 enclosure 6" (152mm) x 8" (203mm) x 6" (152mm). This is required on all machines that do not have this capability in the machine control. (Available without control box. Part #UL-601-NB module. Requires 4" (102mm) x 5" (127mm) space.)



### 8500

The Model 8500 adjustable pedestal mount can be utilized for mounting the operator stations or the *UltraTouch* modules off the machine. These adjustable height pedestals are painted OSHA yellow and are of heavy angle construction with a floor mounting plate that can be lagged to the floor. The adjustable height feature assures the correct ergonomic position for various size operators. This will help control stretching and pulling strains of the operator.

## Specifications

NEMA 4 Sealed Housing  
Solid State Circuitry  
Dual Sensor Sources--Infrared/Capacitive  
Response Time <20 ms  
CSA Approved, UL Listed  
Module requires a 2" (51mm) mounting depth in run bar

### Current Requirements

110 VAC 2 pole -- 50 mA  
4 pole -- 60 mA  
24 VDC 2 pole -- 150 mA  
4 pole -- 250 mA

### Operator Status Indicator -- LED's

A. Red -- Ready to cycle  
B. Green -- Cycle initiated

### Relay Type -- Captive Contact Safety Relay

**Relay Rating** -- 8 amp @ 220 VAC; 8 amp @ 120 VAC

### Relay Cycle Life

Mechanical -- 50 million cycles

Electrical -- 100,000 cycles at 220 VAC, 4 amp

**Voltage Range** -- +/- 10%

**Warranty** -- 2 years



Press Control  
UL 508 LISTED  
42EL

UL Subject 491

# Ordering Procedure

UltraTouch®

## Wiring Configuration

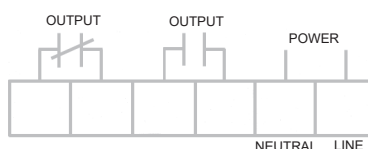
## Ordering Procedure

### 2 Pole Double Throw Relay 120 VAC

Model #  
UL-101-2P

Relay Contact Rating

16 amps



Relay operates when hand is inserted into sensors actuation tunnel.

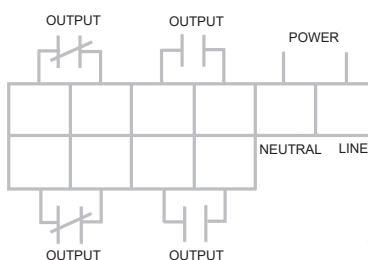
If customized assemblies are required, please consult the factory. When ordering, please specify quantity required.

### 4 Pole Double Throw Relay 120 VAC

Model #  
UL-101-4P

Relay Contact Rating

8 amps



Relay operates when hand is inserted into sensors actuation tunnel.

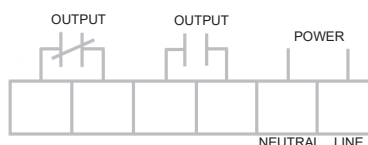
When ordering, please specify quantity desired and Model Number shown on preceding page. Add the suffix 4P to the Model Number to designate the UltraTouch Model to be supplied with a 4 pole double throw relay configuration. Examples: UL-101-4P, UL-102-4P, UL-301-4P, UL-401-4P, UL-501-4P

### 24VDC Voltage System 2 Pole Double Throw Relay

Model #  
UL-101-2P-DC

Relay Contact Rating

8 amps



Relay operates when hand is inserted into sensors actuation tunnel.

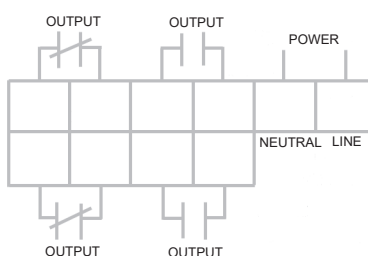
When ordering, please specify quantity desired and Model Number shown on preceding page. Add the suffix 2P-DC to the Model Number to designate the Model to be supplied with a 24VDC 2 pole system. Examples: UL-101-2P-DC, UL-102-2P-DC, UL-301-2P-DC, UL-401-2P-DC, UL-501-2P-DC

### 24VDC Voltage System 4 Pole Double Throw Relay

Model #  
UL-101-4P-DC

Relay Contact Rating

8 amps



Relay operates when hand is inserted into sensors actuation tunnel.

When ordering, please specify quantity desired and Model Number shown on preceding page. Add the suffix 4P-DC to the Model Number to designate the Model to be supplied with a 24VDC 4 pole system. Examples: UL-101-4P-DC, UL-102-4P-DC, UL-301-4P-DC, UL-401-4P-DC, UL-501-4P-DC

UltraTouch machine actuation devices are not to be used on full revolution power presses or on machinery utilizing restraints or pull-out devices as the point of operation guarding systems.



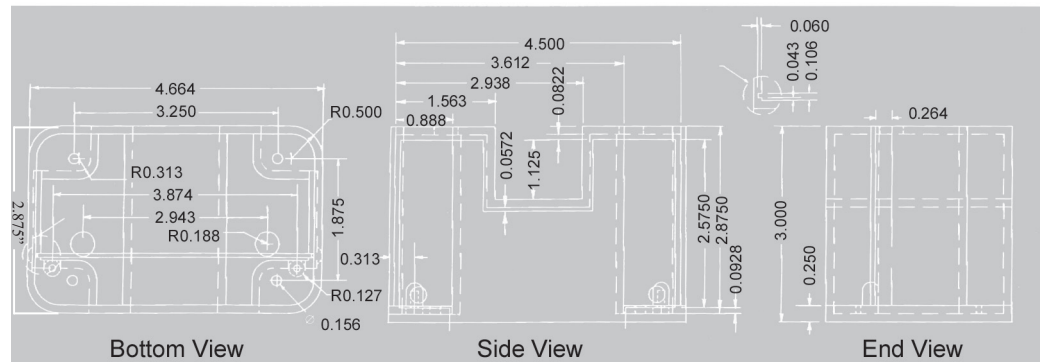
# Mounting Dimensions

Dimensions in Inches

UltraTouch®

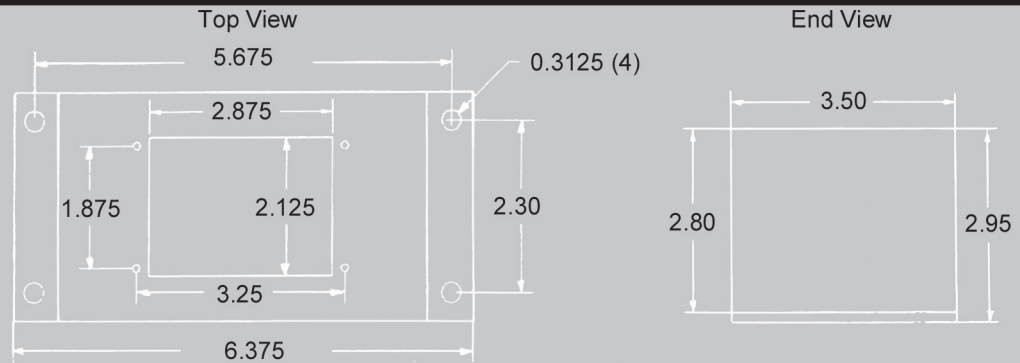
## UL-101 UltraTouch® Module

Enclosure Specifications  
• Material 0.125 in plastic



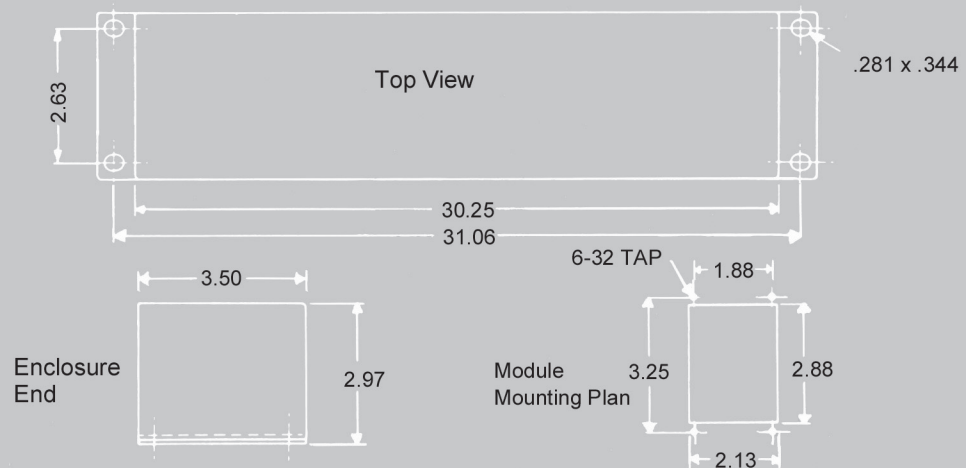
## UL-102 Module Base All Styles

Enclosure Specifications  
• NEMA 13  
• 14 Gauge  
• Steel Enclosure



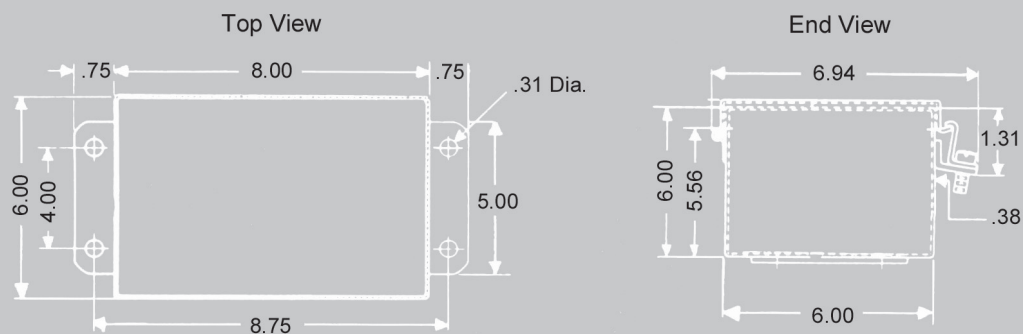
## UL-301 UL-401 UL-501 All Styles

Enclosure Specifications  
• NEMA 13  
• 14 Gauge  
• Steel Enclosure



## UL-601

Enclosure Specifications  
• NEMA 12 & 13  
• UL 50 Type 12 & 13  
• JIC Std. EGP-1967  
• CSA Enclosure 5  
• IEC 529, IP65  
• 14 Gauge  
• Steel Enclosure  
• Available in AC or DC



Specials 1. Stainless steel module bases. 2. Cast malleable iron module bases.

## Universal Safety Controller HUB / Safety PLC

Customized control panels available in steel or stainless steel enclosures.



The Universal Safety Controller HUB from Pinnacle Systems replaces multiple individual freestanding safety relay modules into one completely integrated and multi-faceted safety center. The Safety Controller HUB contains a multitude of input wiring provisions for various safety devices that will be incorporated on the machine to be guarded or controlled. The HUB also contains dry contact safety relays and solid-state outputs in one complete, compact control reliable safety controller package. This provides ease of installation, improved safety and economic improvement on both installation and hardware cost. Typical safety device inputs that can be monitored and controlled by the safety hub are: safety interlock switches (all types), safety light curtains, E-stop switches, cable-pull switches, safety mats, "control reliable" valves, muting systems, operator two hand controls which contains anti-tie down/concurrency logic functions, EDM (External Device Monitoring) and much more.

### Safety Light Curtains Safety Category 4 Type 4, SIL3, PL e

#### Model CA - Cascading Safety Light Curtain

Cascading safety light curtains provide the user the ability to connect additional sets of light curtains by daisy chaining multiple emitters and receivers together. The cascading of safety light curtains provides multiple areas of guarding in any plane (X, Y, Z), while utilizing the control reliable dual safety outputs from the Category 4 safety device for the safety outputs to the machine control. The ability to guard multiple areas on irregular shaped machines by cascading safety light curtains reduces wiring and provides a lower cost yet effective machine guarding solution. 24VDC input powered unit. Also, all connecting cables are supplied standard. PNP outputs.

#### Model MG - Metal Box Controller and Safety Light Curtain

Light curtain with a free standing NEMA 12 (IP 64) metal box controller. Input power can be 110V, 220 VAC or 24 VDC. Excellent for "free standing" light curtain applications. Complete system diagnostics and blanking capability supplied standard. Also, all connecting cables are supplied standard. Dry safety relays (Form C).

#### Model DR - DIN-rail Controller and Safety Light Curtain (Dry Contacts)

Light curtain with a DIN-rail mountable controller rated NEMA 1 (IP 10) for mounting into an existing control panel. Input power is 24VDC. Complete system diagnostics and blanking capability supplied standard. Also, all connecting cables are supplied standard.

#### Model SS - Solid State Safety Light Curtain

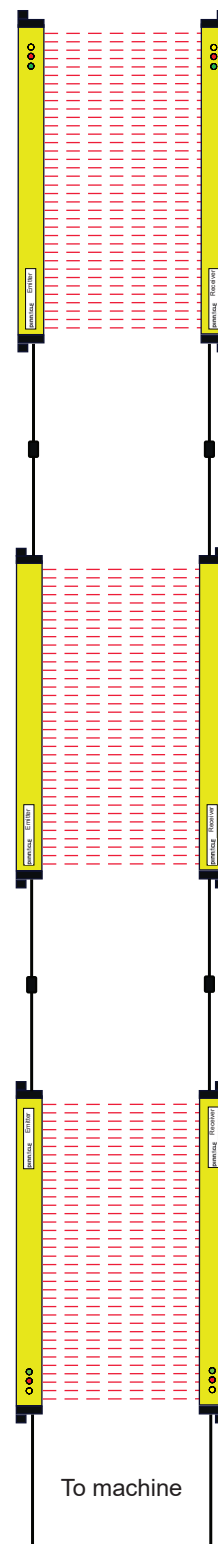
Light curtain with no 3rd box or controller. Unit is rated NEMA 4 (IP 56) and has two monitored solid state PNP outputs. Mechanical captive contact (dry) safety relays also available. Input power is 24VDC. Complete system diagnostics and blanking capability supplied standard. Also, all connecting cables are supplied standard.

#### Model CE - Solid State Outputs Global Safety Light Curtain

Designed to be supplied to any marketplace in the world. Light curtain with no 3rd box or controller. Unit is rated NEMA 4 (IP 56) and has two monitored solid state PNP outputs. Mechanical captive contact (dry) safety relays also available. Input power is 24VDC. Complete system diagnostics and blanking capability supplied standard. Also, all connecting cables are supplied standard.

#### Model PPG - Perimeter Guarding

Free standing 2 pylon 110 VAC input power system with built-in monitored safety relays (dry). A multitude of beam spacing options are available for arm and body detection. Model PPG is designed for perimeter guarding applications. 24VDC optional.



To machine

## UltraTouch Ergonomic Palm Buttons





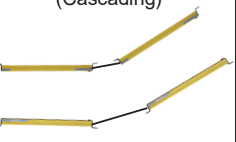

The patented Pinnacle UltraTouch system has been designed as a direct replacement for standard spring loaded mechanical palm buttons and is designed to fit into existing operator palm button stations without modification. This gives UltraTouch an unparalleled level of safety while giving the operator the benefit of using the correct ergonomic hand position of neutral, 0° deviation and 100% hand power.





## Safety Light Curtains

### Safety Category 4 Type 4, SIL3, PL e

Model	Guarding For	Input Voltage	Safety Outputs	Beam Spacing	Available Sizes	Scanning Distance	Blanking Capabilities
<b>Model SS</b> Solid State Safety Outputs 	Finger/ Hand  Arm/ Body  Body	24 VDC	Two monitored solid state (PNP) safety outputs (.5A max. each). Max .25A draw each	½" (13 mm)  1.0" (25.4 mm)  4.0" (101 mm)	4" – 64" (102 – 1625 mm)  4" – 120" (102 – 3048 mm)  20" – 124" (508 – 3149 mm)	1' – 75' (.3 – 28 m)  	Floating and Auto Blank  Constant Scan Only
<b>Model MG</b> Metal Box Controller 	Finger/ Hand  Arm/ Body  Body	24 VDC 110 VAC 220 VAC	Two monitored captive contact safety relays (dry) rated at 8 amps at 250 VAC resistive	½" (13 mm)  1.0" (25.4 mm)  4.0" (101 mm)	4" – 64" (102 – 1625 mm)  4" – 120" (102 – 3048 mm)  20" – 124" (508 – 3149 mm)	1' – 75' (.3 – 28 m)  	Floating and Auto Blank  Constant Scan Only
<b>Model DR</b> Multiple Function DIN-Rail Controller 	Finger/ Hand  Arm/ Body  Body	24 VDC	Two monitored captive contact safety relays (dry) rated at 8 amps at 250 VAC resistive	½" (13 mm)  1.0" (25.4 mm)  4.0" (101 mm)	4" – 64" (102 – 1625 mm)  4" – 120" (102 – 3048 mm)  20" – 124" (508 – 3149 mm)	1' – 75' (.3 – 28 m)  	Floating and Auto Blank  Constant Scan Only
<b>Model CE</b> Designed for the Global Marketplace 	Finger/ Hand  Arm/ Body  Body	24 VDC	Two monitored solid state (PNP) safety outputs (.5A max. each). Max .25A draw each	½" (13 mm)  1.0" (25.4 mm)  4.0" (101 mm)	4" – 64" (102 – 1625 mm)  4" – 120" (102 – 3048 mm)  20" – 124" (508 – 3149 mm)	1' – 50' (.3 – 16 m)  	Floating and Auto Blank  Constant Scan Only
<b>Model CA</b> Multiple Plane Guarding (Cascading) 	Finger/ Hand  Arm/ Body  Body	24 VDC	Two monitored solid state (PNP) safety outputs (.5A max. each). Max .25A draw each	½" (13 mm)  1.0" (25.4 mm)  4.0" (101 mm)	4" – 64" (102 – 1625 mm)  4" – 120" (102 – 3048 mm)  20" – 124" (508 – 3149 mm)	1' – 50' (.3 – 16 m)  	Floating and Auto Blank  Constant Scan Only
<b>Model PPG</b> Designed for Perimeter Guarding applications with latching relays 	Body	24 VDC 110 VAC 220 VAC	Two monitored captive contact latching safety relays (dry) rated at 8 amps at 250 VAC resistive	1.5" (38 mm) 3.0" (76 mm) 6.0" (152 mm) 12.0" (305 mm)	24" – 96" (609 – 2438 mm)	1' – 90' (.3 – 27 m)	Constant Scan for Perimeter Guarding

\* If mechanical safety relays (dry) are required to switch higher loads, please refer to our Part #52-278 DIN-Rail mount captive contact safety relays. Part Number 52-278 (two required) can be mounted on DIN-Rail or screw mounted on a control panel backplate.



**NEW  
SWITCHING  
SD DEVICE**

# Safety Mat System

**Hazardous area presence sensing  
detection**

**Complies with ANSI/RIA Standard  
R15.06-2012, ANSI/B11.19-2019  
OSHA 1910.217b, CSA and  
UL 508 Requirements**

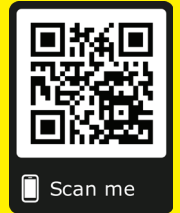
*Customized Safety Mat  
Systems are our Specialty  
and are available in Ribbed,  
Non-Skid or High-Temperature/  
Wet Environment Surfaces*

**Machinery Directives**

- **EN 1760-1**
- **EN 954-1**
- **EN ISO 13849-1 : 2015**
- **EN ISO 13856-1 : 2013**
- **RoHS Directive 2011/65/EU**
-



# **Safety Mat Systems for Machine Guarding (NSD)**



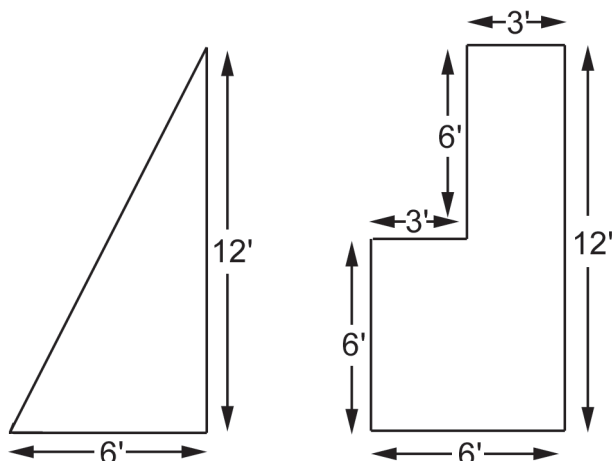
- **Extremely Durable Safety Mat**
- **Large single mat sizes up to 6' x 12'**
- **Reduces installation time and costs**
- **Any mat shape or contour available**
- **Complex safety mat layouts with multiple zones around machinery is our specialty**
- **Provides visual recognition of the guarded zone which enhances safety**
- **No programming required**
- **Excellent for CNC Router Guarding**
- **Contains Advanced Flexible Electrodes (no rigid steel plates in mats)**
- **High Temperature Mats available for Robotic, Welding and Hot applications**
- **Made in USA**

## NSD Single Mat Capability

Save time and installation costs with single piece mat installations. Help eliminate or reduce daisy chain wiring practices required by competitive systems.

The sizes shown are typical single piece mat installations that illustrate the manufacturing versatility of the **NSD** Safety Mat System.

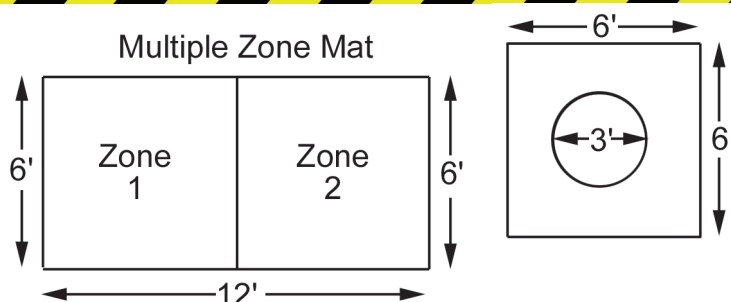
- The wiring exit positions can be located anywhere on the mat perimeter.
- The mat sizes shown can easily be altered to fulfill your specific project needs.
- No tooling fees for special mat designs.



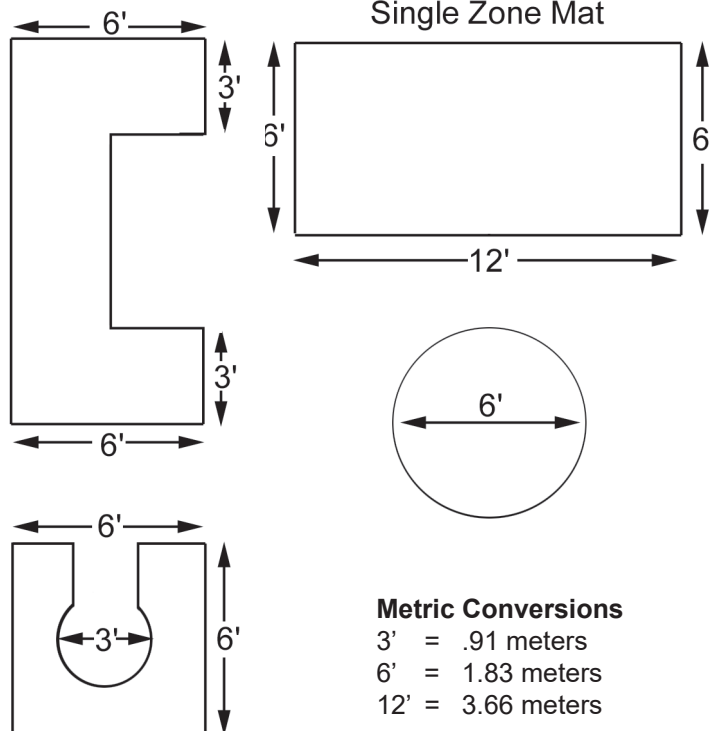
## NSD Mat Wiring Options

- X** - (standard) 2 - 2 conductor wires exiting at center of mat on B dimension.
- E** - 2 - 2 conductor wires exiting at opposite corners on B dimension.
- W** - 4 conductor cable out of the top left corner (home run wiring to mat controller).
- P** - 4 conductor plug out of the upper left corner; 20' (6m) plug extension supplied standard. Hardwired to mat controller.

## Multiple Zone Mat



## Single Zone Mat



### Metric Conversions

3' = .91 meters  
6' = 1.83 meters  
12' = 3.66 meters

## NSD Safety Mat Label

Provides immediate safety mat system information required by international guarding standards. The label is located on the mat surface. Bar coding is supplied standard to ease in receiving and inventory control. Customized labels are available.



(actual size)

# NEW NSD SWITCHING DEVICE

## NSD Mat Layout Procedure

1. Sketch total area to be guarded.
2. Locate desired mounting position of mat controller.
3. List mat sizes and styles desired to completely guard the hazardous zone.
4. If area to guard is too complex to determine mat sizes, submit drawing to the factory.

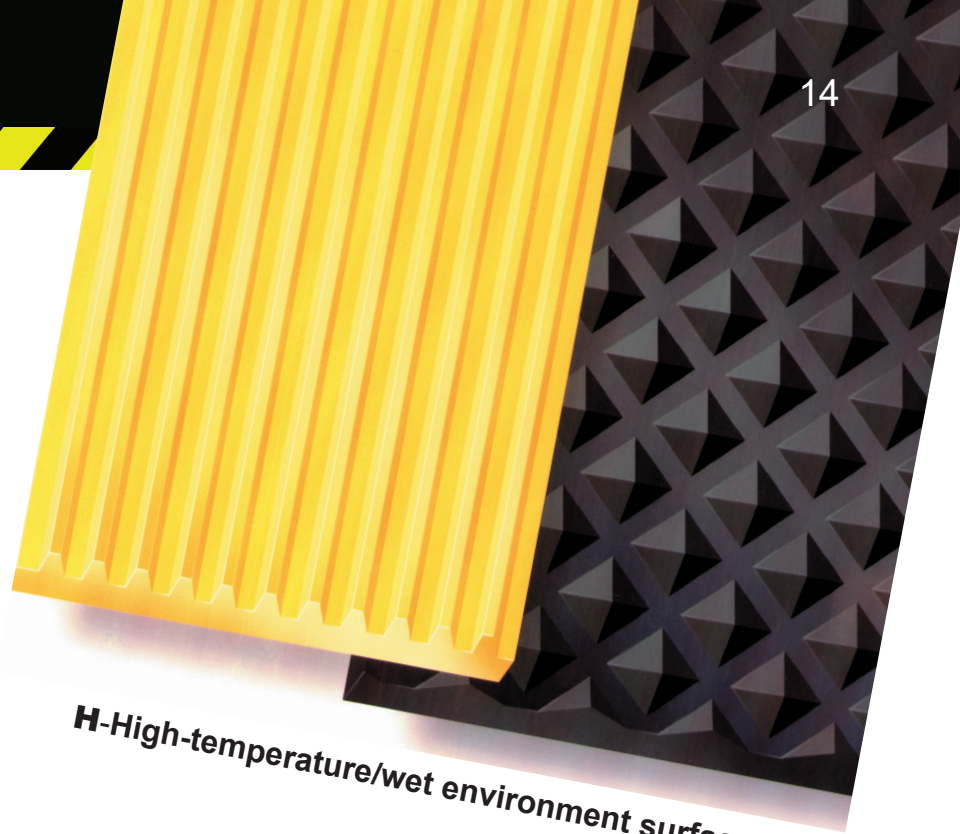
### Mat Sizes - Inches/Millimeters

#### Standard Mat Widths (A)

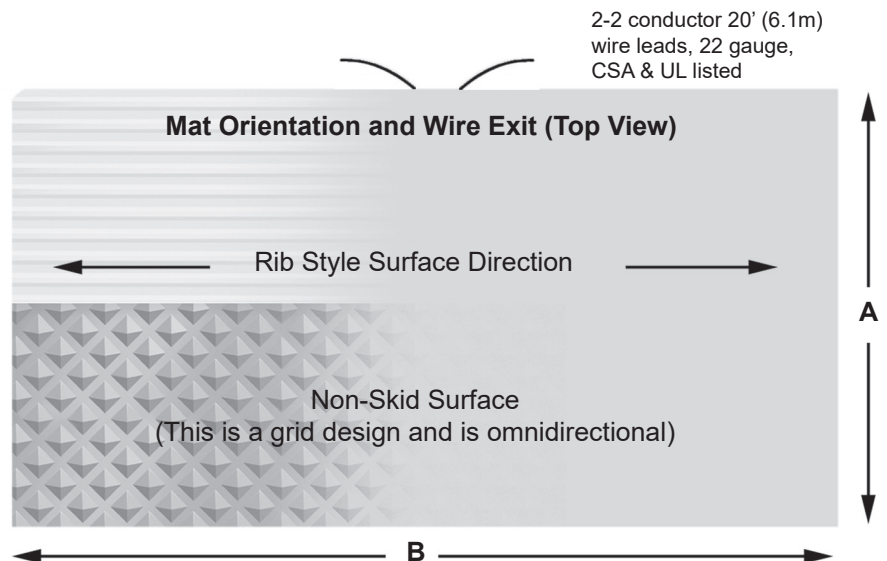
12" / 305mm	48" / 1219mm
18" / 457mm	54" / 1372mm
24" / 610mm	60" / 1524mm
30" / 762mm	66" / 1676mm
36" / 914mm	72" / 1829mm
42" / 1067mm	

#### Standard Mat Lengths (B)

12" / 305mm	84" / 2134mm
18" / 457mm	90" / 2286mm
24" / 610mm	96" / 2438mm
30" / 762mm	102" / 2591mm
36" / 914mm	108" / 2743mm
42" / 1067mm	114" / 2896mm
48" / 1219mm	120" / 3048mm
54" / 1372mm	126" / 3200mm
60" / 1524mm	132" / 3353mm
66" / 1676mm	138" / 3505mm
72" / 1829mm	144" / 3658mm
78" / 1981mm	



**H-High-temperature/wet environment surfaces**



### Example Part #

**NSD - 36 - 96 - Y - R - X - 20 - S**

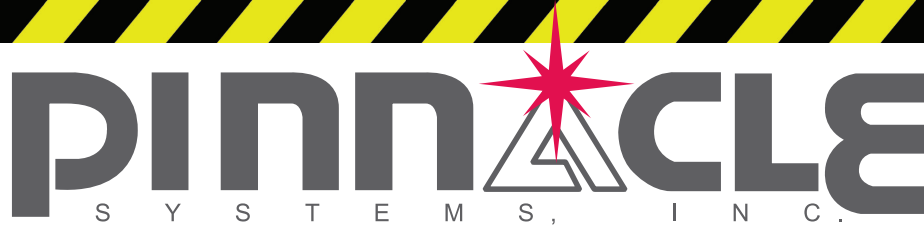
(prefix)	Width	Length	Color	Mat Style	Mat Wiring	Wire Length	Options
	12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72	12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114, 120, 126, 132, 138, 144	<u>Y</u> -Yellow <u>B</u> -Black	<u>R</u> -Rib Surface <u>N</u> -Non-Skid Surface <u>H</u> -High Temp. Surface (Excellent for weld splatter, molten plastic, die casting, forging operations, and wet environments)	See options shown left <u>X</u> <u>E</u> <u>W</u> <u>P</u>	Order in feet. 20' (6.1m) supplied standard. Specify longer lengths if needed, 100' (30.48m) maximum.	S-Designates a special cut, contour notch, wire exit or angle in mat (please submit drawing).

### SPECIALS...

The ultimate customized mat system in the industry. This series can provide customized mats, machine inlays, wire exits, etc. Submit drawing and requirements to factory.



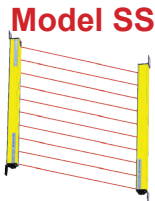
# Products Overview



## Machine Safeguarding Systems & Controls for Industry

We design, manufacture & service all of our products. Made in USA.

### Safety Light Curtains



*A style to fulfill your machine guarding needs*

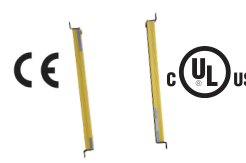
Model MG



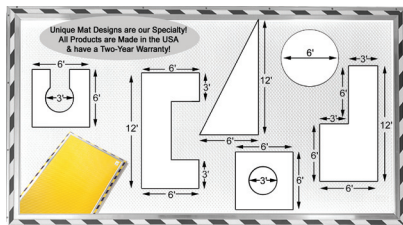
Model DR



Model CE



Model PPG

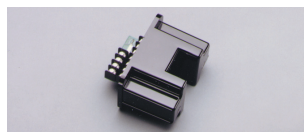


### Safety Mat Systems for Machine Guarding (NSD)

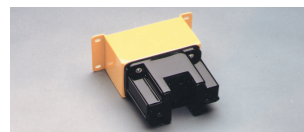
- Extremely Durable Safety Mat
- Large single mat sizes up to 6' x 12'
- Any mat shape or contour available
- Complex safety mat layouts with multiple zones around machinery is our specialty



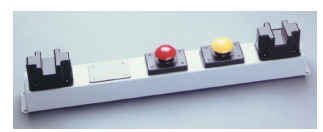
### UltraTouch<sup>®</sup> Ergonomic Palm Buttons



UL-101  
Retrofit Module



UL-102  
Freestanding Assembly



UL-501  
Operator Run Station



## Universal Safety Controller HUB

*Safety PLC with Diagnostic Message Display*

[www.pressroomelectronics.com](http://www.pressroomelectronics.com)

**Pressroom** *Electronics* <sup>TM</sup>

[sales@pressroomelectronics.com](mailto:sales@pressroomelectronics.com)

***Punch Press Clutch / Brake, Operator & Automation Controls  
for the Metal Stamping Industry***

### Time Based Brake Monitors

**Calculate OEE Automatically**  
(Overall Equipment Efficiency)

### Press Automation Controls

- Die Protection
- Programmable Limit Switches
- Servo Feed Interfaces
- Tonnage Monitoring

Complete individual product features, specifications, installation manuals & ordering procedure available on website.

Made in USA • [sales@pinnaclesystems.com](mailto:sales@pinnaclesystems.com) • [www.pinnaclesystems.com](http://www.pinnaclesystems.com)

P.O. Box 100088 • Pittsburgh, PA 15233 • Phone: (412) 262-3950 • Fax: (412) 262-4055

P/N: PS-EPB-AA-BA