New Switching Device

Safety Mat System

Provides “exceptional durability” for hazardous area machine guarding applications

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
-

PINNACLE SYSTEMS, INC.

Made in USA

New Switching Device

Revolutionary Switching Mechanism is Changing the Safety Mat Industry

Break through NSD technology provides digital (on/off) switching for safety mat applications. The advanced NSD switching mechanism provides the following:

- NSD safety mats are designed to be machine interfaced with only NSD controllers for normally open SPST 4-wire safety mats.
- The NSD safety mat has no rigid steel electrodes used in the switching mechanism that can rust and dent.
- The NSD safety mat contains no wiring solder joints within the mat assembly that could degrade or short out. Wiring solder joints can fail under loads such as fork truck or hand cart traffic.
- NSD flexible electrodes life cycle over 5,000,000 switch activations.
- NSD safety mats provide increased reliability and safety with longer product life.
- Customized wire exit positions available with no additional tooling costs.
- NSD flexible electrodes provide a product that is flexible and won't kink or short out like rigid steel electrodes when bent.
- The NSD mat electrodes are:
  Non-Corrosive Flexible
  Non-Magnetic Anti-Static
- NSD safety mats can use AC or DC input power.
- Large single mat manufacturing process helps eliminate additional interconnect pieces required by others and simplifies installation white reduces cost.
- Dual 20' (6.1m) lengths of two-conductor, 22 gauge multistrand 300 VAC (four conductors total), CSA & UL Listed wiring per mat eases installation time.
- Fast delivery on custom shapes and sizes with no need for special tooling costs.
- Multiple zones in one mat housing available.
- Designed specifically for the rigorous industrial environment.
- Easy system to install.
- No vacuum seal to break which induces rust and leads to dead zones.
- Can absorb punctures.
- Dual ribbed mat housing.
- High-temp welding mats available
- Non-skid or high temperature/wet environment mats available.
- Hermetically sealed sensor system (NEMA 6, IP67).
- Adapts well to uneven factory floor installations.
- Custom engineered systems available.
- Large selection of sizes and capabilities.
- Maximum intermittent load on an NSD mat is 3000 PSI.
- Provides visual recognition of the guarded zone.
- Warranty - 2 years.

New Switching Device

Questions for the Rigid "Steel Electrode" Safety Mat

1. How are rust pockets (dead zones) monitored within the mat switching electrode?
2. How much can you bend a steel mat before it kinks the steel electrode and shorts out (fails)?
3. How flexible is the system for specials, unique sizes, and wire exits?
4. What happens when a heavy load (fork truck) rides along side a raised elastomer that distorts the steel and shorts out the electrode?
5. What happens when the steel used in the electrode element isn't perfectly flat?
6. Does the steel electrode have a pocket of air (oxygen = rust) between the two steel electrodes?
7. What happens when a steel electrode mat is installed on uneven floors?
8. Does the steel electrode mat manufacturer pull a vacuum and inject an inert gas between the steel electrode switch assembly to assure that no oxygen is exposed to the steel electrode to prevent rusting? (Remember, oxygen = rust, rust = dead zones, and dead zones = loss of safety)
9. What happens when the vacuum seal is broken?
10. What happens when the elastomer's glue releases and slides out of position?
11. How many switch cycles can be made at the same point before carbon deposits are created by arcing?

Facts on the Use of "Steel Electrode" Safety Mats

Tired of rigid electrode (steel or copper) style mats? No wonder, steel electrode safety mats were designed in the mid 1950's. Some of their disadvantages include:

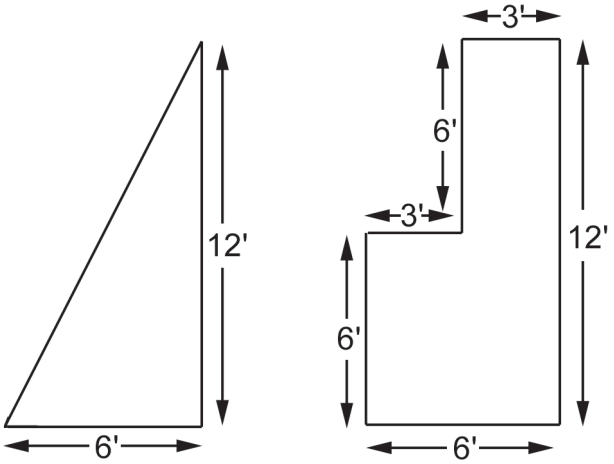
- Bend with subsequent short outs, especially in the corners of steel mats.
- Naturally rust which creates dead zones.
- Have multiple dead zones on the mat surface where elastomers are installed.
- Cannot handle heavy loads.
- Fail at a high rate.
- Are not flexible.
- Have limited sizes available.
- Are heavy and awkward to install.
- Require multiple wiring connections buried in perimeter trim.
- Require long lead times for special sizes and shapes, if possible at all.
- Have limited wire exit positions available.
- Are extremely difficult to troubleshoot a daisy chained system.
- A punctured steel mat immediately shorts out and will fail due to the metal roll over at the point of puncture.
- Continued switching in the same area "arcing" creates carbon deposits and potentially creates a dead zone and an unsafe condition.
- Steel mats are not PSI based switches but rather "force" related switching.
- Cannot be installed on uneven floors.

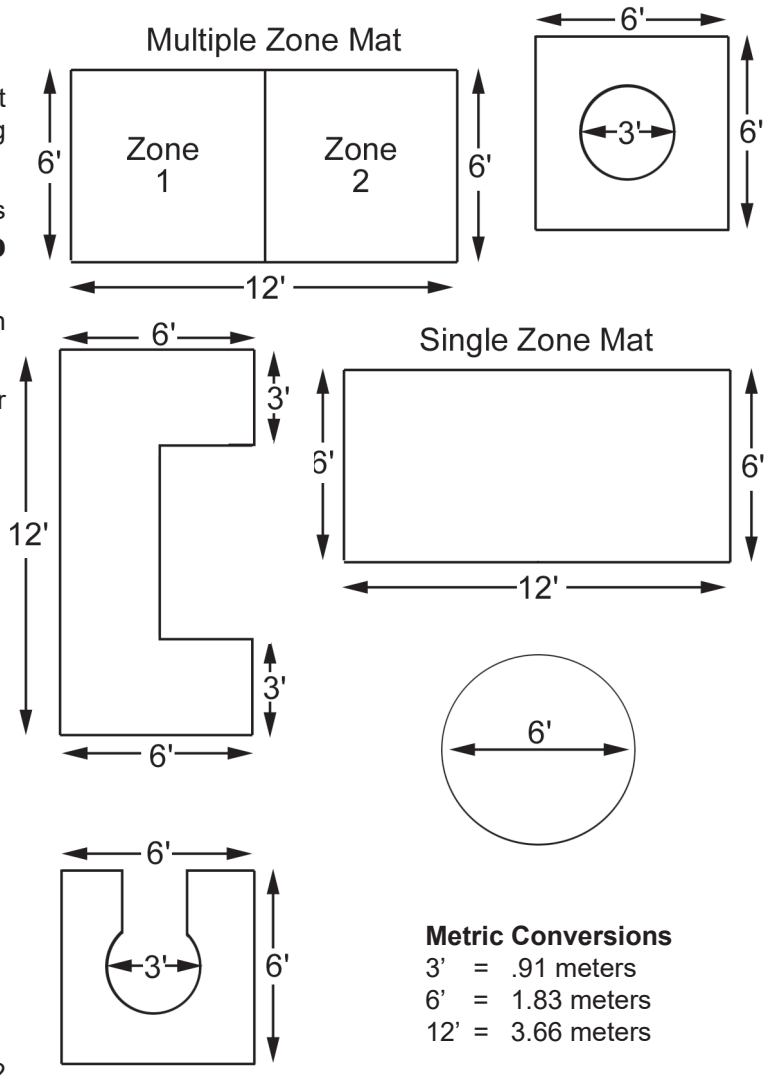
NSD Single Mat Capability

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.

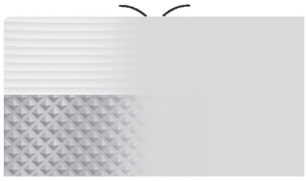




Metric Conversions

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

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.

NSD Safety Mat Label

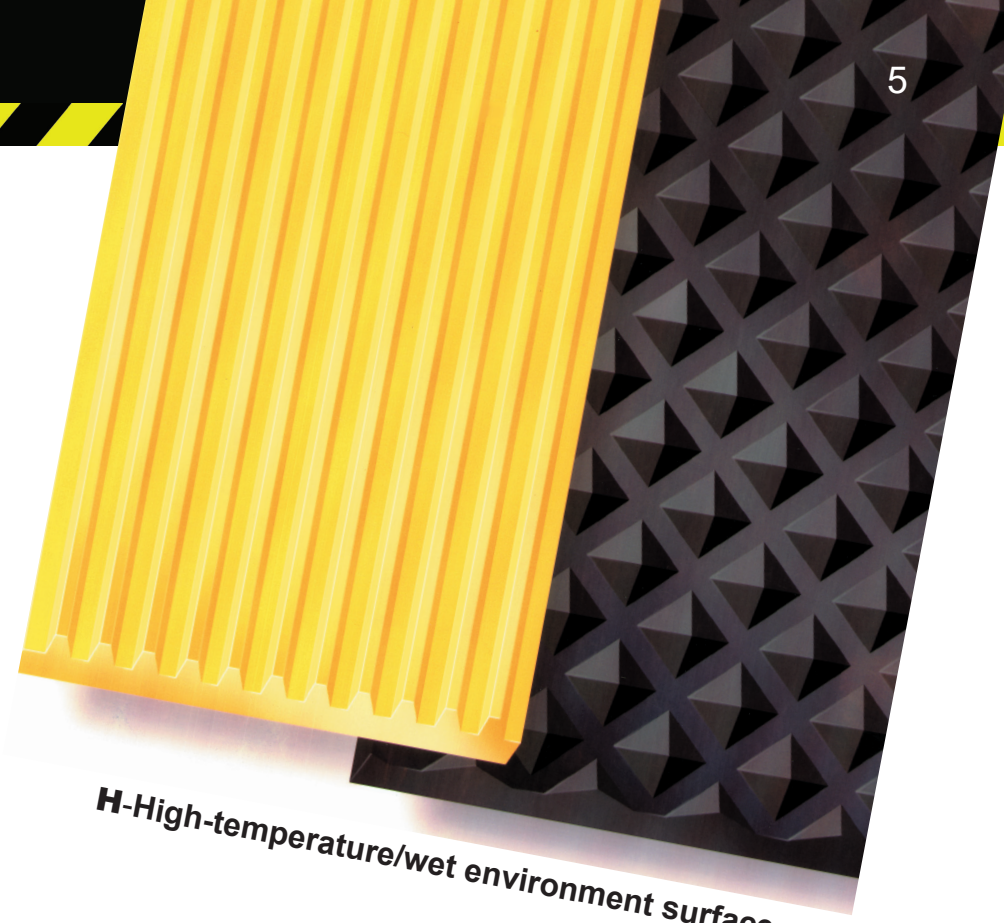
Provides immediate safety mat system information required by international guarding standards. The label is located on the mat surface. Bar coding is supplied standard to ease in receiving and inventory control. Customized labels are available.

(actual size)

NEW 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.

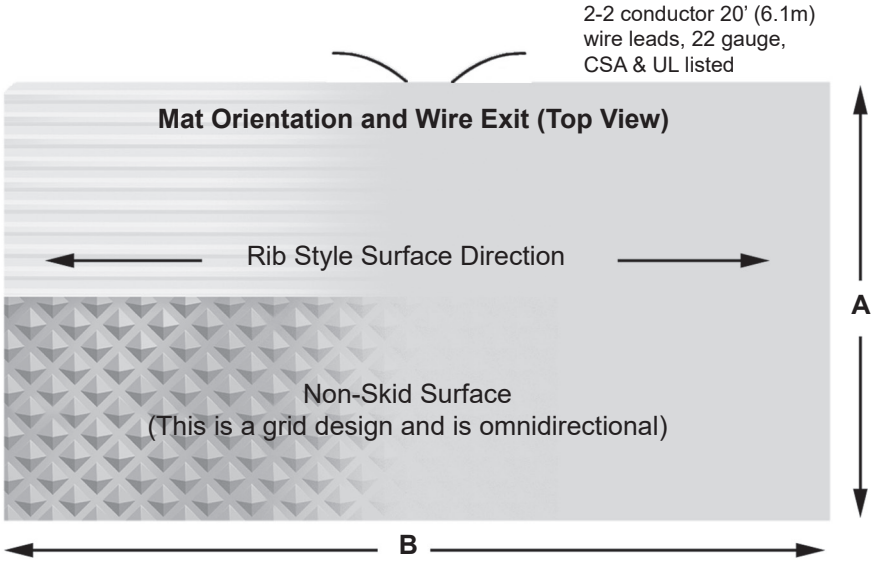


H-High-temperature/wet environment surfaces

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	



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	Y-Yellow B-Black	R-Rib Surface N-Non-Skid Surface H-High Temp. Surface (Excellent for weld splatter, molten plastic, die casting, forging operations, and wet environments)	See options shown left X E W P	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.

Perimeter Trim for NSD Mats

Perimeter Trim (Part #M001) is used for anchoring the outside perimeter of the safety mat assembly to the floor and to run the mat wiring back to a location near the mat controller. The unique wire raceway is built into the perimeter trim and is supplied standard with all Part #M001 orders. The perimeter trim adds 2.5" (64mm) to mat dimension per edge.

Ordering Procedure: Specify linear feet or dimensions followed by one of the following:

TK: (picture frame trim kit)
M001: (bulk)
M001-M: (bulk/machined)
Custom Trim Kit: (consult factory)

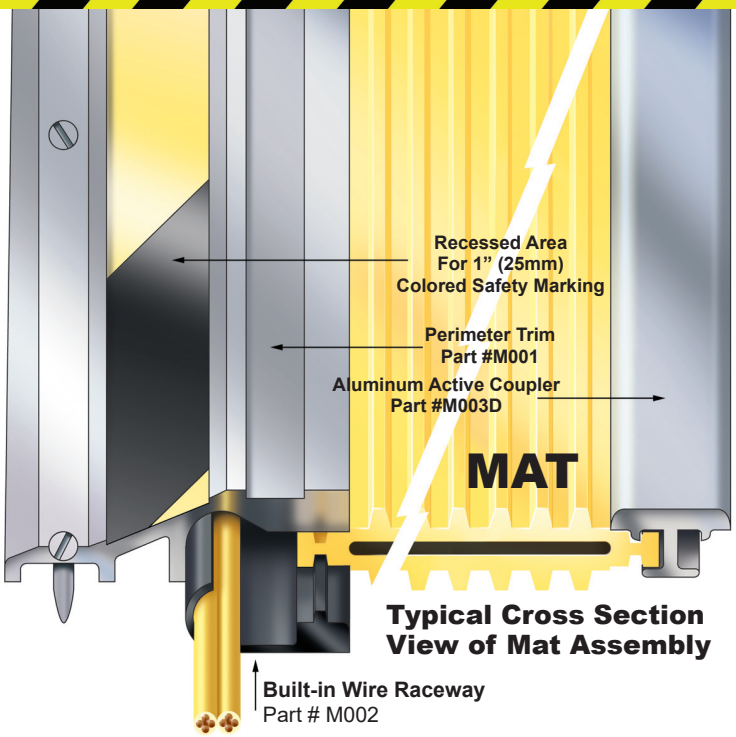
Example: Part # 2442TK.
This example is a 24" x 42" mat with a 24" x 42" picture frame trim kit; total area is 29" x 47".

Active Coupler (Part #M003D) is used whenever the mats are placed side to side or end to side. This will activate the "Active Edging™" feature which will eliminate dead zones between mats. The active coupler adds .25" (6mm) to mat system's overall dimension.

Ordering Procedure: Specify Part Number and total length required in feet.

Built-in Wire Raceway (Part #M002)

This innovative design concept provides excellent wiring protection for your safety mat system. The design provides an elevated off the floor wire raceway to protect the wiring and connections from fluids and caustic materials on the floor. It also provides a wiring harness to protect the mat wires from being pinched by improper perimeter trim installations commonly found in the industry.



Safety mats are required by law to be "fixed" in position for machine guarding applications.

Mat Wiring: Dual 20' (6.1m) 2 conductor, 22 gauge (wiring styles X and E) and 24 gauge (wiring styles W and P), multistrand wires. CSA & UL Listed.

Mat Cable Diameter: .18" (5mm)

Mat Housing: .25" (6mm) top and bottom mat housing, cross drain built-in on mat bottom, hermetically sealed, NEMA 6 IP(67) rated. Special mat housings available, consult factory.

Perimeter Trim: Part # M001 High-grade aluminum #6063-T5

Active Coupler: Part # M003D High-grade aluminum #6063-T5

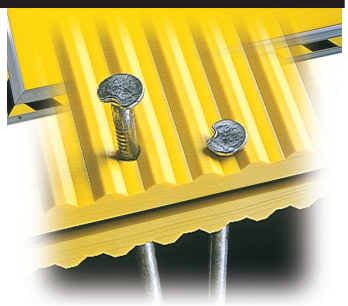
Wire Raceway: Part # M002 High-strength PVC (black)

Mat Temperature Rating: -15°C to 55°C / 4°F to 130°F

Maximum Mat Input: 24V (AC or DC) @ 75 mA

NSD vs. Steel Electrode Durability Test

Simple in-house tests for you to try!!!



1. Stab or puncture with nails, ice pick, etc. approximately ten times in various areas on the mat sensing surface.
2. Bend the mat corners and see what happens.
3. Place on uneven floors and compare.

Chemical Resistance

The mat housing has excellent resistance to acids, alkalies, and salts. Hot acids and alkalies, as well as concentrated oxidizing and organic acids, have a deleterious affect over prolonged exposure.

Mat Chemical Resistance

Water	E	Acetic Acid	F
Ethyl Alcohol	E	Gasoline	F
Sodium Chloride	E	ASTM 1 Oil	F
Bleach	E	Benzene	P
Hydrochloric Acid	F to E	Aceton	P
Sulfuric Acid	F to E	Trichlorethylene	P to F
Nitric Acid	F to E		

Key: E=Excellent; F=Fair; P=Poor

Safety Mat Controllers

(multiple styles available)

Model NSD-TR-01
Metal Box Controller in steel enclosure

System Overview

The NSD Safety Mat System controllers contain two independent control circuits which allow for shut down due to any single failure in one of the control circuits. The N.O. output circuit is controlled by two captive contact relays in series which are both monitored. If the contact in one relay should stick closed (i.e., contact weld), the other relay will shut down and the LED will indicate the fault; if the contact on the bad relay opens back up, you must reset the power to clear the fault. This relay contact monitoring provides a high degree of user safety.

Circuit Description

A low voltage (24VAC or 24VDC) signal is sent out to the safety mat(s) through two wires. Two special optically-isolated diverse redundant circuits look at the signals coming back from the mat(s) detecting the presence of proper positive and negative voltage (AC) levels and output their signals to redundant missing pulse detectors. If the voltage coming back is too high or low, the missing pulse detectors will drop out and de-energize the relay circuit. If the voltage coming back is not AC (missing either positive or negative peaks), then the signal going to the missing pulse detector will disappear which will, in turn, drop out and de-energize the relay circuit.

Redundant relay position detectors watch for a relay contact stuck in the wrong position. The circuits will lock out the reset feature of the NSD control unit if a relay contact is closed when it should be open.

Each relay has its own driver circuit to complete the redundancy of the circuits.

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Specifications

Enclosure:	NEMA 12, 13, IP 54, Steel
Input Power:	120VAC +/- 10% @ 3 watts 50-60 Hz fused
Safety Category:	Category 4
Relay Style:	Monitored force-guided captive contact safety relays
Relay Configuration:	2 N.O. Safety Relays (closed when circuit activated) 1 Aux. Output N.O. or N.C
Safety Relay Rating:	4A @ 220VAC
Reset Provisions:	Manual or Automatic
Controller Response Time:	15 ms
Self-Checking Intervals:	Every 20 ms
Number of Isolated Zones:	1 to 13 (customer specified)
Maximum Number of Mats:	20 with daisy chain wiring

Dimensions:

Board Only:

Model NSD-TR-BO

5” (127mm) x 7” (178mm) plate with 4 holes 4.25” (108mm) x 6.25” (159mm) on center

Controller:

Model NSD-TR-01 = 1 Zone

8” (203mm) x 6” (152mm) x 3.5” (89mm) with 4” (102mm) x 8.75” (222mm) hole

Model NSD-TR-02 = 2 Zones

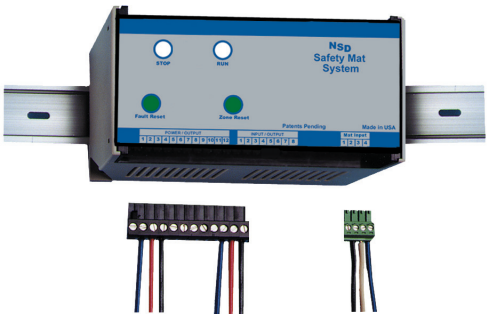
12” (305mm) x 10” (254mm) x 5” (127mm) with 8” (203mm) x 12.75” (324mm) holes

Model NSD-TR-03 & TR-04 = 3 & 4 Zones

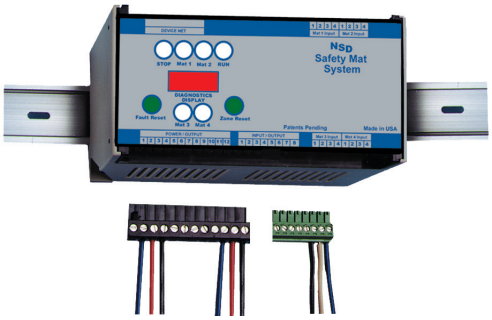
16” (406mm) x 14” (356mm) x 6” (152mm) with 13” (330mm) x 16.75” (425mm) holes

External Reset Provision:	Green push button
Indicators:	
Internal (on board):	Yellow LED = +5VDC power supply Red LED = Normally dim, brighter when mat is stepped on. Cut wire detected when not lit. Green LED = Relay contact detected closed when it should have been open when not lit. Must reset power to clear.
External:	Red LED = 1 or both relays are de-energized. Green LED = All relays are energized.
Diagnostic Message Display:	N/A
DeviceNet:	N/A
Warranty:	2 years

Model NSD-DR-01
DIN-rail Controller Mount



Model NSD-DR-04
DIN-rail Controller Mount
(with Diagnostics Message Display)



Enclosure:	NEMA 1, IP 32
Input Power:	24VDC +/- 20% @ 7 watts
Safety Category:	Category 4
Relay Style:	Monitored force-guided captive contact safety relays
Relay Configuration:	2 N.O. Safety Relays (closed when circuit activated) 1 Aux Output N.O. or N.C. 1 Fault Relay N.O.
Safety Relay Rating:	4A @ 220VAC
Reset Provisions:	Manual or Automatic
Controller Response:	19 ms per mat input used
Self-checking Intervals:	Every 20 ms
Number of Isolated Zones:	1 per controller
Maximum Number of Mats: Homerun Wiring:	1 with DR-01 4 with DR-04
Daisy Chain Wiring:	20 for either Controller
External Reset Provision:	Green push button
DIN-control Dimensions:	5.87” (149mm) length x 4.33” (110mm) width x 2.95” (75mm) height
Internal Indicators: (On Board)	Red LED = +12VDC Green LED = +20VDC Yellow LED = +5VDC Green LEDs = one for each relay (4 total)
External Indicators:	Red LED = 1 or both relays are de-energized. Green LED = All relays are energized. Yellow LEDs = 1 for each mat status (4 total)
Model NSD-DR-04:	Built-in diagnostic message display
DeviceNet:	Add suffix DN to Model #
Warranty:	2 years

Remote Status Display (RSD) *Optional for DIN-rail Controller NSD-DR-04*

The RSD (front panel shown below) may be used in conjunction with the NSD-DR-04 DIN-rail Controller. The RSD provides the machine operator and front line supervisor immediate system status and diagnostics when the DIN-rail Controller is mounted inside the machine control panel.

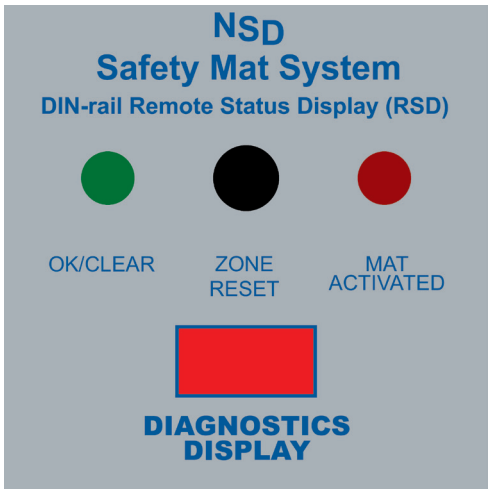
Remote Status Display components:

- Red/Green indicator lights
- Diagnostic scrolling message display with 5’ (1.52m) of connector cable
- Zone reset button

The components are mounted on a steel plate and are designed to be exterior panel mounted. The RSD option enhances safety and is a time saver at machine set-up and when maintenance diagnostics are required.

Ordering Procedure: Add suffix RSD to controller part number.

Example: NSD-DR-04-RSD.



Remote Status Display Requires:

Panel Cutout:
3” (76mm) x 3” (76mm)

Mounting Hole Dimensions:
3.7” (94mm) x 3.7” (94mm)
Center to Center

Excellent mat control for complex and multiple zone applications with built-in diagnostic message display and resets.

Metal Box Features with Pulsed Mat Monitoring

- **Controller Layout—**This control system can be ordered with 1 to 3 separate output zones. Each zone has 3 separate isolated dry contact outputs and user optional external relay check. Up to 8 separate mat inputs allow any combination of mats to control any combination of zones and, at the same time, provide instant information of faults via a scrolling diagnostic message display and mat input indicators (LED's). All safety related faults cause a lockout condition requiring internal reset.
- Universal controller for all mat sizes
- Status indicators for operator awareness
- Ultrafast response time
- Multi-lingual diagnostics available
- DeviceNetTM fieldbus network compatible (optional)
- Remote latching reset built-in
- Fault relay output built-in
- Push button reset with memory
- Meets or exceeds UL Subject 491, UL1998, OSHA, ANSI, RIA, and international standard IEC 1760-1, EN ISO 13849-1, EN ISO 13856-1
- Two-year warranty
- Made in USA

Controller Display front panel with diagnostic display and multiple zone resets

Design Criteria

Control Reliable System—Critical components are duplicated so a single component failure will not cause an unsafe condition. If a component does fail, the self-checking circuitry recognizes the fault and initiates a safe stop of the machine. The fault is then displayed on the message display.

Self-Checking Circuitry—The Mat Controller will self-check every 20 milliseconds. Self-checking is the ability to electronically verify that all of the system's critical internal circuit components and their redundant counterparts or back-ups are operating properly.

Diverse Redundancy Design Concept—The Mat Controller utilize the diverse redundancy design concept. This gives the mat system a higher level of redundancy and control reliability. The two microprocessors are of different design, and the microprocessor or parallel programs are programmed from different instruction sets written by different programmers.

Redundant Captive Contact Safety Relays—Redundant relays assure safety should an output relay fail. The Controller utilizes safety relays which have force-guided contacts. This is a configuration where the contacts are mechanically locked together so if one set of contacts weld, the other contacts cannot change state.

Alphanumeric Diagnostic Message Display—Scrolling message display shows status and fault codes. This is an excellent safety and maintenance feature unparalleled in the machine guarding industry for increasing machine uptime.

Controller Specifications

Multiple Zone Outputs Metal Box Controller
SIL3, PL e, Category 4 Design

Input Power:	20-40VDC @18 Watts 85-125VAC @ 19 VA 200-245VAC @ 19 VA	Requires removal of transformer All AC voltages work with 50 or 60 Hz
Max # of Mats:	Up to 8 separate mat inputs for homerun wiring	
Scan Time:	19 mSec/mat input	Pulsed Mat Monitoring
Outputs:	*SAFETY*: 2 N.O. outputs (open when RED) per zone *AUXILIARY*: 1 N.O. or N.C. output per zone *FAULT*: Normally open (N.O.)	Monitored Monitored 1 to 3 output zones
Zone Reset Inputs:	3 inputs for N.O. push buttons for manual resetting of each zone located on the control panel door	Monitored
Settings:	Jumpers to select manual or automatic reset, # of mats/zone and how many zones, fault reset and external relay checking	
Indicators Internal:	Red LED on power supply board	ON= +12V supply ok
External:	8 Yellow LED's (1 per mat input) on panel door 3 Red/Green LED's (1 set per zone) on panel door	Yellow LED on = Standing on mat Yellow LED flashing=Fault with mat/circuitry Green LED on = Relays energized Red LED on = Relays de-energized Red LED flashing = Relay fault
External Display:	Diagnostic scrolling alphanumeric message display (4 character LED)	
Safety Relay Contact Rating:	8 AMP Rating @ 220VAC 8 AMP Rating @ 120VAC	
Safety Relay Configuration:	Dual captive contact self-checking safety relays	
Temperature Range:	0° to 50° C	
Self-Checking Intervals:	Every 20 milliseconds	
Enclosure:	NEMA 12 lockable 18 gauge painted steel (IP 64)	Dimensions on next page
Multi-Lingual Message Display:	Consult factory for specific languages desired	

The following standard provisions are designed to facilitate the guarding system interface and monitoring desired (usage is optional):

External Relay Check Provision—The External Relay Check allows the Mat Controller to monitor a pair of external relays in series using the external relays secondary set of DRY contacts, provided they are N.C. force-guided contacts. The captive or force-guided contacts will maintain the identical position as the primary set of contacts on the external relays, except the secondary set of contacts are wired to signal the reverse of the primary (i.e., primary contacts are N.O. and secondary contacts are N.C.). The circuit looks for both closing and opening of the external relay contacts. The Mat Controller provides a safe external relay check.

Application—Monitoring external relay contacts for shorts, opens, or welded contacts.

Auxiliary Output Contact Provision—The Auxiliary Output contact provides a N.O. or N.C. isolated (DRY) contact output to signal the condition of the mat system. The output is used in conjunction with the standard pair of output relays that are wired to the safety circuit of the equipment.

Application—Signal to PLC, etc.

NSD Mat Controller Ordering Procedure

DeviceNet™ fieldbus network compatible. Add suffix DN to controller part number for this optional feature.

Example Part #

NSD - A - 1 - 7 - 2 - 7

A - **Metal Box Controller**-Mat control and message display mounted in stand alone NEMA 12 lockable enclosure.

B - **Board only system supplied on a mounting back plate**-Mat controller boards and message display to be installed into an existing control panel.

C - **Custom Control Panel** (consult factory)

Mat Controller input power
1-120VAC
2-220VAC
3-24VDC
(24VDC must be used for European Projects "CE")

Number of individual mats (inputs) to be wired back to Mat Controller.
Specify quantity:
1 to 8

Number of isolated control zones (outputs) desired.
1-1 Zone
2-2 Zones
3-3 Zones
4-4 Zones (requires larger control box)
Etc.

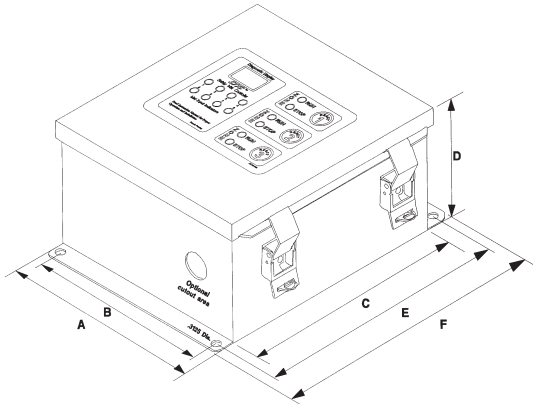
Optional mat plug receptacles mounted on the Mat Controller. Receptacles require mats with wiring style "R."
Specify quantity:
1 to 8

Mat Controller Dimensions

NSD Metal Box Controller (shown below)
NEMA 12 (IP 64)

Inches/Millimeters

Dim A	*Dim B*	*Dim C*	*Dim D*	*Dim E*	*Dim F*
9.00”	7.75”	10.00”	5.25”	10.75”	11.50”
229	197	254	133	273	292



*Note: Enclosure mounted plug receptacles (optional) are mounted on the enclosure bottom. Requires 3” (76mm) clearance.

Controller Board Only System mounted on backplate (no enclosure)

Printed Circuit Boards Dimensions

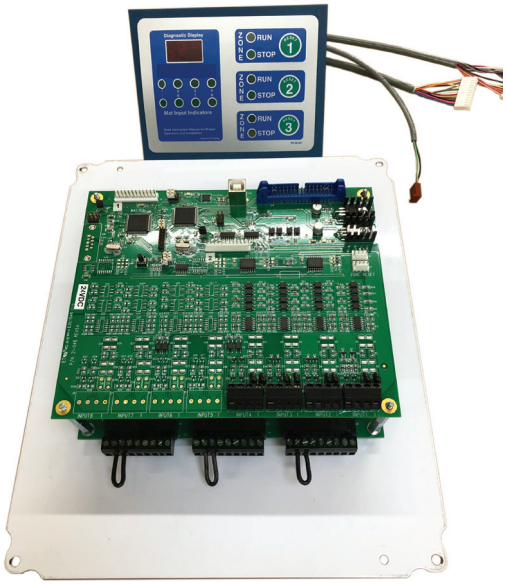
6.5 / 165	x	8 / 203	inches / millimeters

Mounting Plate Size that circuit boards are mounted on

8.87 / 225	x	8.87 / 225	inches / millimeters

Mounting Backplate Holes

8 / 203	x	8 / 203	inches / millimeters



Additional products to achieve your ***Total Safety Solution***!!!

- Safety Light Curtains (All Types and Styles)
- Universal Safety Controller HUB / Safety PLC
- Safety Mat Systems and Controls
  - Area Guarding Systems
  - NSD Safety Mat Systems
  - STTS Safety Mat Systems
  - Direction of Travel Mats
  - High-Temp Welding Mats
- Ergonomic Palm Buttons
  - UltraTouch Palm Buttons
- Safety Interlock Switches (including explosion proof)
- Customized “control reliable” controls for dual solenoid activated pneumatic and hydraulic valve applications
- Fencing with Interlocks
- E-Stop Buttons
- Stack Lights
- Energy Isolation and Single Point Lockout Systems
- Plant Surveys, Risk Assessment & Installation Services
- Customized Control Panels; Stainless Steel enclosures available for all products

Punch Press / Metal Stamping Industry

- Resolver or Rotary Cam Based Clutch / Brake Controls - OSHA/ANSI Compliant
- Punch Press Automation Controllers
- Time-Based Brake Monitors
- Programmable Limit Switches
- Die Protection & Tonnage Monitoring Systems
- Servo Feed Interfaces

Press Brake Guarding and Controls

- Press Brake Guarding for Mechanical, Air Clutch and Hydraulic Press Brakes
- Press Brake Control Systems





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We have designed our equipment to the very highest performance and safety standards known to the current technological state of the art, as evidenced by our U.S.A. and foreign patents issued and pending. However, the installation, usage, and suitability, and fitness of our equipment for any purpose, known or unknown,is interdependent upon the performance of other equipment not manufactured, installed, secured or maintained by Pinnacle Systems, Inc.

We cannot and do not accept responsibility for any overall system performance when factors such as these, are beyond our control.

Part Number: NSD-B-BOBA-FO