

# ISB

## MERLIN 4000

Unique Concept  
Designed Specifically  
to Safeguard Today's  
Most Advanced  
Press Brakes



Safety is our passion, **YOUR** safety is our mission.

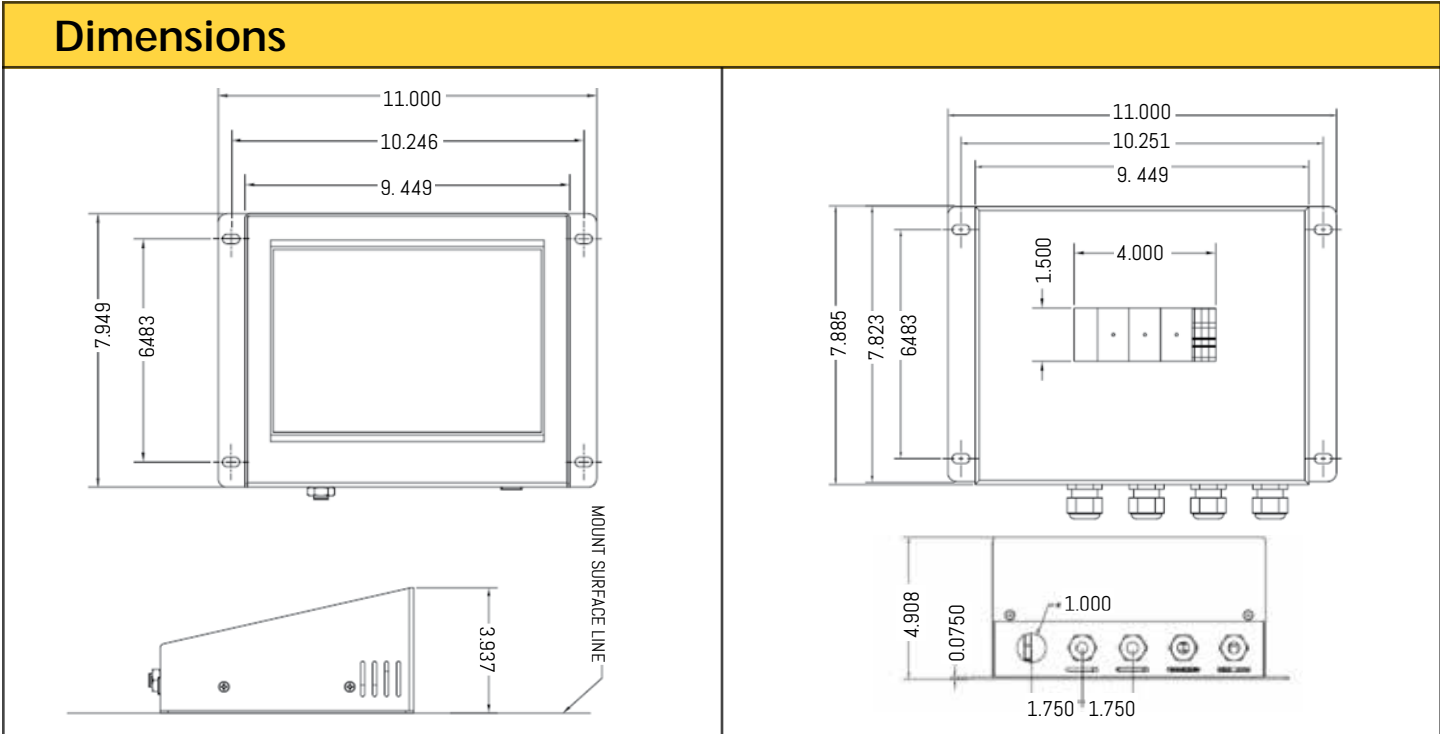
# Merlin 4000



Press brakes are difficult machines to guard, simply because the part's flange profiles generally changes from step to step during the fabrication process. A standard safety light curtain can not provide protection because of these varying part profiles. Only the unique MERLIN concept, pioneered by ISB, can learn each flange profile while making your initial sample part and automatically create a window exactly the proper size required for each specific cycle. This opening may change from stroke to stroke automatically, completely determined by our processor, not your operator or set up personnel.

**No Decisions.**  
**No Errors.**  
**No Complications.**

## THE MOST ADVANCED MERLIN PRESS BRAKE GUARDING SYSTEM JUST GOT BETTER!



## Merlin 4000

### Merlin 4000 Features

- New compact touch screen based HMI panel for easier use.
- Unlimited job storage with job sharing.
- Each job can have up to 99 steps.
- Easy jobs back-up & restore using a USB memory stick.
- USB & Ethernet networking capability.
- Select-stop programmable stroke stop for each step to allow efficient bending of small or narrow parts. \*optional items may be required.
- Password protected set-up and supervisor levels.
- Operates exclusively with ISB's MX light curtain columns, either 14 mm or 22 mm detection capability, and a maximum of 10 meters of coverage.
- Built-in light curtain muting using two external inputs.
- Easy teaching of the part flanges and support arms by simply following the HMI's step by step instructions and pressing the provided remote learn foot switch as initial sample part is being fabricated.
- Part flanges are dynamically monitored to prevent teaching of fake parts / operator abuse / permanent blockages.
- Stationary support arm size limits to prevent abuse. (adjustable & password protected)
- Floating beam to allow flat sheets of metal without flanges to pass through the light curtain.
- Blanking tolerance to allow for slight misposition for taught flanges.
- On screen diagnostics / troubleshooting.

- Each beam of the light curtain uses an indicator LED to display a blockage, and a blinking LED to show the size and location of the taught flange during each step.
- Bumping mode is included to allow for bending of the cones, cylinders or other one of a kind off shaped parts.
- No significant addition to set-up time
- No altering of rapid advance or slow speed of press brake.
- Can be used on any type of press brake. (mechanical, hydraulic, servo-brakes, up-acting or down-acting)
- Available in English, Spanish and French.

### Merlin 4000 Indicators Now Interactive

When running a programmed job in the press brake, the Merlin 4000 LED Indicators now flash from step to step to give the operator a visual aid of where to hold the proper flange size and location. Once the part is properly located, the LEDs stop flashing and the machine can then be operated.



**Unsatisfied  
Flashing  
Blanking  
Indicator**



**Incorrect Object  
Size and  
Placement**



**Correct Object  
Size and  
Placement**

# Merlin 4000

## System Layout

Merlin 4000 HMI  
MXC4000-01



Merlin 4000 Interface Wiring Box

120 VAC Version  
MXW4000-01

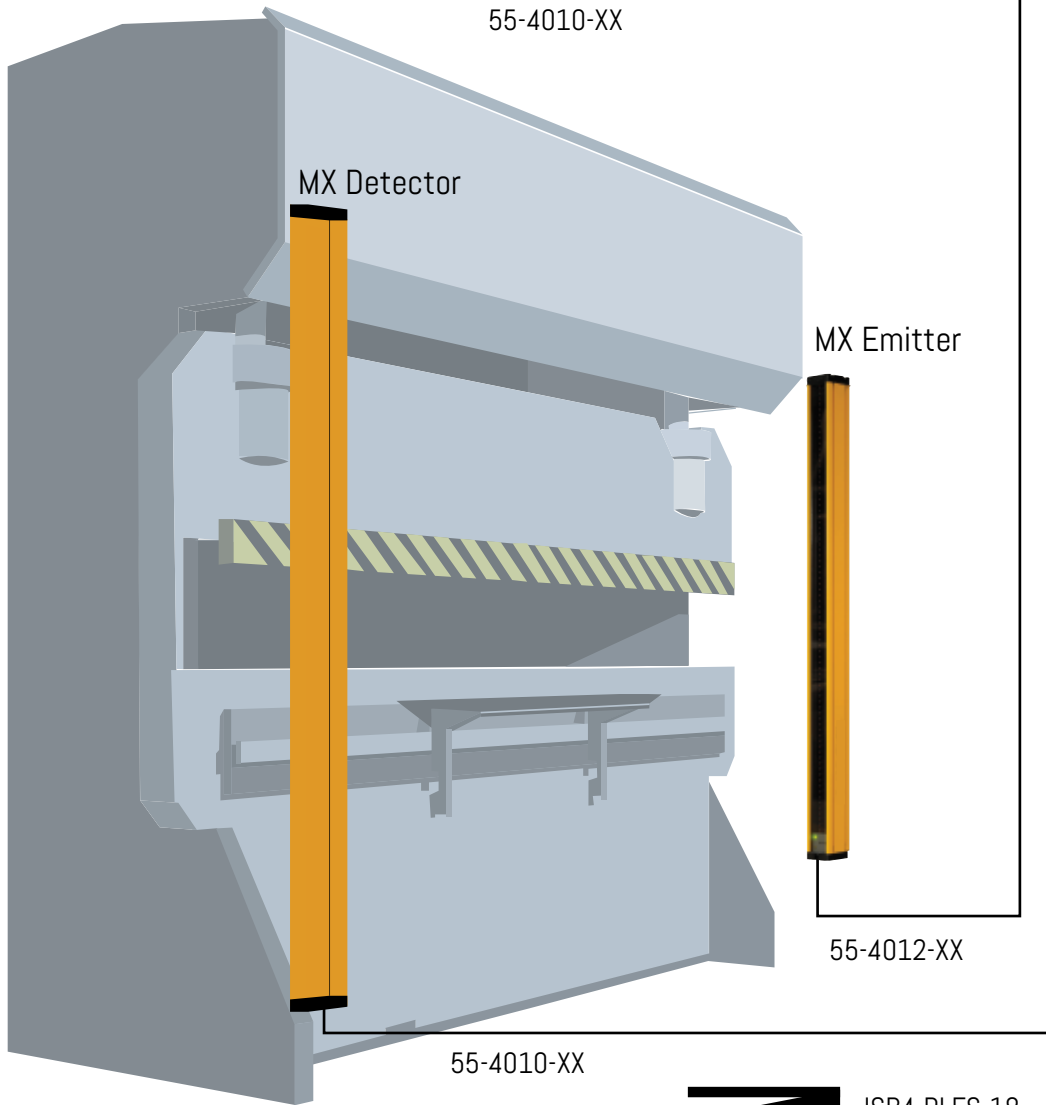
24 VDC Version  
MXW4000-11



Machine Top + Mute

Machine Stop Circuits

55-4010-XX



MX Detector

MX Emitter

55-4012-XX

55-4010-XX



**Merlin 4000 HMI Ordering information:**

MXC4000-01

**Merlin 4000 Interface Wiring Box Ordering information:**

Merlin 4000 Wiring Box 120 VAC

MXW4000-01

Merlin 4000 Wiring Box 24 VDC

MXW4000-11



**MX 4000 Light Curtains 14 mm detection capabilities**

Protective Field	Height Emitter Unit Model	Detector Unit Model
(24") 600 mm	MX4014-600	MX4214-600
(30") 750 mm	MX4014-750	MX4214-750
(36") 900 mm	MX4014-900	MX4214-900
(42") 1050 mm	MX4014-1050	MX4214-1050
(48") 1200 mm	MX4014-1200	MX4214-1200

\* Consult factory for other sizes.

**MX 4000 Light Curtains 22 mm detection capabilities**

Protective Field	Height Emitter Unit Model	Detector Unit Model
(24") 600 mm	MX4022-600	MX4222-600
(30") 750 mm	MX4022-750	MX4222-750
(36") 900 mm	MX4022-900	MX4222-900
(42") 1050 mm	MX4022-1050	MX4222-1050
(48") 1200 mm	MX4022-1200	MX4222-1200

\* Consult factory for other sizes.

# Merlin 4000 Components

## Remote Learn Foot Switch

Ordering information for remote learn foot switch:	
ISB4-RLFS-18	



## MX4000 Emitter & HMI Cables

Ordering information for MX 4000 emitter cables:	
5 m cable length	55-4010-50
10 m cable length	55-4010-10
15 m cable length	55-4010-15



## MX4000 Detector Cables

Ordering information for MX 4000 detector cables:	
3 m cable length	55-4012-03
5 m cable length	55-4012-05
10 m cable length	55-4012-10



## MX4000 Mounting Bracket

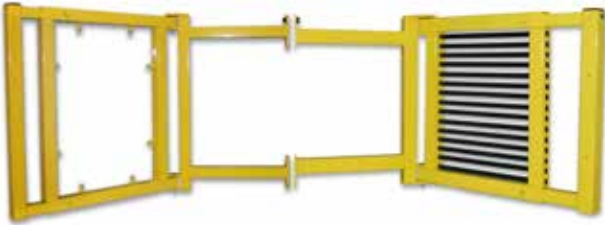
Ordering information for MX split collar mounting bracket:	
Set of 4 (plastic)	02-4006-04



## Light Curtain Swing Away Side Guards

ISB custom built welded light curtain mounting brackets have built-in swing away side panels to allow for easy die changeover. Side panels available in lexan or removable horizontal bars.

Ordering information for preferred Lexan side screens:	
MTSSG-24-PLX	(for 600 mm / 24" light curtains)
MTSSG-30-PLX	(for 750 mm / 30" light curtains)
MTSSG-36-PLX	(for 900 mm / 36" light curtains)
MTSSG-42-PLX	(for 1050 mm / 42" light curtains)
MTSSG-48-PLX	(for 1200 mm / 48" light curtains)
Substitute -HB for PLX for all P/N's if horizontal bar side screens are desired.	



## ■ How Does Merlin 4000 Work

Merlin 4000 will recognize the change in part-profile for multiple bends, and sequentially negate only the beams necessary for the current step to allow the press brake to complete its cycle.

**How is a Merlin 4000 programmed? Simple...Remote Learn Foot Switch.**

### **Remote learn foot switch.**

- Select the program mode and place the part in position for the first bend.
- Teach the part profile by pressing the remote learn foot switch.
- Cycle the press brake making the first bend.
- Position the part in place for the next bend and teach the profile with the remote learn foot switch.
- Cycle the press brake.
- Continue until the part is complete.

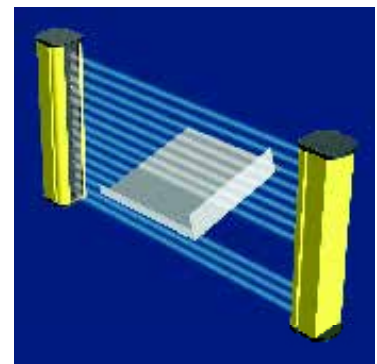
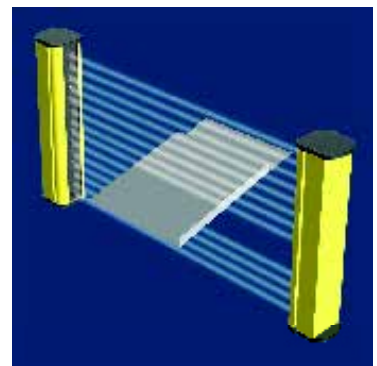
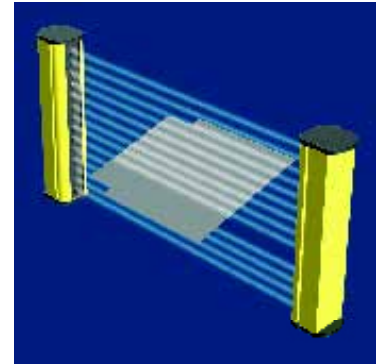
### **Floating beam and blanking tolerance**

What if a bending step does not have a flange and the part does not consistently block a beam?

- The floating is automatically enabled when needed.
- The floating beam function allows up to 3 beams.
- The blanking tolerance allows small mispositioning at the edges of the flange up to 3 beams.

### **Run job.**

Once your part has been programmed, you can then store the program sequence in memory and recall it by using numeric code usually a drawing number.

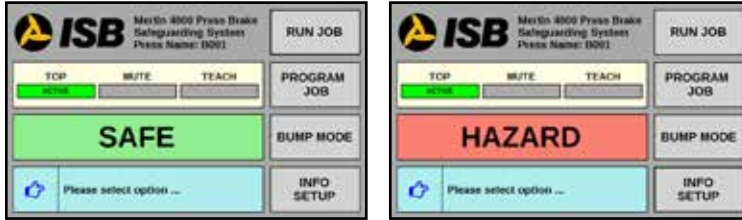


## **HOW DOES MERLIN 4000 ALLOW PART MOVEMENT DURING BENDING? SIMPLE... BUILT IN MUTING.**

Merlin 4000 is interfaced to the machine control to receive signals when the ram is at the top position and at the mute point (usually 6 mm above the pinch point).

Once at the mute point, Merlin 4000 ignores the interruption of beams by the part moving upwards while being bent, thus enables the ram to return to the top stop position.

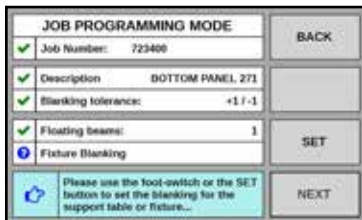
# Merlin 4000 Screens



Main screens showing SAFE and HAZARD modes. Hotkeys for RUN, PROGRAM and BUMP mode make for easy navigating. The external input signal status for TOP of stroke, MUTE, and TEACH are displayed for easy troubleshooting.



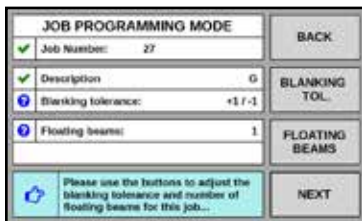
Main screen showing MUTED mode. Built in muting allows for moving flanges during the bending and upstroke portion of the cycle. Note that the external input status for the top of stroke and mute has changed. The machine is no longer at the TOP and is now receiving a MUTE signal from the press brake's controller.



When programming a part, as steps prompted on bottom line are completed, a green check appears next to each task. Current task prompted is to set for non-moving support arms or table. To prevent unnecessary exposure, there are software limits for the maximum number of allowed blocked beams. These limits can be changed but are supervisor password protected.



The last line always prompts the user with easy to follow instructions. This screen is instructing the set-up person to teach Step 1 of the part being made by holding it in place and pressing the learn foot switch.



Easy job programming stored by job number and part description. The FLOATING BEAMS and BLANKING TOLERANCE are easily set using hotkeys. The last line of the screen prompts the operator of the next task.



<div style="border: 1px solid gray; padding: 5px;"> <p>Merlin 4000 Press Brake Safeguarding System</p> <p style="text-align: center;"><b>SAFE</b></p> <p>Please use the buttons on the right to select bending job...</p> </div>	<div style="border: 1px solid gray; padding: 5px;"> <p>Job Number: <input type="text"/> ENTER</p> <p>Please enter the job number you want to run</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>⊗</td> </tr> <tr> <td>6</td><td>7</td><td>8</td><td>9</td><td>0</td><td>CANCEL</td> </tr> </table> </div>	1	2	3	4	5	⊗	6	7	8	9	0	CANCEL
1	2	3	4	5	⊗								
6	7	8	9	0	CANCEL								

Once jobs are stored, hotkeys will allow you to see RECENT JOBS or BROWSE your internal library. The JOB NUMBER key allows you enter the stored job number.

<div style="border: 1px solid gray; padding: 5px;"> <p>Job Number: 01234 Bending steps: 3 SAVE&amp;RUN</p> <p>Description: BOX 5 - 8 BENDS</p> <p>Current Step: 03 TEACH</p> <p style="text-align: center;"><b>SAFE</b></p> <p>Ready to bend. Hold the part in place and cycle the press... PREVIOUS STEP</p> <p style="text-align: right;">NEXT STEP</p> </div>	<p>Once a job is taught and stored in memory, the operator can run parts normally. In the event there is a need to restrike or skip steps, use the PREVIOUS STEP or NEXT STEP hotkey, the last line of screen prompts the operator of the next task.</p>
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<div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center;">JOB PROGRAMMING MODE</p> <p>Job Number: <input type="text"/> ENTER</p> <p>Enter a number for this job OR press TEMPORARY JOB (Job will be saved as temporary) TEMPORARY JOB</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>⊗</td> </tr> <tr> <td>6</td><td>7</td><td>8</td><td>9</td><td>0</td><td>CANCEL</td> </tr> </table> </div>	1	2	3	4	5	⊗	6	7	8	9	0	CANCEL	<div style="border: 1px solid gray; padding: 5px;"> <p>Job Number: TEMP Bending steps: 3 END JOB</p> <p>Description: Temporary Job</p> <p>Current Step: 01 RESTART JOB</p> <p style="text-align: center;"><b>SAFE</b></p> <p>Workpiece is properly aligned. Ready to bend... PREVIOUS STEP</p> <p style="text-align: right;">NEXT STEP</p> </div>
1	2	3	4	5	⊗								
6	7	8	9	0	CANCEL								

If programming a job that you are not ever going to run again, a TEMPORARY JOB mode exists to speed up the job set-up and to avoid so many extra jobs in the memory list.

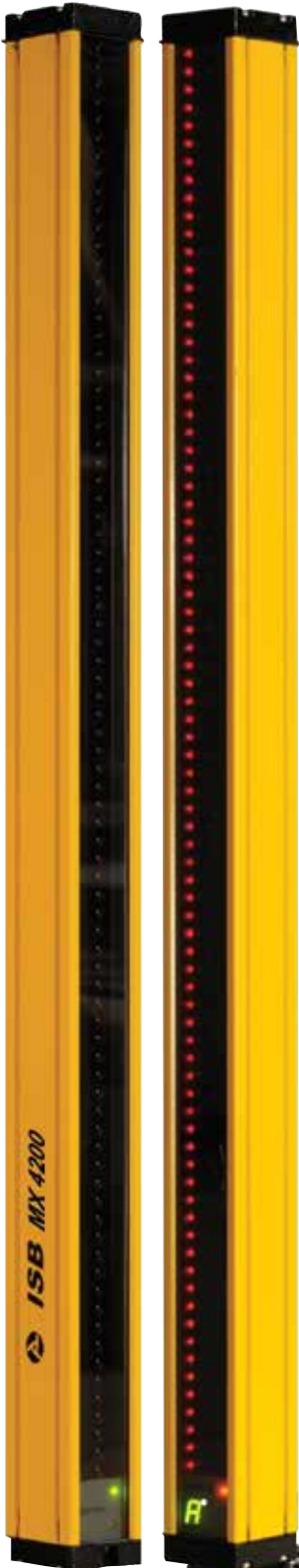
<div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center;">JOBS BACKUP</p> <p>JOBS BACKUP options</p> <p>Jobs Backup options require SUPERVISOR password to be entered</p> <p>Press BACKUP to save the job folder content to a removable media storage unit</p> <p>Press RESTORE to restore the content of the job folder from a removable media storage unit</p> <p>Use the buttons to access each option.</p> </div>	<div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: right;">BACKUP</p> <p style="text-align: right;">RESTORE</p> <p style="text-align: right;">CANCEL</p> </div>
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Easy BACKUP and RESTORE functions are supervisor password protected.

<div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center;">CHANGE PASSWORDS</p> <p>CHANGE PASSWORDS options</p> <p>Changing Supervisor Password requires SUPERVISOR password to be entered</p> <p>Changing Set Up Password requires SETUP or SUPERVISOR password to be entered</p> <p>Use the buttons to access each option.</p> </div>	<div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center;">PASSWORD SETUP</p> <p>Password: <input type="password"/> CANCEL</p> <p>Press CHANGE to modify the SUPERVISOR password. CHANGE</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>⊗</td> </tr> <tr> <td>6</td><td>7</td><td>8</td><td>9</td><td>0</td><td>APPLY</td> </tr> </table> </div>	1	2	3	4	5	⊗	6	7	8	9	0	APPLY
1	2	3	4	5	⊗								
6	7	8	9	0	APPLY								

The SETUP PASSWORD and SUPERVISOR PASSWORD can be changed following easy to follow prompts.

## Other Products Offered By ISB



### *Saf-Touch 2*

The most reliable ergonomic palm buttons  
Effective in reducing carpal tunnel syndrome.



### Resolver Based Press Controls

With built in die monitoring  
ETL certified for your air clutch mechanical presses  
8 PLS



### GPA Dual Safety Valves

Self monitoring 120 V coils  
24 V optional



### Safety Relay

24 VDC



### **MERLIN**

#### MX Series Light Curtains

The MX4200  
CE Type 4 safety light curtains.  
With multiple blanking, floating & muting features.



### ISB Adjustable Die Safety Blocks

Provide safety during set up and maintenance for power presses.



# The Latest In ISB's Safety Innovations



The SLS-400 is easily installed, connected and set up in no time.

The SLS-400 is an easy to use, low maintenance safety scanner designed to drastically improve the safety of your workplace.

Introducing ISB's newest safety product.  
The SLS-400 area scanner

Designed to monitor intrusions into hazardous or restricted areas.

Provides protection with two distinct programmable zones; Warning & Stop.

The SLS-400 is reliable in hazardous conditions and continues to protect even when subjected to weld sparks, dust or ambient light.

Solid enclosure makes it durable, thus able to withstand the harsh conditions of many factory settings.

### Most ideal applications;

- Large CNC cutting tables
- Robotic entry cells
- CNC routers
- Laser, plasma and water jet machines
- Many other large area monitoring requirements

## The FAB-MAT

The FAB-MAT immediately signals automated and computerized equipment to stop when someone enters the area protected by FAB-MAT.

Guards potentially dangerous areas common to metal fabricating such as CNC punching machines, benders, formers, turret punch and lathe.

FAB-MAT can be used to actuate doors, burglar alarms, annunciation bells, lights and signaling devices. The FAB-MAT is appropriate around UV drying equipment, it can be used as a step tread on mass transit vehicles.



### Features;

- 4-wire configuration
- Exclusive patented mat construction allows complete flexibility in any direction
- Reliable & long lasting service in severe industrial applications
- heavy duty non-skid corrugated surface or smooth surface for clean environment
- Available in black or yellow
- Custom sizes and shapes available.

### The FAB-MAT is versatile and efficient.

FAB-MAT protects the working envelope of robots (i.e., pick and place robots, paint spraying robots).

It can be used to stop overhead or tabletop conveyor systems and material handling equipment.

For more information or general specifications that are common for all MX safety light curtains, refer to our *Type 4 Safety Light Curtains* catalog.



The Merlin 4000 Light Curtain Columns comply with the following standards:  
IEC 61508 (SIL 3) | IEC 61496 (Type 4) | IEC 61062 (SILCL 3) | EN ISO 13849 (PL e, Category 4)

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

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**Safety is our passion,  
YOUR safety is our mission.**

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