ISB

# MERLIN 4000

Unique concept designed specifically to safeguard today's most advanced press brakes.


Distributed By

HERITAGE MACHINERY

Phone: 248-693-4796 sales@heritagemachinery.com

Safety is our passion, YOUR safety is our mission.

WWW.ISBLITE.COM

# Merlin 4000



Press brakes are difficult machines to guard, simply because the part's flange profiles generally change 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.**

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**THE MOST ADVANCED PRESS BRAKE GUARDING SYSTEM**

**JUST GOT BETTER!**

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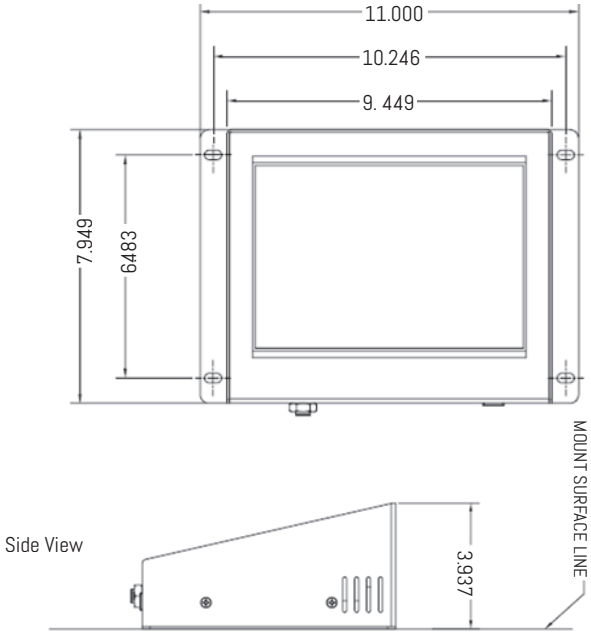
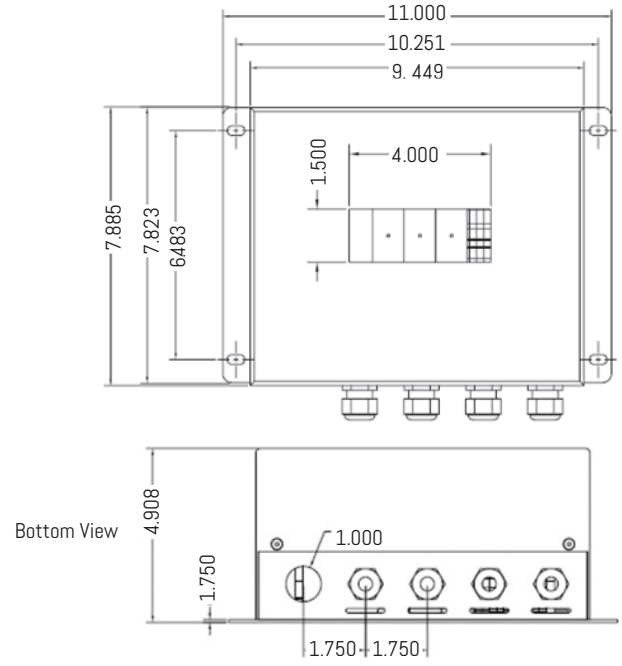
**DIMENSIONS ( in inches )**

**Merlin 4000 HMI**




**MX4000 Interface Box**



## MERLIN 4000 FEATURES

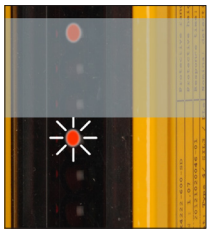
- New compact touch screen based HMI panel for easier use.
- Unlimited job storage with job sharing.
- Each job can have up to 99 steps.
- Easy jobs back-up & restore using a USB memory stick.
- Select-stop programmable stroke stop for each step to allow efficient bending of small or narrow parts.
- Password protected set-up and supervisor levels.
- Operates exclusively with ISB's MX4200 Safety Light Curtains, either 14 mm or 22 mm detection capability, and a maximum of 10 meters of coverage.
- Built-in 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 beams 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)
- Operates in English, Spanish and French.

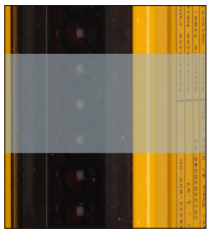
## MERLIN 4000
## INDICATORS

When running a programmed job in the press brake, the MX4000 Series Safety Light Curtains 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 LED's 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 ( front only )

| Merlin 4000 HMI |
| --- |
| MXC4000-01 |

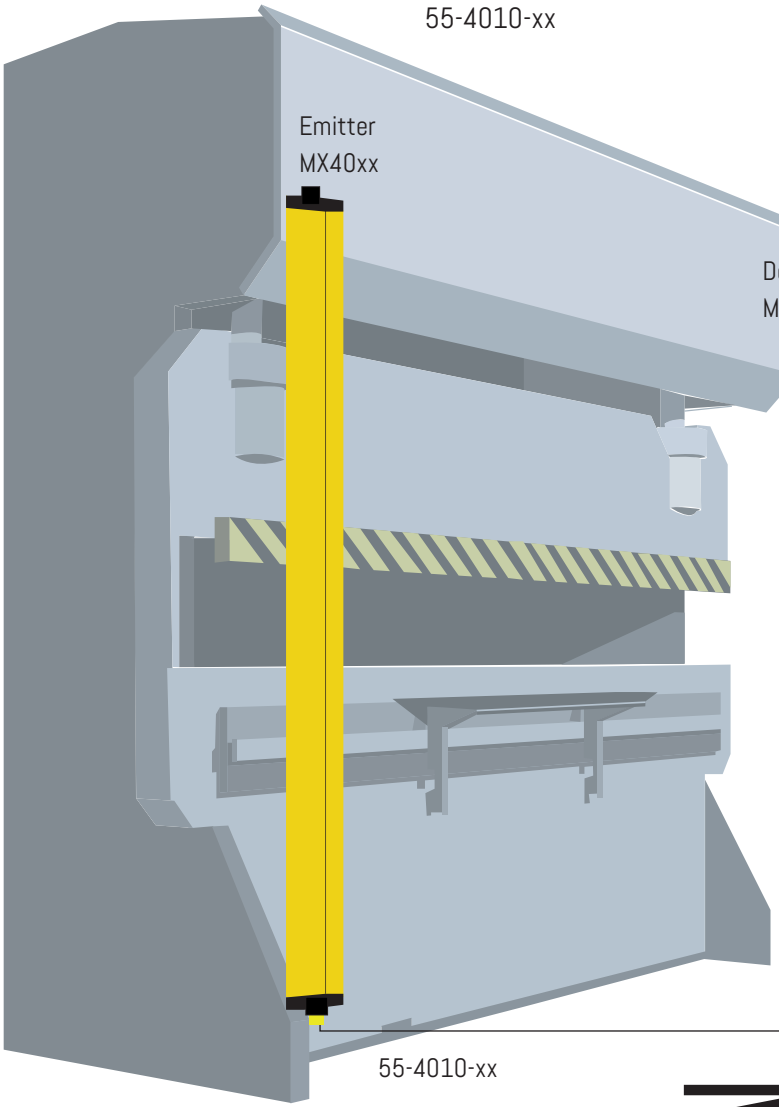
| Merlin 4000 Interface Wiring Box |
| --- |
| MXW4000-01 (120 VAC) |
| MXW4000-11 (24 VDC) |



Machine Top + Mute

Machine Stop Circuits

55-4010-xx




55-4012-xx

55-4010-xx

ISB4-RLFS-18

* xx signifies model options on pages 5 and 6

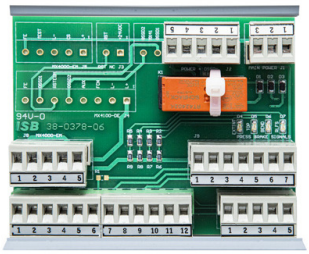
# Merlin 4000 HMI & MX Light Curtain Interface Wiring Box

| MERLIN 4000 HMI | |
|---|---|
| **Ordering information:** | MXC4000-01 |


MXC4000-01


MXW4000-xx

| MERLIN 4000 INTERFACE WIRING HARDWARE | |
|---|---|
| **MX42xx Front Protection** | |
| Merlin 4000 Wiring Box 120VAC | MXW4000-01 |
| Merlin 4000 Wiring Box 24 VDC | MXW4000-11 |
| Merlin4000 interface PCB 24 VDC | MXP4000-01 |
| **MX42xx Front Protection & MX41xx Rear Protection** | |
| Merlin 4000 Wiring Box 120VAC | MXW4000-02 |
| Merlin 4000 Wiring Box 24 VDC | MXW4000-12 |
| Merlin4000 interface PCB 24 VDC | MXP4000-02 |
| **MX42xx Front Protection + Fab-Mat Rear Protection** | |
| Merlin 4000 Wiring Box 120VAC | MXW4000-03 |



MXP4000-01

# MX4200 Safety Light Curtains

| MX4000 LIGHT CURTAINS 14mm DETECTION CAPABILITIES | | |
|---|---|---|
| Protective Field Height | Emitter Unit Model | Detector Unit Model |
| (24") 600mm | MX4014-600 | MX4214-600 |
| (30") 750mm | MX4014-750 | MX4214-750 |
| (36") 900mm | MX4014-900 | MX4214-900 |
| (42") 1050mm | MX4014-1050 | MX4214-1050 |
| (48") 1200mm | MX4014-1200 | MX4214-1200 |

* Consult factory for other sizes.

| MX4000 LIGHT CURTAINS 22mm DETECTION CAPABILITIES | | |
|---|---|---|
| Protective Field Height | Emitter Unit Model | Detector Unit Model |
| (24") 600mm | MX4022-600 | MX4222-600 |
| (30") 750mm | MX4022-750 | MX4222-750 |
| (36") 900mm | MX4022-900 | MX4222-900 |
| (42") 1050mm | MX4022-1050 | MX4222-1050 |
| (48") 1200mm | MX4022-1200 | MX4222-1200 |

* Consult factory for other sizes.

# Merlin 4000 Components

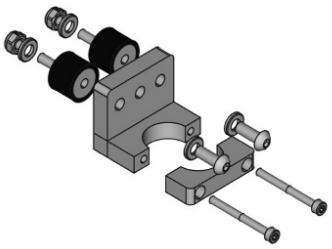
| REMOTE LEARN FOOT SWITCH: |
|---|
| **Ordering Information** |
| ISB4-RLFS-18 |

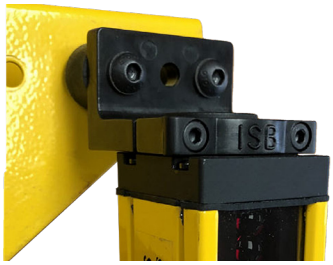
| MX4000 DETECTOR CABLES: | |
|---|---|
| **Ordering Information** | |
| 3m cable length | 55-4012-03 |
| 5m cable length | 55-4012-05 |
| 10m cable length | 55-4012-10 |

| MX4000 EMITTER CABLES: | |
|---|---|
| **Ordering Information** | |
| 5m cable length | 55-4010-05 |
| 10m cable length | 55-4010-10 |
| 15m cable length | 55-4010-15 |

## MX4000 Mounting Bracket

| MX SPLIT COLLAR MOUNTING BRACKET WITH SHOCK MOUNT | | |
|---|---|---|
| **Ordering Information** | | |
| Set of 4 | 02-4007-04 | Plastic |
| Set of 4 | 02-4008-04 | Aluminum |



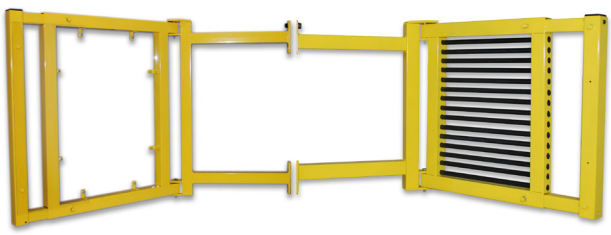



## Light Curtain Swing Away Side Guards

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 polycarbonate or removable horizontal bars.

| PREFERRED POLYCARBONATE SIDE SCREENS: | |
|---|---|
| **Ordering Information** | |
| MXSSG-600-PLX | (for 600mm/24" light curtains) |
| MXSSG-750-PLX | (for 750mm/30" light curtains) |
| MXSSG-900-PLX | (for 900mm/36" light curtains) |
| MXSSG-1050-PLX | (for 1050mm/42" light curtains) |
| MXSSG-1200-PLX | (for 1200mm/48" light curtains) |
| Substitute PLX for HB for all P/N's if horizontal bar side screens are desired. | |



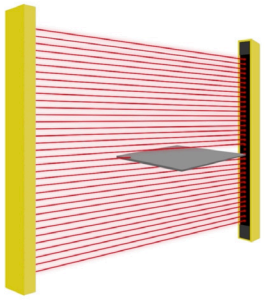
## How does the Merlin 4000 work?

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.

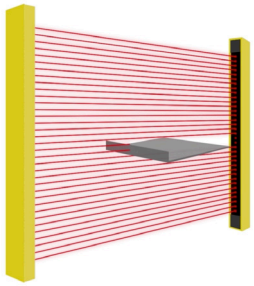
### How is a Merlin 4000 programmed? Simple...

### Remote Learn Foot Switch.

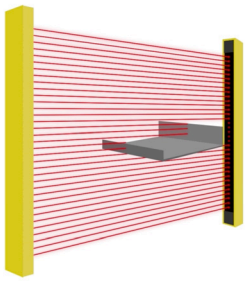
- Select the program mode and place the part in position for the first bend.
- Teach the part profile by pressing the remote learn foot switch.
- Cycle the press brake making the first bend. (see step 1)
- Position the part in place for the next bend and teach the profile with the remote learn foot switch. (see step 2)
- Cycle the press brake.
- Continue until the part is complete. (see step 3)



Step 1



Step 2



Step 3

### 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.

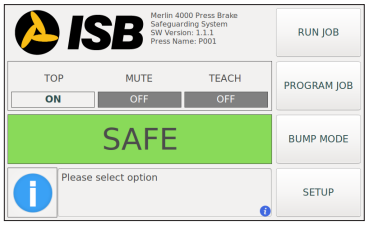
### Run job.

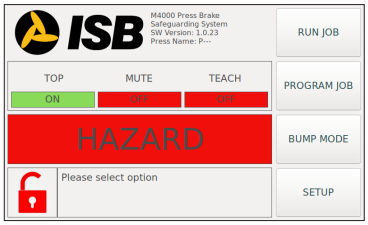
Once your part has been programmed, you can then store the program sequence in memory and recall it by using a numeric code, usually a drawing number.

### How does the Merlin 4000 allow part movement during bending? Simple... built in muting.

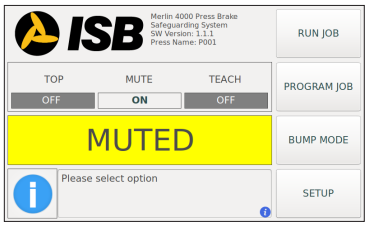
Merlin 4000 is interfaced to the machine control to receive signals when the ram is at the top position and at the mute point (usually 6 mm above the pinch point).
Once at the mute point, Merlin 4000 ignores the interruption of beams by the part moving upwards while being bent, thus enables the ram to return to the top stop position.

# Merlin 4000 Screens

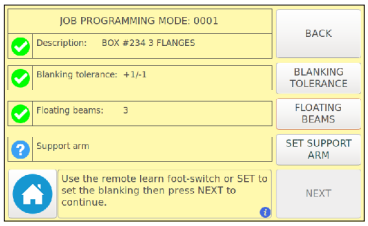


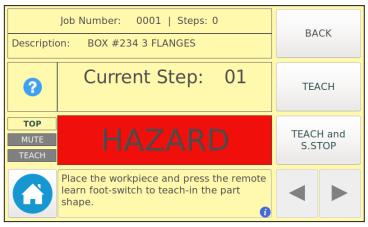

Main Screens showing "SAFE" and "HAZARD" Modes. Hot keys for RUN, PROGRAM and BUMP Mode make for easy navigating. The external input signal status for Top of Stroke, Mute, and Learn Switch are displayed for easy troubleshooting.



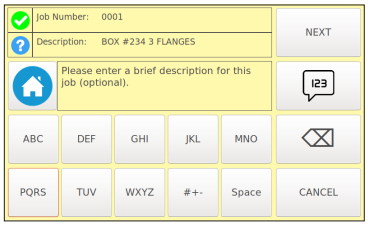

Main screen showing "Muted" Mode. Built in muting allows for moving flanges during the bending and upstroke portion of the cycle. Note that the external input status for the top of stroke and mute has changed. The machine is no longer at the TOP and is now at the receiving a MUTE signal from the press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



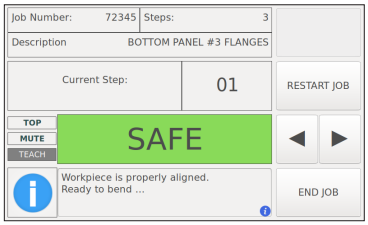

When programming a part, as steps prompted on bottom line are completed, a green check appears next to each task. Current task prompted is to set for non-moving support arms or table. To prevent unnecessary exposure, there are software limits for the maximum number of allowed blocked beams. These limits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



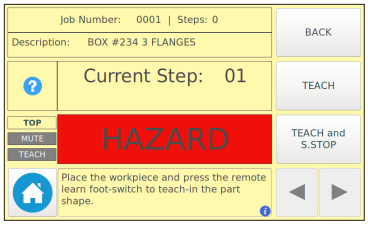

The last line always prompts the user with easy to follow instructions. This screen is instructing the set-up person to teach Step 1 of the part being made by holding it in place and pressing the learn foot switch.

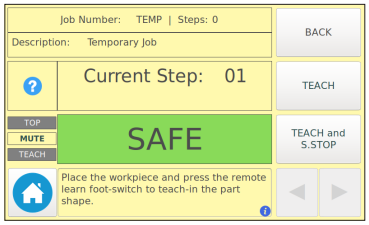



Easy Job Programming stored by job number and part description. The floating beam and blanking tolerance are easily set using hotkeys. The last line of screen prompts the operator of the next task.

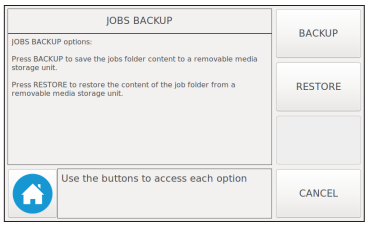



Once a job is taught and stored in memory, the operator can run parts normally. The last line of the screen prompts the operator for the next task and in the event there is a need to restrike or skip steps, ◄ (previous) or ► (next) step hotkeys can be used to adjust to the bend sequence.

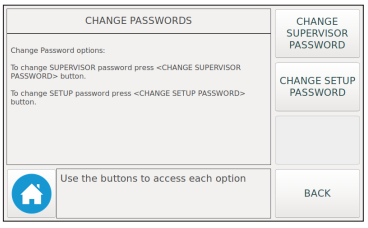


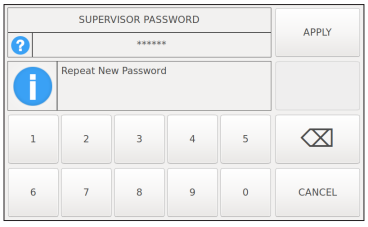




If running a job that you are not ever going to run again, a TEMPORARY JOB mode exists to speed up the job set up and to avoid unnecessary extra jobs in the memory list.

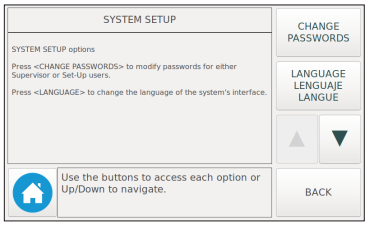


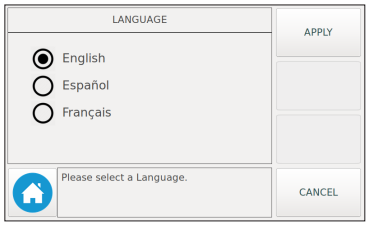

Easy “BACKUP” and “RESTORE” functions are provided for the configured jobs, these options are protected by a supervisor password.



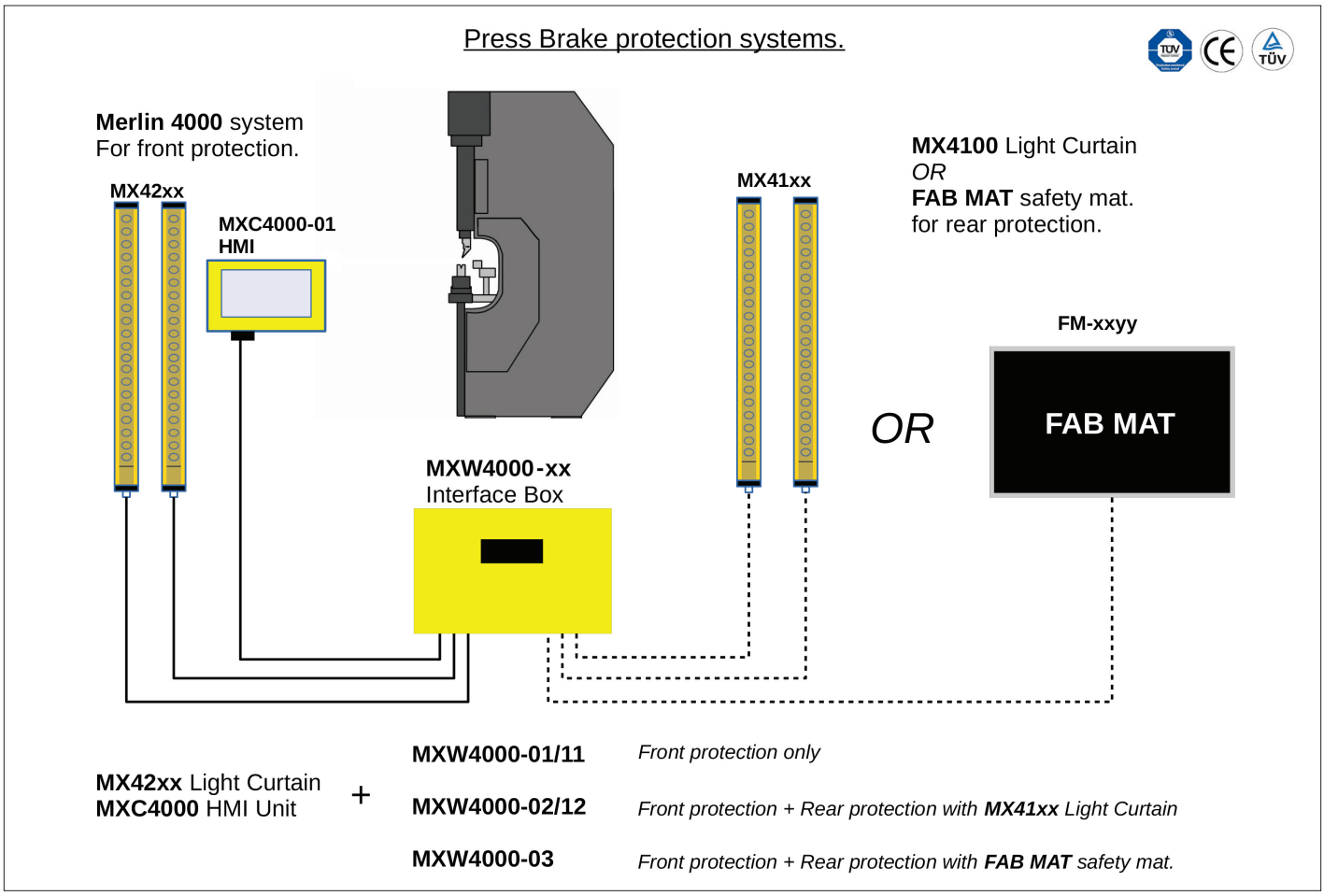

Two configuration levels are provided, SET UP for day to day job configuration adjustments and SUPERVISOR password that grants access to all configuration options in the system.
The SET UP and SUPERVISOR PASSWORD can be changed following easy to follow prompts.




Operates in English, Spanish or French. Switching language is easy and is password protected.

## Safeguarding the back of press brakes




## Using safety floor mats.

The ISB Fab Mat is a great alternative to protect the back side of a press brake to prevent personnel from standing in danger areas. They also are a practical alternative to guard around press brakes equipped with horns.

Multiple ISB Fab Mats can be placed side by side to create any shape required, and secured to the floor using our ramped aluminum extrusion. Mats are custom made to fit the coverage area and multiple mats can be wired to a single Fab Mat 2 controller.

For more details and general specifications, refer to our Fab Mat Catalog.


## Using ISB Type 4 Safety Light Curtains.

A full line of ISB MX4100 (no beam blank out) or MX4200 (with beam blank out) safety light curtains can be mounted vertically, diagonally or horizontally on the back side of press brakes to prevent personnel access to the point of operation and motorized back gauging equipment.

Wiring Box MXW4000-02/12 is available to accommodate all the Merlin 4000 connections and a second safety relay to interface a totally independent pair of conventional Safety Lights protecting the back side or bottom access.

For more details and specifications, please see our Type 4 Safety Light Curtain Brochure.

# Other products offered by ISB

## MX SERIES LIGHT CURTAIN


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

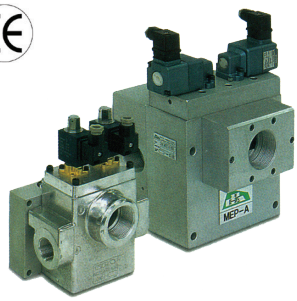
## RESOLVER BASED PRESS CONTROLS

With built in
die monitoring for your
air clutch mechanical
presses

Up to 12 PLS Channels
Up to 25 Die Protection
Channels


## GPA SAFETY VALVES

Self monitoring 120 V coils
24 V optional



## SAFETY RELAYS

P/N: 22-4001
Main safety relay
24 VDC

P/N: 22-4002
Expansion safety relay

## DIE SAFETY BLOCKS

Provide safety
during set up
and maintenance
of power presses.

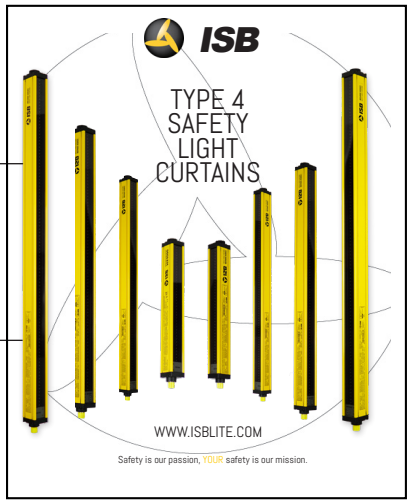

## SOF-TOUCH 2 ERGONOMIC BUTTONS OR PALM BUTTON STATION

P/N: ST2-0001-90

P/N: ST2-0001

P/N: ST2-4200-00

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




**The MX4000 Light Curtains comply with the following standards:**
**IEC 61508 (SIL 3) | IEC 61496 (Type 4) | IEC 61062 (SILCL 3) | EN ISO 13849 (PL e, Category 4)**

60-4020-01 Rev III



**www.isblite.com**
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**Phone +1 514 634 7000 Fax: + 1 514 634 9868**

Safety is our passion, YOUR safety is our mission.