

WARNINGS

- 1 Safety Light Curtains are NOT DESIGNED FOR full revolution mechanical punch presses.
- 2 Infra systems Safety Light Curtain can not protect the operator in the event of catastrophic brake failure of machine clutch or brake control of hydraulic or pneumatic valve control etc. hence operators and other personnel etc. must use the same caution and good practices in the operation of the machine as if Safety Light Curtain were not present, to attain maximum safety. It is employer's responsibility to impart this information to all employees associated with operation of machine.
- 3 Safety Light Curtain can not protect the operator if individual sensors or sides are blanked in such way to allow the operator to reach into point of operation, without being sensed by guard.
- 4 Safety Light Curtain can not protect the operator if the Unit BY-PASS switch is kept on By-PASS mode making the guard in-operative (OFF).
- 5 Safety Light Curtain must be properly interlocked with the main machine control.
- 6 The distance that the machine travels after the clutch is de-energized and the brake is applied is primarily a function of the brake and counter balances on individual machine. Before installing the Safety Light Curtain, make sure that the brake is capable of stopping the machine quickly at any point in the cycle.

The employer must provide barriers to prevent operators & other personnel from reaching in to the point of operation other than through the Safety Light Curtain, to enhance safety

WARRANTY

Infra systems warrants all products to be free from defects in material and workmanship under normal use and service for a period of one year. Our obligation under this warranty is limited to making goods at the factory. Defective parts returned to us (with transportation charges prepaid) within one year after delivery to original purchaser and shown by our examination to have been defective, will be repaired or replaced without cost to original purchaser. Infra systems is not liable for damage or injury to persons or property which may result from the use of these products.

INSTRUCTION MANUAL

FOR

SAFETY LIGHT CURTAIN (Two Output Models)



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SAFETY LIGHT CURTAIN / SAFETY GUARD

mainly consists of one Emitter and one Receiver along with connecting cables and sliding strips. It works on 12 – 24 volts DC and offers 2 PNP output which can directly operate relay. It can be directly connected to PLC or to any controller. Safety Light Curtain for hand protection is available in two types.

1. Parallel beam type
2. Cross beam type

For a given protected height, Cross Beam Models are more sensitive as there are more number of beams in the same height.

Safety Light Curtain SET consists of following:

1. Emitter (Sensor)
2. Receiver (Sensor)
3. Connecting cable with connector for Emitter – 5 meters
4. Connecting cable with connector for Receiver – 3 meters
5. Sliding Strips – 4 nos
6. Bolts – 4 nos.

SENSOR SPECIFICATIONS :

Power Supply: 12- 24 Volts DC

Supply Protection: Reverse Polarity

Output: PNP output 100 mA at 24 V DC

Output Indications: Through LEDs

Channel Indication: LED indication for each channel

Response Time: 10- 20 m sec.

Restart: Automatic

No of beams: 6, 8, 10, 12, 16, 18, 24, 30, 36

Beam By Pass: Provided in hand protection models

Protected Heights: 90- 1300 mm

Pitch offered: 20, 30, 40, 50, 90 mm

Max Range: Adjustable up to 3 meters/ 5 meters/ 10 meters

Electrical Connections: Plug in Connector for Emitter & Receiver

Standard Cable length: 5 meters for Emitter, 3 meters for Receiver

Operating Temperature : up to 55 Degrees centigrade

Fastening Modes: Back Slot OR to the top and lower end

Cross Section: 36 x 42 mm/ 50x36 mm

Applicable to: Directly works with PLCs / Controllers

Suitable for: Machines with quick emergency stop

6. case channel LED at Receiver does not get ON after blocking the beam from Emitter, the sensitivity of the system should be adjusted.

TO ADJUST THE SENSITIVITY

Remove a plastic cap at the top cover of Emitter unit and locate a small blue colour Trim pot. With help of small screw driver gently adjust the trim pot setting smoothly such that all the beams are blocked from Emitter side, Reduce the sensitivity (Range) of the system by rotating the trim pot anticlockwise.

7. If any one beam is not working, that particular beam can be By passed After By passing the particular beam, unit will work on remaining beams.

TO BY-PASS THE BEAMS

1. Beam should be By-passed only when it is essential

- a. When any beam is faulty
- b. If any part of the beam is obstructed.

2. By passing beams will reduce safety of an operator

For all beam models By-pass facility for this models is provided through program. Remove top cap of Receiver and locate a small press switch. Press this switch continuously for 6 Seconds and block the beam which is to be By-passed. Beam will automatically get By passed. Pl. note that all the beams can not be By-passed in these models. You have to keep any one beam working.

To remove the By pass, - Put the supply OFF. Press this switch and make the supply ON. By pass will be removed. However note that this will remove all the By-passed beams at once

INSTALLATION AND COMMISSIONING

1. Emitter and Receiver units are to be fixed in front of each other. These should be located such that it will form invisible screen in between operator and the machine.
For column type machine, these sensors can be fixed on front wall with 'L' brackets. For 'C' type machines, these can be fixed on both side of working table with fixing stands.
For 'C' type machine Infra systems offers standard fixing arrangement fixture) at extra cost.
2. Control unit is to be fixed on or besides the electrical panel of power press.
3. Make sure that connecting cables from Emitter and Receiver to control unit are NOT grouped or tied to other cables of power press or with any other cables carrying heavy currents or high frequency signals.
4. Make electrical connections as explained. Connect 220V AC supply to control unit, preferably from electrical lighting supply. Make sure to connect (capacitor + resistor) across the coil of contactor under interlock.
5. Normal Functioning of Safety light curtain is as follows:
 1. Connect the Safety light curtain with control unit as per wiring details and make the unit ON.
 2. In normal working condition, unit will function as follows.
 - i) All the channel LED's for Receiver unit will be OFF.
 - ii) Top LED indicates at Receiver unit will be Amber LED
 - iii) Top LED indicates at Emitter will be Red LED.
 - iv) At control unit, sense LED will be OFF and output LED will be ON.
 3. Put hand in between Emitter and Receiver and move hand from top to bottom of Emitter blocking each beam.

Unit should function as follows.

- i) Hand will block the beam and that particular channel LED at the receiver unit will be ON. When hand is moved from top to bottom at emitter, LED's at receiver will glow one after another as hand is moved from top to bottom.
- ii) When any channel LED gets ON, Top LED at receiver unit glows Red. Also sense LED at control unit glow and output LED gets OFF.
- iii) Relay gets OFF if any beam is blocked and remains OFF as long as any of the beam is blocked check functioning of Safety Light Curtain as explained above. If the unit works as explained above It can be considered as normal functioning of safety light curtain.

EMITTER UNIT :

- + Consist of 6 / 8 / 10 /12/16/18/24/30/36 emitters.
- + Plug in connection (3 core wire) at the bottom.
- + Fixing arrangement on the back of unit with adjustable height.
- + One Red LED is provided for supply indication.
- + Sensitivity potentiometer is provided at the top inside the housing for adjustment of range.

RECEIVER UNIT :

- + Consist of 6 / 8 / 10 /12/16/18/24/30/36 receivers.
- + Plug – in connection (5core wires) at the bottom.
- + Fixing arrangements on the back of unit with adjustable height.
- + Channel By-pass for (6, 8, 10,12,16,18/24/30/36) beams is through software programme.
- + LED Indications of SENSE for each channel on front side.
- + Red LED with 3 mm dia for self check is provided just above Sense LED. This LED glows in case if any defect is detected in any of the beam during self check.

Sensor Output Connections:

Emitter :

Brown wire from EMITTER:(+) 12– 24 volts DC
Blue wire from EMITTER:(-) 12– 24 volts DC
White wire from EMITTER:Connect to
WHITE wire from Receiver

Receiver:

Brown wire from RECEIVER:(+) 12 – 24 volts DC
Blue wire from RECEIVER:(-) 12 – 24 volts DC
Black wire from RECEIVER : OUTPUT - PNP
Gray wire from RECEIVER : OUTPUT - PNP
White wire from RECEIVER : Connect to WHITE wire from Emitter

Earthing Pole :

Green Colour wire provided for Earthing. It is already connected to Earthing Pole on sensors. Make sure that both sensors are properly connected to Earth at your end. It is mandatory to connect the sensor to Earth for proper functioning of the unit.

Control Unit Wall Mount - Type CW

OUTPUT CONNECTIONS

1. Phase
2. Neutral 220 V AC \pm 10% 50 Hzs
3. Earth
4. C Output – 1 For machine interlock
5. NC
6. C Output – 2 For machine interlock
7. NO
8. Brown wire from EMITTER
9. Blue wire from EMITTER
10. White wire from EMITTER
11. Brown wire from RECEIVER
12. Blue wire from RECEIVER
13. White wire from RECEIVER
14. Black wire from RECEIVER

Output Indications and Controls :

- 1 LED Indication for Sense
- 2 LED Indication for Output
- 3 LED Indication for Unit By-Pass
- 4 Unit By-Pass switch is provided inside the control unit.

IMPORTANT NOTES:-

- 1 Output contacts are to be connected in SERIES with the emergency stop switch of the machine. OR In SERIES with the coil of contactor controlling solenoid valve.
2. Safety light curtain should be BY-PASSED during upward stroke of power press through cam switch (available on power press) to increase productivity.
3. Connect a capacitor (0.1 MF / 650V) + resistor across coil of contactor connected at output terminals

It is recommended that you charged the controller through the supply from electrical lighting panel and not through the supply from machine.