

# MULTI-BEAM<sup>®</sup> Optical Edgeguide System



**Model 3GA5-14:** 120V ac    **Model 3GB5-14:** 220/240V ac

The MULTI-BEAM Optical Edgeguide System is a unique sensor, used in pairs, to provide complete edge-guidance sensing and control. Each sensor consists of a special MULTI-BEAM scanner block, power block, and logic module. Each component is designed specifically for the edge-guiding function. The scanner block, which contains a modulated emitter and receiver, works together with the power block such that the emitter is gated "ON" only during positive half cycles of the 50/60Hz power, and the receiver is gated "ON" only during the negative half cycles. The opposing sensor operates the same way, except that it is wired with power leads L1 and L2 reversed from the way they are connected to the first sensor. As a result, the sensor "A" emitter will only operate the sensor "B" receiver, and vice-versa. This synchronization of the two sensors prevents unwanted crosstalk while permitting very high excess gain.

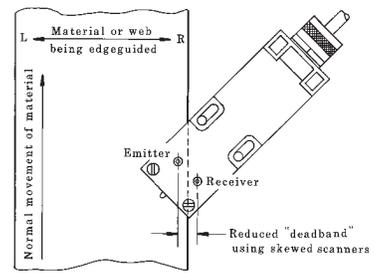
The logic module includes *both* ON- and OFF-DELAY timing functions. The ON-DELAY ignores short-term "nuisance" signals, and the OFF-DELAY permits a controlled amount of timed correction.

The logic modules have a LIGHT/DARK OPERATE programming jumper. Typically, the inboard receiver is programmed for LIGHT OPERATE, and the outboard receiver for DARK OPERATE. In this way, the web being guided is properly positioned in the "deadband" between the sensing beams when one beam is broken and the other is not. The spacing between the beams is fixed at 1/2 inch (12.5 mm) and this becomes the "deadband" for edgeguiding. If tighter control is desired, the two sensors may be mounted at an angle to the edge of the web such that the effective beam spacing is reduced to 1/2 inch times the cosine of the angle (see diagram at right).

The power block contains the same 3/4 amp solid-state switch as is used in standard MULTI-BEAM power block models PBA and PBB, which will operate most ac solenoids, relays, or programmable logic controllers (PLCs). The very high optical penetrating power (excess gain) plus rugged MULTI-BEAM construction permits reliable control in harsh environments such as sawmills or power sanding machines where conventional photoelectrics could not survive the contamination levels. If necessary, optical penetrating power may be reduced by substituting model UC-D upper covers.



## Deadband Adjustment



## SPECIFICATIONS, Optical Edgeguide System

**Supply Voltage:**                    **model 3GA5-14,** 105 to 130V ac (50/60Hz)  
     **model 3GB5-14,** 210 to 250V ac (50/60Hz)

**Output Configuration:** SPST solid-state switch, 3/4 amp maximum (derated to 1/2 amp at 70 degrees C). 10 amp maximum inrush for one second, or 30 amps for one ac cycle (non-repeating). On-state voltage drop less than 2.5V ac at full load; off-state leakage current less than 100 microamps.

**Response Time:** response time is a function of the ON and OFF delay timers, which are independently adjustable over a useful range of from 1 to 15 seconds.  
 NOTE: shorter time ranges are available on a quote basis.

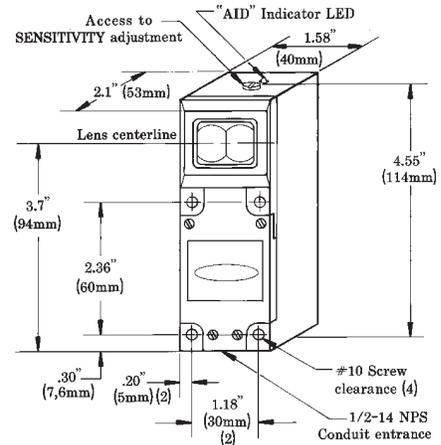
**Construction:** same as standard MULTI-BEAMS. Reinforced VALOX<sup>®</sup> housing; components totally encapsulated. Meets NEMA standards 1, 3, 12, and 13.

**Range:** 100 feet (30 m). Excess gain of 10,000X at 1 foot (30 cm).  
 NOTE: materials to be guided must be totally opaque.

**Indicator LED:** red LED status indicator on top of the housing is "on" when the receiver detects modulated light (unblocked) condition.

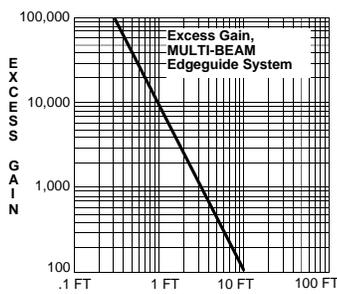
**Operating Temperature Range:** -40 to +70° C (-40 to +158° F).

## Dimension Drawing

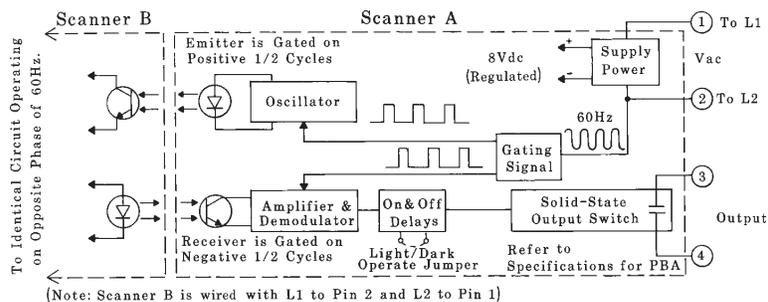


SENSITIVITY control accessible beneath lower cover. See drawing next page.

## Excess Gain Curve



## Functional Schematic, Optical Edgeguide System

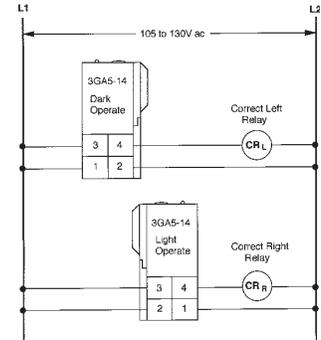


## Installation Information

- 1) Mount the sensors *exactly parallel* to each other with their lenses directly opposite each other (see Deadband Adjustment drawing).
- 2) *Double check wiring* carefully per Hookup Diagram. One sensor must be jumpered for "dark operate", and the other must have the jumper removed for "light operate".
- 3) Operation checkout (using alignment indicator LEDs):  
**Both beams unblocked** = both LEDs "on" and one output "on";  
**One beam blocked** = one LED "off" and no output "on";  
**Both beams blocked** = both LEDs "off" and the other output "on".

NOTE: if necessary, decrease SENSITIVITY (beneath lower cover; see drawing below, rotate control counterclockwise) to prevent "burn-through" when guiding non-metallic materials (and/or use model UC-D upper covers).

## Typical Hookup Diagram

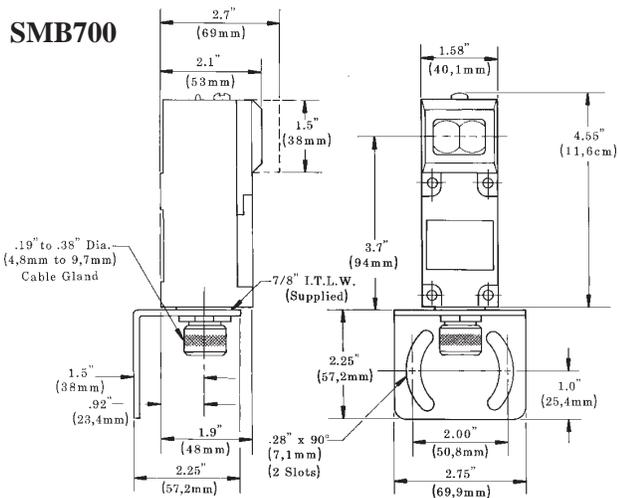


## Accessories

**Model SMB700 is a general-purpose two-axis mounting bracket** which is supplied with a cable gland assembly that is used to attach the MULTI-BEAM wiring base to the bracket. The gland assembly is threaded through the bracket and into the conduit entrance at the base of the scanner block. A large lockwasher is supplied to hold the scanner block firmly in place. The bracket is 11-gauge zinc-plated steel.

**Model SMB700SS is an 11-gauge stainless steel version** of the SMB700. It is sold alone, without the cable gland assembly and lockwasher.

**Model SMB700F is a flat, single-axis version** of the SMB700. It is sold without hardware.



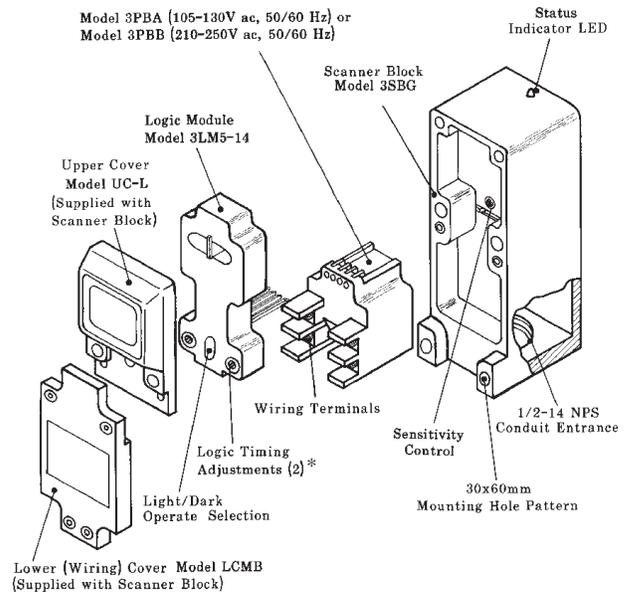
**WARNING** This photoelectric presence sensing system does NOT include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can result in *either* an energized or a de-energized sensor output condition.

Never use this product as a sensing device for personnel protection. Its use as a safety device may create an unsafe condition which could lead to serious injury or death.

Only MACHINE-GUARD and PERIMETER-GUARD Systems, and other systems so designated, are designed to meet OSHA and ANSI machine safety standards for point-of-operation guarding devices. No other Banner sensors or controls are designed to meet these standards, and they must NOT be used as sensing devices for personnel protection.

## Spare Parts Identification

The modular parts of the Optical Edgeguide System can be ordered and replaced separately.



\*On-off delay, range 1-15 seconds; shorter ranges available on a quote basis. See Banner catalog for more information.

RF1-2NPS



Model **RF1-2NPS cable gland assembly** (left) for MULTI-BEAMS includes cord grips for .1- to .4-inch diameter cable and lockwasher.

Model **MBC-4** (right) is a **4-pin male industrial duty connector** that threads into the base of all MULTI-BEAMS. **MBCC-412** is a **12-foot long (3,6m) mini-type cable**. It is interchangeable with standard industry types of several manufacturers.

MBC-4

MBCC-412

