VALU-BEAM® SMA912 Series

3-wire ac self-contained sensors with solid-state outputs



- Sensors with 3-wire hookup for 24 to 130V ac
- All sensing modes available: opposed, retroreflective, diffuse (proximity), convergent, and fiberoptic
- Switch selectable for light- or dark-operate
- Totally encapsulated circuitry in a rugged, molded plastic housing; NEMA 1, 2, 3, 3S, 4, 4X, 12, and 13
- Integral conduit fitting and 6' PVC-covered cable supplied on standard models; NEMA-4 minifast" Quick Disconnect cable/connector combination optional
- Adjustable sensitivity
- Versatile mounting options

Banner SMA912 Series VALU-BEAMs are rugged, self-contained photoelectric sensors designed for especially demanding industrial applications where economy, performance, and durability are important.

SMA912 Series VALU-BEAMs have solid state outputs and operate from 24 to 130V ac (50/60 Hz). Hookup is three-wire. NOTE: Emitters operate from either 24 to 130V ac or 10 to 30V dc.

Powerful modulated LED light sources give SMA912 Series VALU-BEAM sensors greater sensing range than competitive units and a high degree of immunity to ambient light. All models are totally epoxy-encapsulated and housed in molded VALOX® housings for the ultimate in shock, vibration, moisture, and corrosion resistance. All VALU-BEAM sensors conform to NEMA standards 1, 2, 3, 3S, 4, 4X, 12, and 13.

The output of VALU-BEAM SMA912 Series three-wire ac sensors is a solid-state switch capable of 500 mA (60VA) continuous load (5 amps inrush). See hookup diagrams, page 2.

SMA912 Series VALU-BEAM sensors have an easily-visible topmounted red LED indicator to assist in alignment and system monitoring. SMA912 series sensors have Banner's exclusive, patented* AID™ system (Alignment Indicating Device), which lights the indicator LED whenever the sensor "sees" its modulated light source, and also pulses the LED at a rate proportional to the received light signal strength. This feature greatly simplifies alignment: in most situations, alignment becomes simply a matter of positioning the sensor for maximum LED pulse rate. Emitters



have a visible red "tracer beam" that indicates "power on" and enables easy "line-of-sight" alignment.

SMA912 Series sensors offer a choice of light or dark operate in the same sensor, switched via a convenient rear panel control.

SMA912 Series sensors may be mounted from either the front or the rear using their two through-mounting holes, or by the outside threads of their base (mounting nut supplied), making them ideal for conveyor and other production line applications. A selection of mounting brackets is available (page 2). The bases of standard VALU-BEAMs have a 1/2" NPS integral internal conduit thread, and are supplied with a 6-foot PVC-covered cable. Models with a NEMA 4-rated quick-disconnect connector ("QD" models) are also available (page 5).

Functional Schematic: SMA912 3-wire AC Sensors | Company | Compa

NOTE: Emitter anits have no receiver phototransistor; receiver units have no emitter LED.

VALU-BEAM SMA912 Series Sensors -

Specifications

SUPPLY VOLTAGE: 24 to 130V ac (50/60Hz), except for SMA91E, ESR, and EF emitters, which operate from 10 to 250V ac or dc.

OUTPUT CONFIGURATION: solid-state switching element.

OUTPUT RATING: 500 mA continuous (60 VA); 5A inrush.

RESPONSE TIME: 4 milliseconds ON, 8 milliseconds OFF (except receiver-only units, which are 4 ms ON and 4 ms OFF). Response time specification of the load should be considered when important.

REPEATABILITY: 1.3 milliseconds, except for receiver-only units, which are 1.0 millisecond.

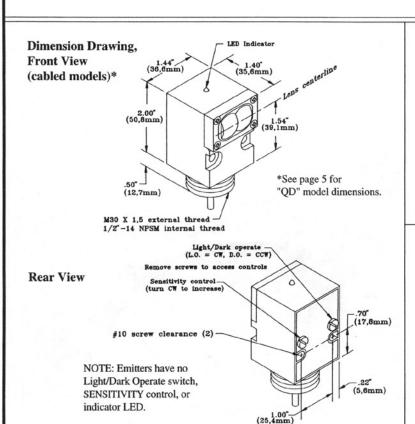
CONSTRUCTION: reinforced VALOX® housing, totally encapsulated, molded acrylic lenses, stainless steel hardware. Meets NEMA standards 1, 2, 3, 3S, 4, 4X, 12, and 13.

CABLE: 6' of PVC-jacketed 3-conductor cable standard. Three-pin quick-disconnect (QD) models are available optionally (one connector pin goes unused for emitters). Model MBCC-312 3-conductor cable for "QD" models must be purchased separately (see page 5).

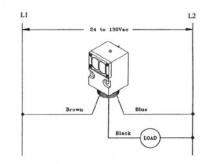
ADJUSTMENTS: LIGHT/DARK OPERATE select switch and SEN-SITIVITY control potentiometer, both located on rear of sensor.

INDICATOR LED: top-mounted red "AID" system (patented) LED indicator lights when the sensor sees its own (or its emitter's) modulated light, and pulses at a rate proportional to the received signal strength. Model SMA91E emitter has a visible-red "tracer beam" which indicates "power on" and enables easy "line-of-sight" alignment.

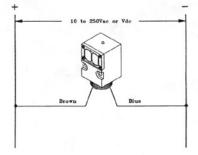
OPERATING TEMPERATURE RANGE: -20 to +70 degrees C (-4 to +158 degrees F).



Hookup: All except emitters



Hookup: SMA91 Emitters*



*There is no polarity for emitter hookup to ac voltage.

Mounting Brackets

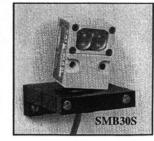


Accessory mounting bracket model SMB900 (left) has curved mounting slots for versatility in mounting and orientation. The sensor mounts to the bracket by its threaded base, using a jam nut and lockwasher (both included). The bracket material is 11-gauge zinc-plated steel. The curved

Model SMB30S swivel-mount bracket (right) offers the ultimate in mounting versatility for VALU-BEAM and other sensors with M30 x 1,5 threads. The VALU-BEAM's base threads into the adjustable captive ball of the bracket, which is then locked in place. Bracket material is black VALOX®, and stainless steel mounting hardware is included.

mounting slots have clearance for 1/4" screws.

Model SMB30C split-clamp bracket (not shown) is a VALOX® bracket similar to model SMB30S but without the adjustable ball. It grips the sensor by the sensor's threaded base. Hardware (included) is stainless steel.



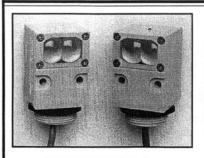
VALU-BEAM SMA912 Series Sensors

Sensing Mode

Models

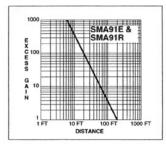
Excess Gain

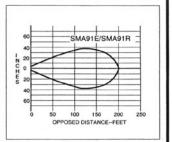
Beam Pattern



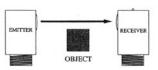
SMA91E & SMA91R

Voltage: 24 to 130V ac, ("E": 10-250V ac/dc) Range: 200 feet (60 m) Response: 8ms on/4 off Repeatability: 1 ms Beam: infrared, 880nm Effective beam: 0.5" dia.

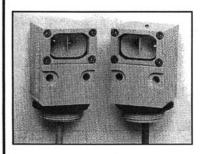




OPPOSED Mode

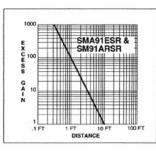


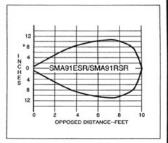
Opposed mode sensors have higher excess gain than other models, and therefore should be used whenever possible. The small size of these sensors makes them ideal for many conveyor applications, and their small effective beam size (particularly of the ESR/RSR models) enables them to reliably detect relatively small objects. VALU-BEAM opposed mode sensors have a visible red "tracer beam" which greatly simplifies sensor alignment. ESR/RSR models have a *wide* beam angle for very forgiving alignment within the 10 foot range. E/R models have a *narrow* beam spread and should be used when it is important to minimize optical "crosstalk" between adjacent emitter-receiver pairs at close range in multiple sensor arrays.

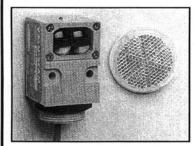


SMA91ESR & SMA91RSR

Voltage: 24 to 130V ac Range: 10 feet (3 m) Response: 8ms on/4 off Repeatability: 1 ms Beam: infrared, 880nm Effective beam: 0.14" dia.

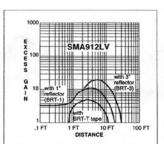


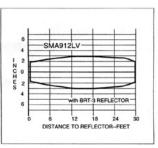




SMA912LV

Voltage: 24 to 130V ac Range: 6 inches to 30 feet (9 m) Response: 4ms on/4 off Repeatability: 1.3 ms Beam: visible red, 650nm

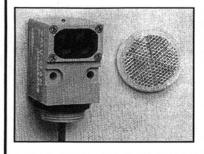




RETROREFLECTIVE



A visible-red light beam reduces the potential for false signals from highly reflective objects ("proxing") and simplifies alignment. AG (anti-glare) models polarize the emitted light and filter out unwanted reflections, making their use possible in applications otherwise unsuited to retroreflective sensing (when reduced excess gain is acceptable). Maximum range with "LV" units is attained when using the model BRT-3 3" corner cube reflector. For details on retroreflective target materials, see the Banner product catalog.



SMA912LVAG

(anti-glare filter)
Voltage: 24 to 130V ac
Range: 1 to 15 feet (4,5 m)
Response: 4ms on/4 off
Repeatability: 1.3 ms
Beam: visible red, 650nm
(with polarizing filter)

