

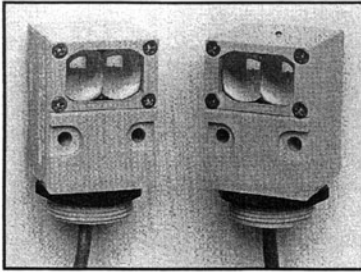
# VALU-BEAM SMA912 Series Sensors

## Sensing Mode

## Models

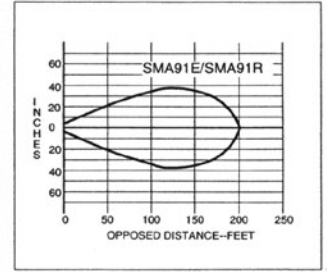
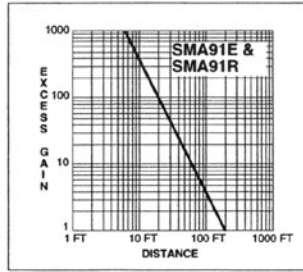
## Excess Gain

## Beam Pattern

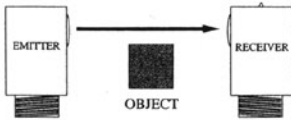


### SMA91E & SMA91R

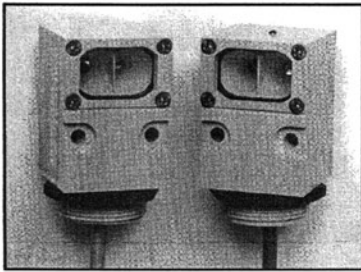
**Voltage:** 24 to 130V ac,  
("E": 10-250V ac/dc)  
**Range:** 200 feet (60 m)  
**Response:** 8ms on/4 off  
**Repeatability:** 1 ms  
**Beam:** infrared, 880nm  
**Effective beam:** 0.5" dia.



## OPPOSED Mode

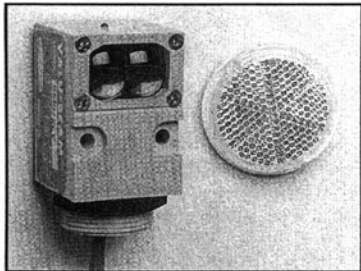
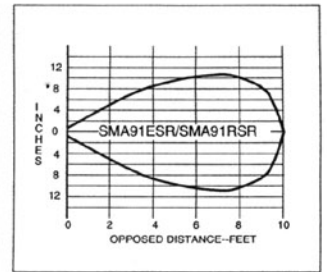
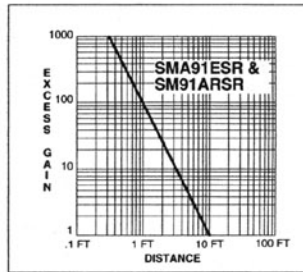


Opposed mode sensors have higher excess gain than other models, and therefore should be used whenever possible. The small size of these sensors makes them ideal for many conveyor applications, and their small effective beam size (particularly of the ESR/RSR models) enables them to reliably detect relatively 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.



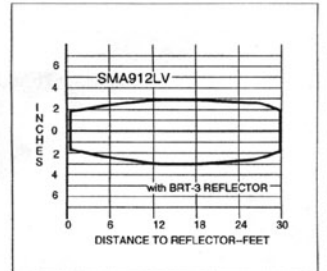
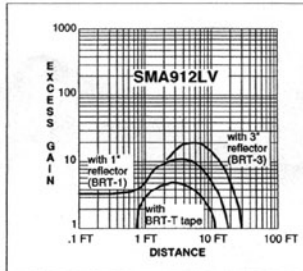
### SMA91ESR & SMA91RSR

**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.

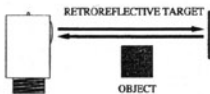


### SMA912LV

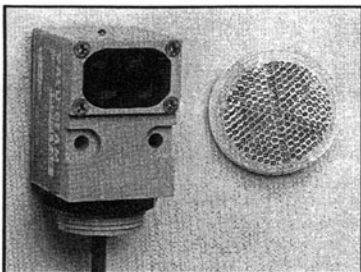
**Voltage:** 24 to 130V ac  
**Range:** 6 inches to 30 feet (9 m)  
**Response:** 4ms on/4 off  
**Repeatability:** 1.3 ms  
**Beam:** visible red, 650nm



## RETROREFLECTIVE

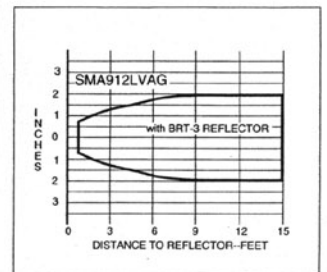
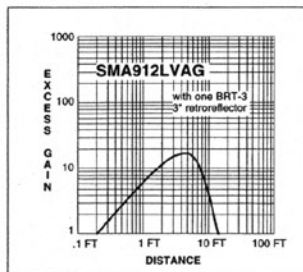


A visible-red light beam reduces the potential for false signals from highly reflective objects ("proxing") and simplifies alignment. *AG (anti-glare) models polarize the emitted light and filter out unwanted reflections*, making their use possible in applications otherwise unsuited to retroreflective 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)



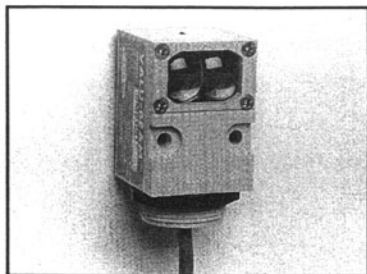
# VALU-BEAM SMA912 Series Sensors

## Sensing Mode

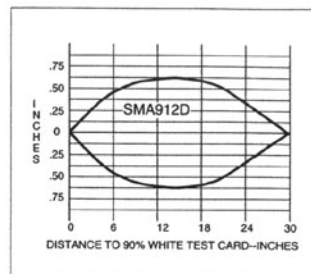
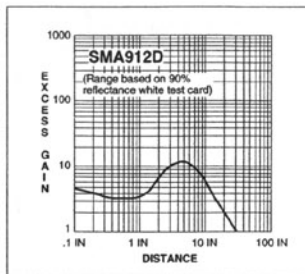
## Models

## Excess Gain

## Beam Pattern



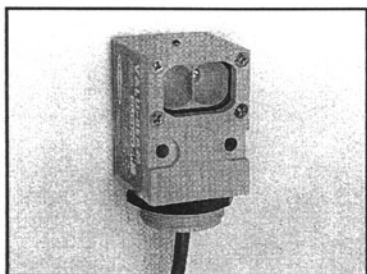
**SMA912D**  
**Voltage:** 24 to 130V ac  
**Range:** 30 inches (76 cm)  
**Response:** 4ms on/4 off  
**Repeatability:** 1.3 ms  
**Beam:** infrared, 880nm



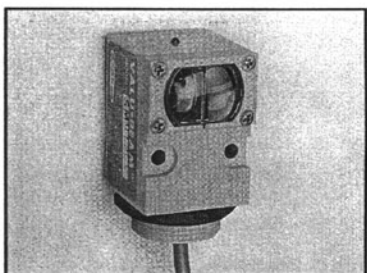
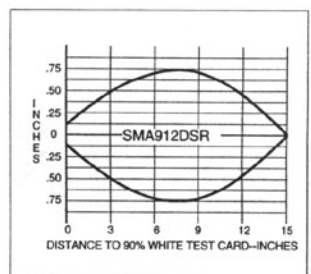
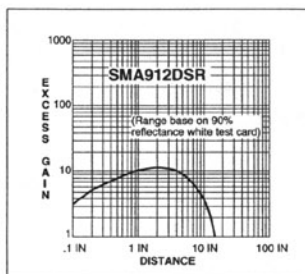
## DIFFUSE Mode



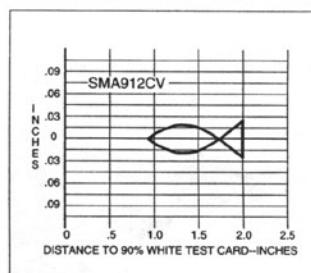
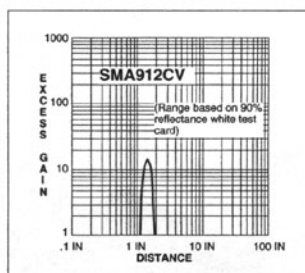
These sensors operate by detecting the reflection of their own light from the object being sensed, and therefore require no special reflectors. "DSR" models have better response than "D" models to objects within 3 inches of the sensor. "DSR" models should be used when it is necessary to minimize sensor response to background objects.



**SMA912DSR**  
**Voltage:** 24 to 130V ac  
**Range:** 15 inches (38cm)  
**Response:** 4ms on/4 off  
**Repeatability:** 1.3 ms  
**Beam:** infrared, 880nm



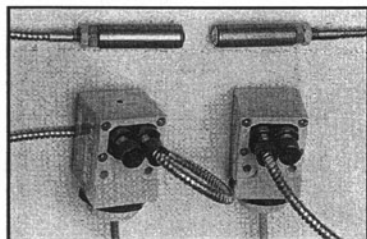
**SMA912CV**  
**Voltage:** 24 to 130V ac  
**Focus at 1.5" (38 mm)**  
**Response:** 4ms on/4 off  
**Repeatability:** 1.3 ms  
**Beam:** visible red, 650nm



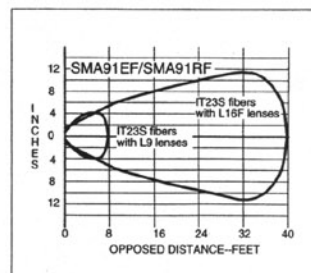
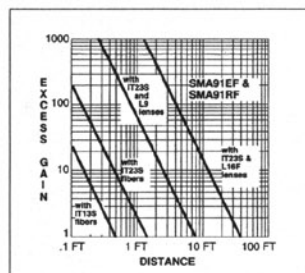
## CONVERGENT Mode



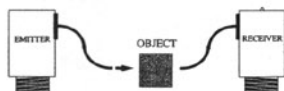
VALU-BEAM convergent sensors produce a precise .06" diameter sensing spot at a focus point 1.5" in front of the sensor lens. Due to their very narrow depth of field, they excel at detecting small objects only a fraction of an inch away from backgrounds. They are also ideal for some high-contrast color-registration applications. Their visible red sensing beam simplifies alignment.



**SMA91EF & SMA91RF**  
**Voltage:** 24 to 130V ac ("EF": 10-250V ac/dc)  
**Range:** see E.G. curves  
**Response:** 8ms on/4 off  
**Repeatability:** 1 ms  
**Beam:** infrared, 880nm



## OPPOSED FIBER OPTIC MODE (glass fibers)



These opposed mode fiber optic emitter-receiver pairs are used where the separation between emitting and receiving fibers is greater than a few feet, or where it is inconvenient to run both fibers from a single VALU-BEAM sensor. These models have a watertight o-ring sealed sensor/fiber interface, and are compatible with all Banner glass fiber optic assemblies (see Banner catalog).