

Autotron

R Series General Purpose LED Controls

The R Series controls from Autotron represent the finest in general purpose photoelectrics. The rugged die cast metal case takes up only 57 cubic inches, making positioning and installing to best serve your production requirements a snap, as well as insuring long life. The R Series circuitry is field-tested with highly engineered solid state technology which provides years of trouble-free operation.

Modulated LED light allows uninterrupted operation under the brightest ambient light conditions. The indefinitely long life of the LED is unaffected by shock or vibration.

The flexibility and operation of the R Series is

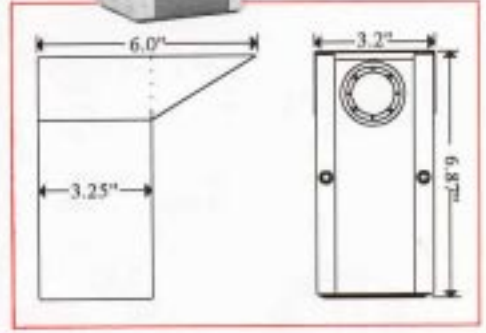
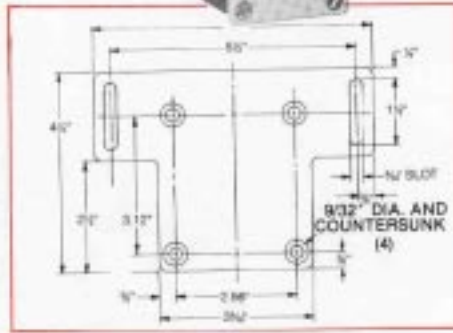
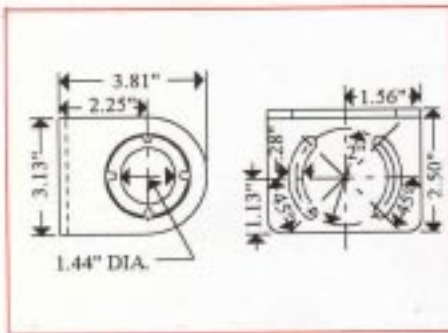
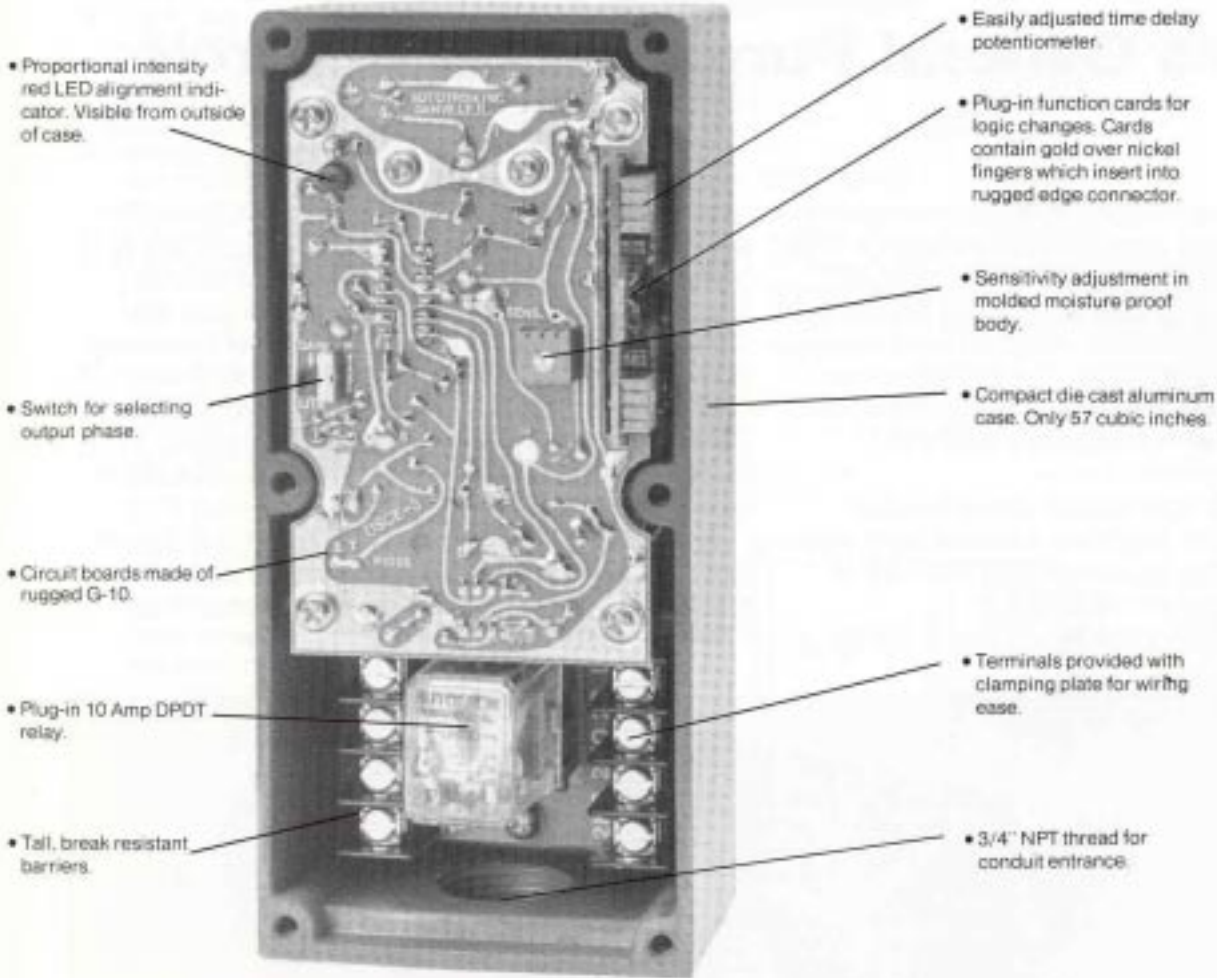
guaranteed through engineering thoroughness which has gained UL listing. LED alignment is made simple by a visible proportional intensity indicator. Lens wear is reduced, and lens efficiency is enhanced through the use of recessed scratch resistant glass. Control functions are changeable through a series of plug-in cards. These cards along with a choice of plug-in output options make the R series the ultimate in modular flexibility.

All of these elements go into making R Series controls from Autotron a dependable and cost efficient work horse, whatever your counting, measuring, or sorting needs might be.



Modulated LED Beam • Versatile

R Series Engineering Puts You in Control



P875 Universal Swivel Bracket Option

- Allows rotation of control in all planes.
- 360° horizontal rotation.
- Made of heavy 7GA cad-plated steel.

P961 Flange Mount Bracket Option

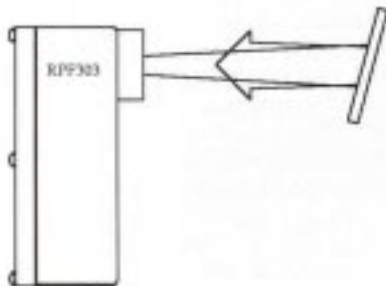
- Allows a additional mounting capability.
- Acts as adapter bracket to A990 Series mounting.
- Made of 3/16" cad-plated steel.

P1193 Weather Shield

- Inhibits accumulation of rain, ice and snow on lens.
- Made of lightweight gold anodized aluminum.
- Stainless steel mounting bolts provided.

METHODS OF DETECTION

RETRO-REFLECTION



A retro-reflective control generally provides a surer, simpler and more positive detection in applications where a reflector can be used.

Retro-reflective controls project light through the control lens to a retro-reflective surface, which reflects the light directly back to the control lens. The reflective surface may be up to 15° from perpendicular, and may even be vibrating. Reflective discs are more efficient reflectors than retro-reflective tape.

The gain of the control is set so that the control will not respond to light reflected off of the object breaking the light beam. If the object is shiny or glossy, it may be necessary to angle the light beam so that it does not strike the object at right angles.

Retro-reflective models currently offered are —

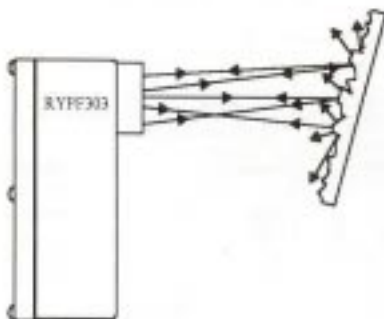
Model No.	Operation	Range Off 3" Diameter Reflector†
RPF303	On/Off	0-35 feet

(See ORDERING INFORMATION on back page for list of optional plug-in function cards.)

RANGE OFF OTHER RETRO SURFACES †

Surface	Part No.	Max. Range
3" dia. reflector	P380	35 feet
1 5/8" dia. reflector	P380A	16 feet
1 1/4" dia. reflector	P380AB	14 feet
7/8" dia. reflector	P380B	12 feet
5/8" dia. reflector	P380C	10 feet
1 1/4" x 3" reflector	P380E	20 feet
1 1/4" x 4" reflector	P380F	20 feet
1" x 1" retro tape	7510	4 feet
1" x 1" retro tape	3870	3 feet
1" x 1" retro tape	7800	2 feet

PROXIMITY (Diffuse Reflection)



Proximity controls are primarily used in applications where retro-reflectors can not be used. They sense the presence of objects by bouncing light off of the object and detecting the diffuse reflected light. They are best suited to detect the presence or absence of objects, but can be used for color detection if there is enough contrast.

Proximity models currently offered are —

Model No.	Operation	Range Off 90% Diffuse White Surface†
RXPF303	On/Off	0-6 feet
RYPF303	On/Off	0-14 inches

(See ORDERING INFORMATION on back page for list of optional plug-in function cards.)

HOW REFLECTIVITY AND DIRT AFFECT RANGE

The table below shows the typical reflectivity of various materials. This determines the minimum Excess Gain required for operation in clean air. Add additional Excess Gain for dirty environments.

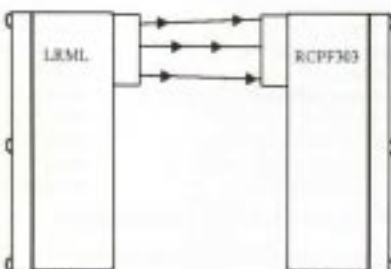
Example: If material reflectivity requires an excess gain of 2 in clean air and your dirty environment requires an excess gain of 5, then you need an excess gain of 10 (2 x 5) to detect your material in your dirty environment.

Control operating range can then be determined from the RXPF303 and RYPF303 Excess Gain graphs on page 4.

Material	Typical Reflectivity	Required Excess Gain For Clean Air
Kodak White Test Card	90%	1.0
White Bond Paper	82%	1.1
Kraft Paper	80%	1.1
Clear White Pine Wood	75%	1.2
Black Polyester Cloth	25%	3.6
Old Black Conveyor Belting	16%	5.6
New Black Conveyor Belting	9%	10.0
3M Nextel Flatblack Paint	4%	22.5

RULE OF THUMB: When distinguishing one material from another, the ratio of one reflectivity to another should be 2:1 minimum.

THROUGH BEAM



Through beam detection is generally considered better than retro or proximity detection because of greater sensing range and freedom from false detection of shiny objects. However, because of difficulty in alignment and the necessity of locating a separate light source, this method of detection is not used as often.

Through beam models currently offered are —

Model No.	Operation	Range†
RCPF303	On/Off Control	0-300 feet
LRML	Light Source	

(See ORDERING INFORMATION on back page for list of optional plug-in function cards.)

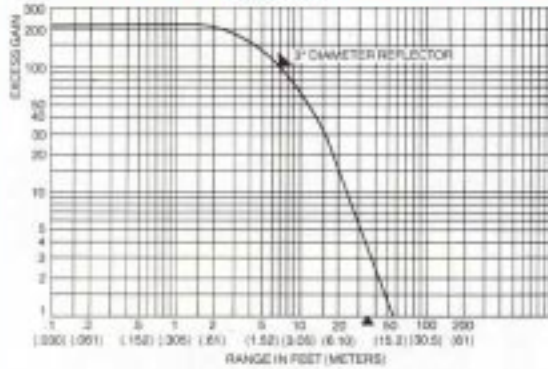
†Maximum ranges apply for clean indoor conditions only. Contact the factory for dirty or outdoor applications.

EXCESS GAIN

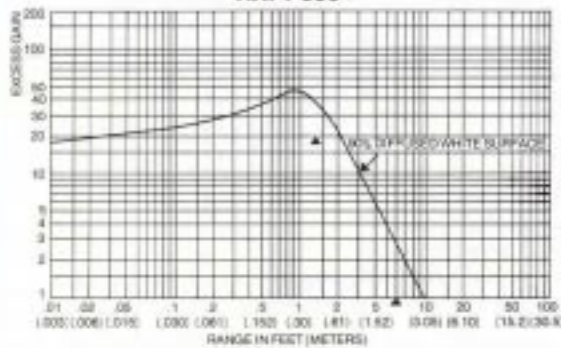
How well a photoelectric control can perform under less-than-ideal conditions is measured in terms of Excess Gain. Excess Gain is the ratio of the light signal available to the light signal necessary for the control to barely work. The graphs below plot this factor versus range from specific targets. If degrading factors such as dirt, a poorly reflective surface, or misalignment exist, an Excess Gain greater than one (1) is required. How much Excess Gain is required for the application is determined by the customer. An Excess Gain of 3-5 should be allowed for light industrial environments, and 5-8 for moderately dirty environments.

TYPICAL EXCESS GAIN vs. RANGE

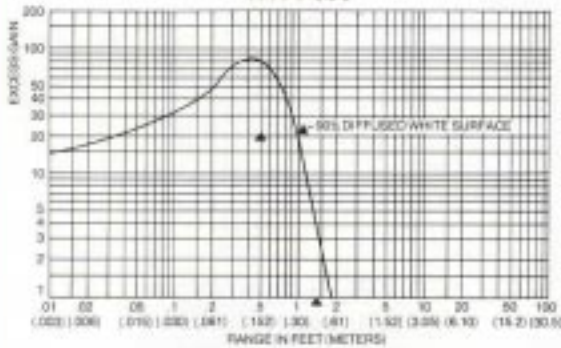
RPF303



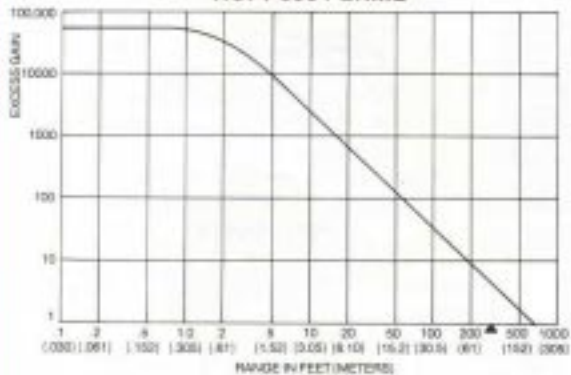
RXPF303



RYPF303

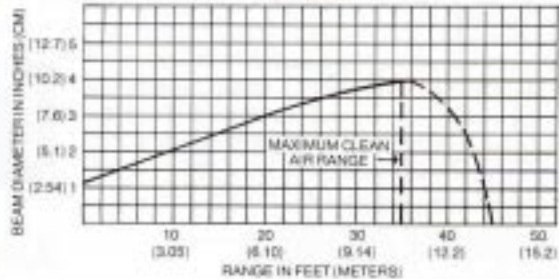


RCPF303 / LRML

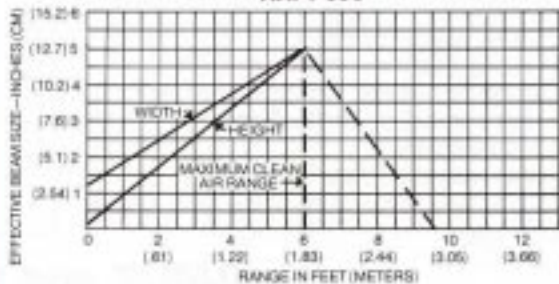


EFFECTIVE BEAM DIAMETER vs. RANGE

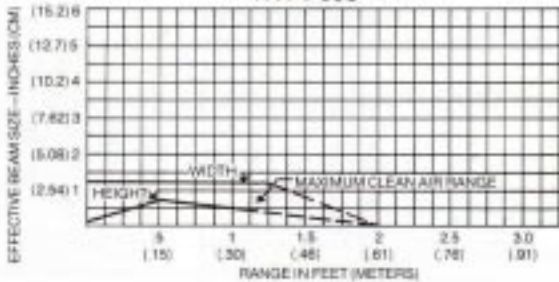
RPF303



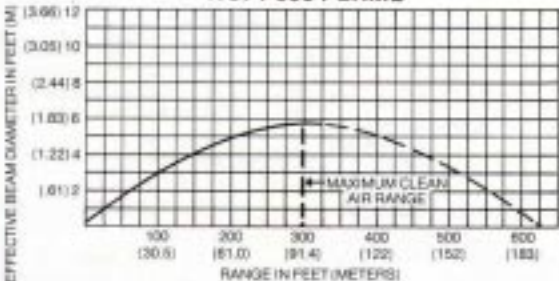
RXPF303



RYPF303



RCPF303 / LRML



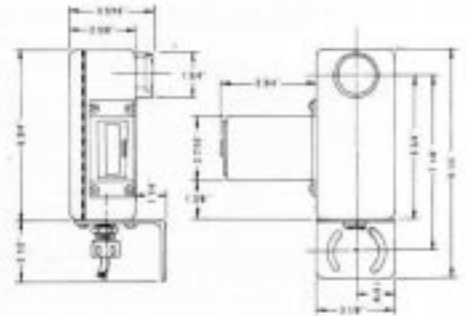
* EFFECTIVE BEAM DIAMETER is defined as that portion of the radiation pattern that is sufficiently intense for detection.

A878R Counting Control Pak

A high performance counting package with instant installation capability. Long life combined with plug-in flexibility provides a unique counting system all rolled into one neat package. The all solid-state design (including the counter) eliminates moving parts that can wear out.

FEATURES

- Packaged system comes ready to use-no wiring to do.
- Plugs into standard 120V outlet.
- Counter is 8-digit, push button reset. Counter life is independent of the total number of counts.
Self-contained Power Supply: 8 years typical
Maximum Count Speed: 3000 CPM
- Complete package consists of:
RPT365 Control (logic output)
P875 Universal Swivel Bracket
P380 Reflector
P1106 Solid-State Counter Assembly
6' Cord Set with Ground
- Retro-Reflector makes alignment easy. Beam can strike reflector up to a 15° angle and still activate.
- Adjustable control sensitivity.
- Light beam distance a maximum of 35'.
- Adjustable time delay. Range is from .02 to 2.5 seconds. Provided to slow response and prevent "double counting."
- Shipping weight of 5 lbs.
- Other features and options same as R Series.
- Not UL listed.



APPLICATION

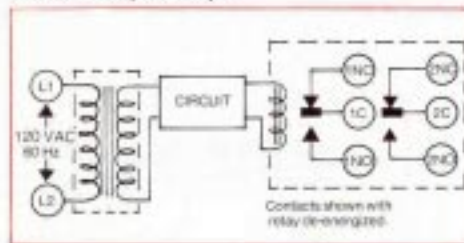


INPUT and OUTPUT OPTIONS

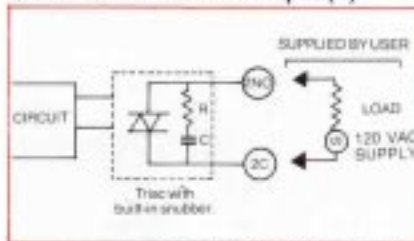
In addition to the standard input and output, the R Series can be supplied with any of the options shown to make the control

compatible with practically any power supply and load. The optional inputs and outputs are not UL listed.

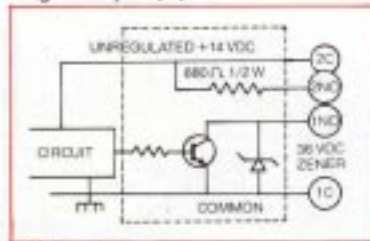
Standard Input/Output



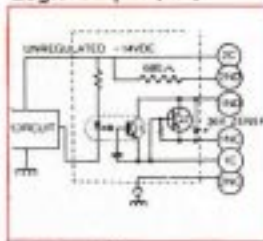
Solid State AC Switch Output (K)



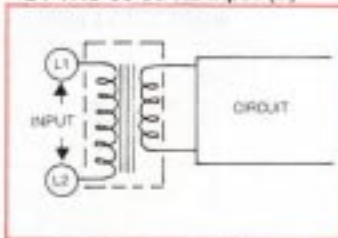
Logic Output (G)



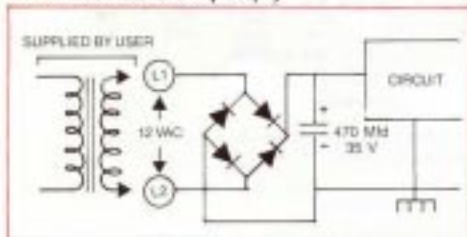
Logic Output (GA)



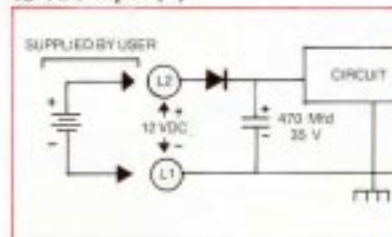
120 VAC 50-60 Hz Input (T)
230 VAC 50-60 Hz Input (E)
24 VAC 50-60 Hz Input (B)



12 VAC 50-60 Hz Input (A)



12 VDC Input (D)



24 VDC Input (W)

