

CONTROLS

LED Modulating Amplifier R42/T42 Series

Features:

- Provides ambient light immunity
- Avoids cross-talk between adjacent sensors
- Available in LIGHT or DARK energize models
- Time delay available
- Total photoelectric control
- Open collector or relay output available
- 115 or 230 VAC input

Description:

The R42/T42 Series offers complete controls designed to provide photoelectric sensor immunity to ambient light. Each will operate one LED reflective skanner or thru-beam pair *but cannot be used with an incandescent lamp device*. Each control provides modulated light source power, amplifies the phototransistor signal and functions as an output switch. Delay ON or Delay OFF timing modes available.

Only standard 115 or 230 VAC input is required. The R42 Series includes an output relay, while the T42 Series has an open collector transistor to switch an external load. Each module is



equipped with a red LED output indicator, and has its own sensitivity adjustment. Separate models are provided for "LIGHT energize" or for "DARK energize" operation and cannot be modified in the field. The user may wire the control for two different modulating frequencies to avoid cross-talk.

These modulating controls, while defeating the problem of ambient light, do not affect the operating distance or target resolution of any sensor. When used with any sensor, the T42 responds in 5 milliseconds, while the R42, limited by its mechanical relay, responds in 25 milliseconds.

Specifications: (at 25°C)

R42 Series

| | |
|-------------------------------|--|
| POWER INPUT | 115 or 230 VAC \pm 10%, 50–400 Hz, 2 VA |
| LED POWER | Supplied by unit. Internal resistor included for 100 mA LED |
| SENSOR VOLTAGE | 5 VDC at 1 mA max. |
| OUTPUT | Relay, SPDT, 5 amp at 115 VAC. 3 amp at 230 VAC or 28 VDC resistive load. 100 mA minimum load. |
| Life | 100,000 operations at rated load, with a cycle rate = 2 seconds ON/2 seconds OFF |
| RESPONSE TIME | 25 milliseconds typ. Counting rate 40 cps typ. |
| SENSITIVITY ADJUSTMENT | 15 turn |

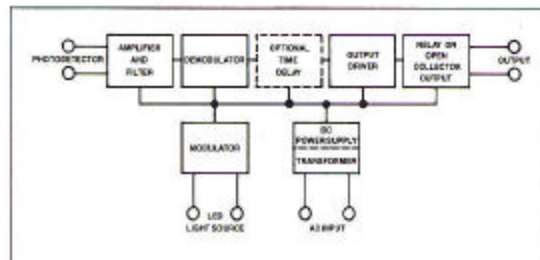
| | |
|--------------------|---|
| TEMPERATURE | Operating: 0° to 50°C Storage: -40° to 70°C |
| ENCLOSURE | 11 pin plug-in module; .750" pin circle dia.; black molded plastic case. Socket not included. |

T42 Series

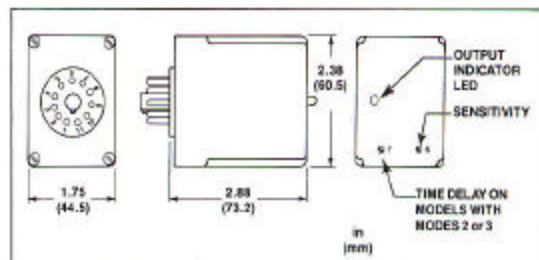
Specifications same as R42 Series except as follows:

| | |
|-----------------------|--|
| OUTPUT | |
| Open Collector | NPN transistor to switch up to 25 VDC at 100 mA max. |
| RESPONSE TIME | 5 milliseconds max. Counting rate 100 cps max. |

Block Diagram:



Dimensions:



R42/T42 Series

Compatibility With Sensors:

An R42 and T42 Series control can operate any LED thru-beam pair or scanner. A 100 mA LED can be wired directly across terminals 7 and 8. Others require an external 1/4 W resistor between the blue (+) lead and terminal 7. For a 60 mA LED use a 6.8 ohm resistor; for a 40 mA LED use a 27 ohm resistor. A 6.8 ohm and 27 ohm resistor are included with each R42 or T42 Series control. These controls should not be used to operate an incandescent lamp device.

Model Selection Guide:

| | | | | |
|----------------------|---|---|--|--|
| Part # | 4 | 2 | | |
| Output Type | LIGHT or DARK Energize | | | |
| RelayR | LIGHT7 | | | |
| Open | DARK8 | | | |
| Collector . . .T | | | | |
| Series | Timing Range | | | |
| | None0 | | | |
| | .05 to 3.00 sec1 | | | |
| | .25 to 15.0 sec2 | | | |
| | 1.0 to 60.0 sec3 | | | |
| Timing Mode | Repeatability of time delay and adjustable pulse width ranges is 2% to 15 seconds, 5% to 1 minute | | | |
| None0 | | | | |
| Delay ON2 | | | | |
| Delay OFF3 | | | | |

Accessories:

RELAYS

The T42 Series control may be used to drive an external relay or solid state relay. The following are available:

R02003 Solid State Relay rated 2.0 amps at 20–140VAC. Life is 10 million operations at rated load.

R00030 DPDT Relay rated 5 amps at 115VAC or 28 VDC resistive load. Life is 100,000 operations at rated load.

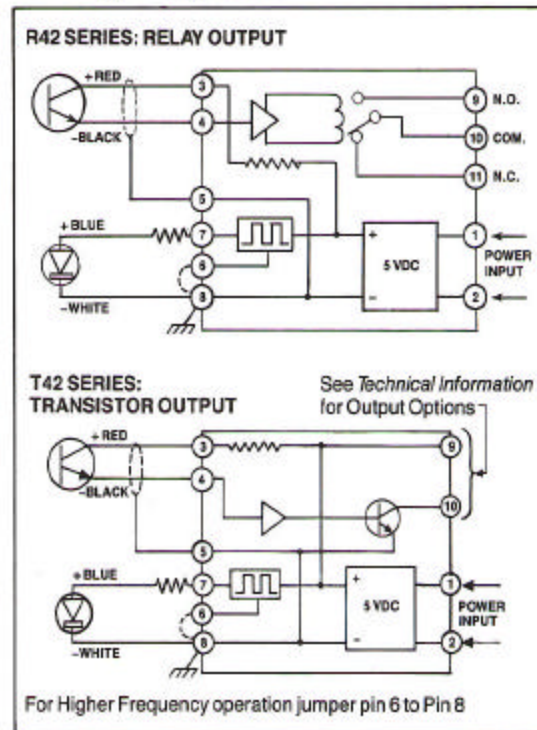
R00031 DPDT Relay rated 10 amps at 115VAC or 28VDC resistive load. Life is 25,000 operations at rated load.

All are 8 pin, plug-in modules. Sockets are not included.

SOCKET

Available — see *Accessories & Options*.

Wiring Diagram:



Time Delay Modes:

MODE 2 is delay ON. When specified for DARK the output will energize if the photodetector is DARK for a period of time greater than set. It will remain energized until the photodetector is LIGHT, then it will immediately de-energize. The converse occurs when the control is specified for LIGHT.

MODE 3 is delay OFF. When specified for DARK the output will energize instantly if the photodetector is DARK. It will remain energized as long as the photodetector is DARK. When the photodetector is LIGHT for the period of time set with the adjustment, the output will de-energize. The converse occurs when the control is specified for LIGHT.

Time Delay Mode Chart:

| FUNCTION | MODE | OUTPUT STATE | PHOTODETECTOR STATE | | | |
|----------------------|---------|--------------|---------------------|-------|------|-------|
| | | | DARK | LIGHT | DARK | LIGHT |
| Delay ON Instant OFF | 2 DARK | Energize | ΔT | | ΔT | |
| | 2 LIGHT | De-energize | | ΔT | | ΔT |
| Instant ON Delay OFF | 3 DARK | Energize | | ΔT | | ΔT |
| | 3 LIGHT | De-energize | ΔT | | ΔT | |