

CONTROLS

Amplifier with Time Delay R46/T46 Series

Features:

- Six time delay modes available
- Relay or open collector output
- Complete photoelectric control
- 15 turn adjustments
- Output indicator LED
- May be wired LIGHT or DARK energize
- 115 or 230 VAC input

Description:

The R46/T46 Series offers complete time delay photoelectric controls designed to operate one reflective skanner or thru-beam pair. Each unit provides light source power, amplifies the photodetector signal, actuating the timer which switches the output load.



R46/T46 Series

Only standard 115 or 230 VAC input is required. The R46 Series has a relay output, while the T46 Series has transistor output. Each is equipped with a red LED output indicator and sensitivity and time delay adjustments.

Specifications: (at 25°C)

R46 Series

POWER INPUT	115 or 230 VAC \pm 10%, 50–400 Hz, 2 VA
LAMP POWER	5 VDC at 125 mA max. supplied by unit
LED POWER	125 mA max. Requires external resistor
SENSOR VOLTAGE	5 VDC supplied by unit
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 max. Counting rate 40 cps max.
SENSITIVITY ADJUSTMENT	15 turn. External potentiometer may be used. See Using a Remote Potentiometer in <i>Technical Information</i> .
TIME DELAY 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.

T46 Series

Specifications same as R46 except for the following:

OUTPUT

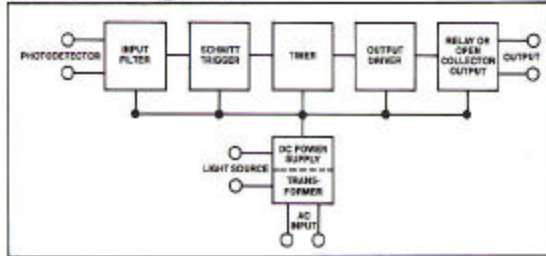
Open Collector NPN transistor to switch up to 25 VDC at 100 mA max.

Diode Protected Collector NPN transistor to switch inductive loads up to 5 VDC at 100 mA max.

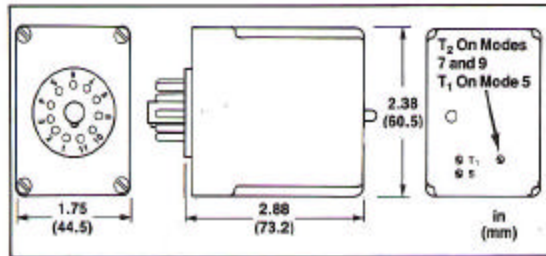
RESPONSE TIME See Standard Amplifier under Response Time Chart in *Technical Information*

R46/T46 Series

Block Diagram:



Dimensions:



Compatibility With Sensors:

These controls are designed to be used with most Skan-A-Matic reflective skanners and thru-beam combinations. When using LED light sources with these controls, a current limiting resistor must be used. This resistor is supplied with each skanner or thru-beam. The Response Time Chart in *Technical Information* gives the response time of various sensors when used with "T" Series controls. Use this data to select the desired combination.

Model Selection Guide:

To specify a control, the part number must consist of a type letter and five digits, denoting series, output option, delay or pulse mode and timing range. Construct the number as follows:

Part #	4	6			
Output Type					
Relay	R				
Open Collector T		T			
Series					
Output Option					
5 Amp Relay (R46 only)			1		
Open Collector (T46 only)				3	
Diode Protected NPN Collector (T46 only) . . .					5
Timing Range (See Range Chart)					
Time Delay					1, 2, or 3
Pulse Width					1, 2, or 3
Delay Mode (See Mode Chart)					
Time Delay					2, 3 or 7
Adjustable Pulse					5 or 9
Zero Speed or Stop Motion					8

230 VAC models available. Add the suffix "230 VAC" to part number. Example: T46321-230 VAC denotes an open collector control with a delayed ON operation mode in the .05 to 3.0 second range with 230 VAC input.

Accessories:

RELAYS

The T46 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.

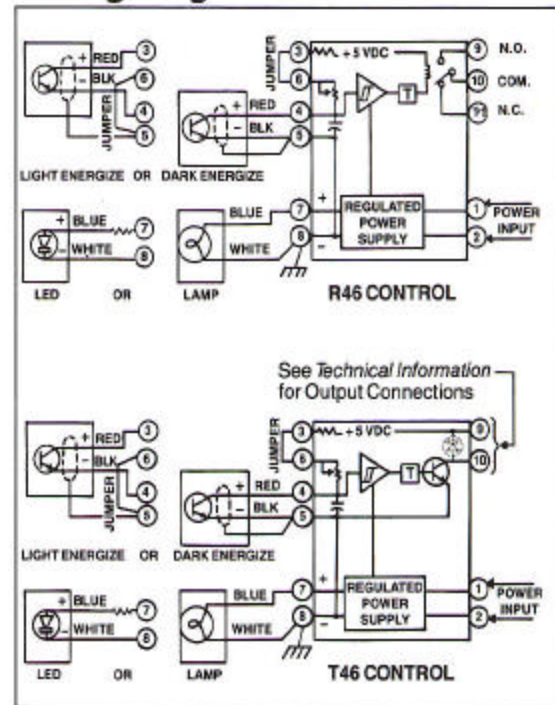
R00031 DPDT Relay rated 10 amps at 115VAC or 28VDC resistive load. Life is 25,000 operations at rated load.

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

SOCKET

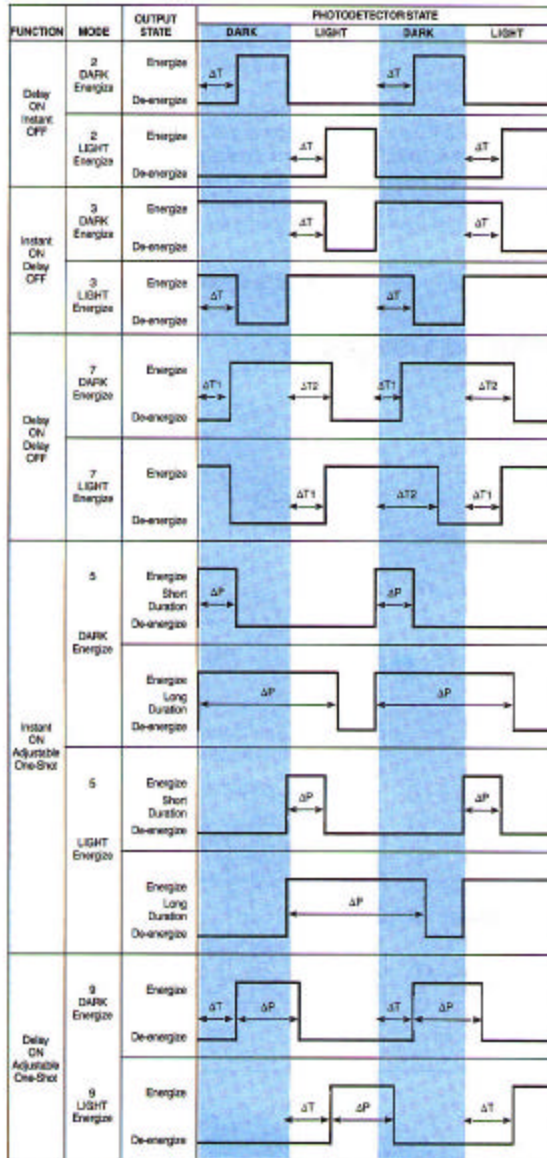
Available — see *Accessories & Options*, pg. 127.

Wiring Diagram:



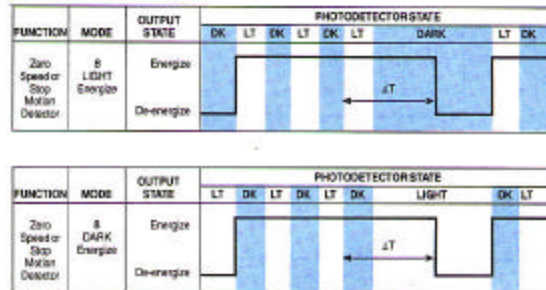
R46/T46 Series

Time Delay Mode Chart:



NOTE:
May be wired for dark energize or light energize operation. See wiring diagrams.
Separate Mode 7 delays must be in same timing range. See Range Chart.

Time Delay Mode Chart-Mode 8:



Time Delay Modes:

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

MODE 3 is delay OFF. When wired 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 wired LIGHT.

MODE 7 combines the delay ON and delay OFF in one control. When wired for DARK output energizes after the photodetector has been DARK for the set time and de-energizes when the photodetector has been LIGHT for a set time. Both times are independently adjustable. The converse occurs when the control is wired LIGHT.

One-shot Adjustable Pulse Modes 5 and 9

MODE 5 when wired DARK will output a pulse when the photodetector is DARK. The output pulse will always be of the same preset duration, regardless of the state of the photodetector. The converse occurs when the control is wired LIGHT.

MODE 9 when wired DARK, combines a delay ON as in MODE 2, and a pulse as in MODE 5. When the photodetector is dark for the period of time set with the adjustment, an output pulse will occur, as in MODE 5. Both the delay and pulse are independently adjustable. The converse occurs when the control is wired LIGHT.

Zero Speed or Stop Motion Detector

MODE 8 when wired LIGHT, the output will energize on a dark to light transition of the photodetector and remain energized as long as additional dark to light transitions are seen. If no transitions are seen for the time set, the output will de-energize. It will remain de-energized until another dark to light transition is seen. The converse occurs when the control is wired DARK.

Time Delay Range Chart

Modes 2,3,7,8 (ΔT)	Modes 5,9 (ΔT and ΔP)
Range 1 .05 to 3.00 sec.	Range 1 .002 to .100 sec.
Range 2 .25 to 15.0 sec.	Range 2 .020 to 1.00 sec.
Range 3 1.0 to 60.0 sec.	Range 3 .200 to 10.0 sec.

Repeatability of time delay and adjustable pulse width ranges is 2% to 15 seconds, 5% to 1 minute.