

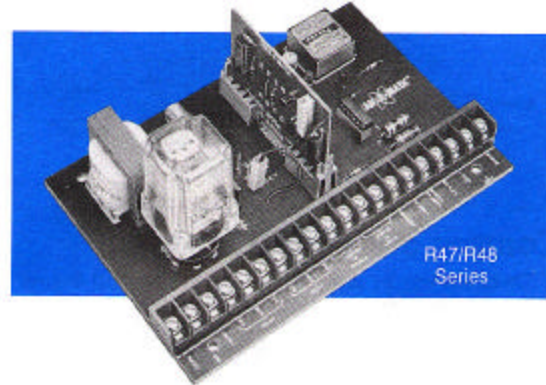
## CONTROLS

### Industrial Control R47/R48 Series

Available thru 1/95

#### Features:

- Chassis mounted unit
- Programmable timing and counting modes
- Four output options
- Plug-in relays
- NEMA 12 enclosure available
- 115 or 230 VAC input



#### Description:

The basic R47/R48 Series offer straight-thru ON/OFF controls, like the R40, but with a choice of four output devices. This basic ON/OFF control can be wired for either LIGHT or DARK energize operation. A jumper to latch feature locks the output ON once it has been energized by the sensor. A jumper to disable feature prevents the output from energizing. These features add extra programming capability.

The basic ON/OFF operation of the R47/R48 Series can be overridden by optional plug-in accessory cards. These cards provide a variety of time delay and counting functions and add greater flexibility to the basic control.

#### Specifications: (at 25°C)

<b>POWER INPUT</b>	115 or 230 VAC ± 10%, 50–400 Hz, 2VA
<b>LAMP POWER</b>	Hi: 5VDC @ 125 mA max. Lo: 3VDC @ 95 mA max.
<b>LED POWER</b>	Hi: 100 mA Lo: 35 mA
<b>SENSOR VOLTAGE</b>	5 VDC at 1 mA max.
<b>OUTPUT OPTIONS</b>	
<b>Open Collector</b>	NPN transistor to switch up to 40 VDC at 250 mA max. Integral to chassis.
<b>Relay 5A</b>	DPDT, 115 VAC or 28 VDC resistive load. 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. Replacement Part #R00030
<b>Relay 10A</b>	DPDT, 115 VAC or 28 VDC resistive load. 25,000 operations at rated load. Response time 25 milliseconds max. Counting rate 40 cps max. Replacement Part #R00031
<b>Solid State Relay 2.0 A</b>	20–140 VAC. Response time 9 milliseconds max. 10 million operations at rated load. Replacement Part #R02003
<b>SENSITIVITY ADJUSTMENT</b>	4 turn
<b>TIME DELAY ADJUSTMENT</b>	15 turn
<b>AMPLIFIER RESPONSE</b>	See Standard Amplifier under Response Time Chart in <i>Technical Information</i>

#### OPERATIONAL MODES

<b>ON/OFF Control</b>	May be set to either LIGHT energize or DARK energize by a jumper connection on the chassis panel
<b>Time Delay</b>	See Mode Chart
<b>Batch Counters</b>	Two digit and four digit batch counters are available. The desired batch size is programmed with thumbwheel switches. Once the set number of counts has been reached, the output of the R47/R48 will energize for an adjustable period of .02 to 1.0 second.

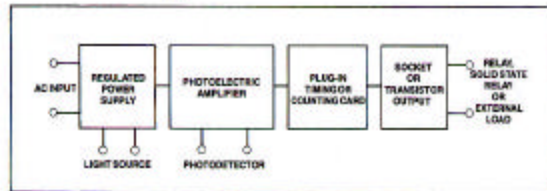
<b>TEMPERATURE</b>	Operating: R47 Series (enclosed chassis) 0° to 40°C R48 Series (open chassis) 0° to 50°C Storage: -40° to 70°C
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<b>CHASSIS DIMENSIONS</b>	5.0" (127.0mm) deep x 7.6" (193.0mm) wide x 3.0" (76.2mm) high max., .196" (4.98mm) dia. mounting holes on 4.25" (108.0mm) x 6.25" (158.8mm) centers. See Wiring Diagram & Dimensions.
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<b>OPTIONAL ENCLOSURE DIMENSIONS</b>	NEMA 12 box 6.8" (172.7mm) deep x 9.5" (241.3mm) wide x 4" (101.6mm) high max., .30" (7.62mm) mounting holes on 4" (101.6mm) x 8.75" (222.3mm) centers. No access holes provided.
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## R47/R48 Series

### Block Diagram:



### 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. The proper resistor is supplied on the control for light sources with 100 mA and 40 mA LED's. The 100 mA LED's are connected to the "LED HI" terminal, the 40 mA LED's are connected to the "LED LO" terminal. Units with the 60 mA LED's should be connected to the lamp terminal using a 68 ohm 1/4 W resistor supplied with the sensor. See Standard Amplifier under Response Time Chart in *Technical Information* for the response time of various sensors when used with various "T" Series controls. Use this data to select the desired combination.

### Model Selection Guide:

To specify a control of this series construct a six digit part number denoting enclosure, output option, delay or pulse mode, and timing range. Construct as follows:

Part # R 4	
<b>Enclosure</b>	<b>Timing Range (See Range Chart)</b>
NEMA 12 . . . . . 7	ON/OFF . . . . . 0
Chassis Only . . . . . 8	Time Delay . . . . . 1, 2, or 3
	Pulse Width . . . . . 1, 2, or 3
<b>Output</b>	<b>Delay Mode (See Mode Chart)</b>
5 Amp Relay . . . . . 1	ON/OFF . . . . . 0
Solid State Relay . . . . . 2	Time Delay . . . . . 1, 2, 3, 4, 7, or 8
Open Collector . . . . . 3	Adjustable Pulse . . . . . 5, 6, 9, or 0
10 Amp Relay . . . . . 4	

230 VAC models available. Add suffix "230 VAC" to Part #.  
Example: R47100-230 VAC

### Accessories:

#### ACCESSORY TIMER CARDS

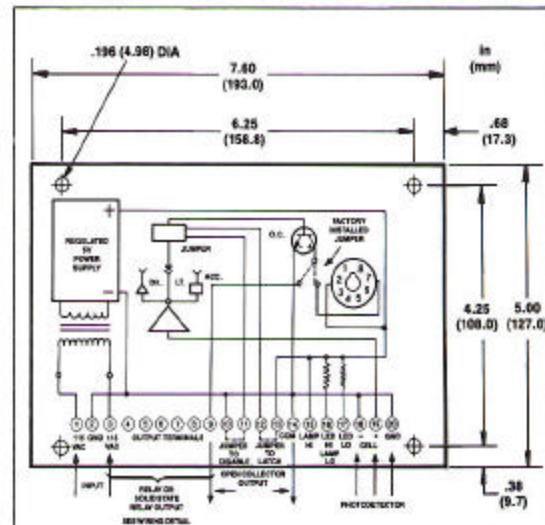
Interchangeable time delay cards may be ordered separately to convert an ON/OFF control or to change an existing mode or range. Order as part no. T221XX, with the last two digits selected above. Example: Order card with delay mode 2 and timing range 1 as T22121

#### BATCH COUNTER CARDS

2 digit and 4 digit models are available, each completely contained on a plug-in circuit card. Batch counters cannot be used if timer cards are employed. Order separately as:

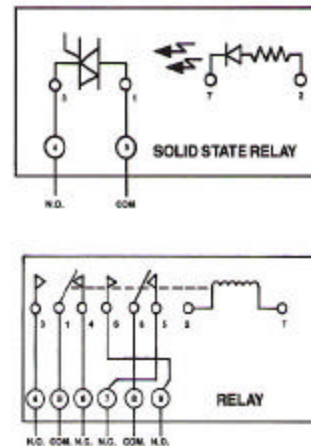
T22018 . . . . . to count from 0 to 99  
T22008 . . . . . to count from 0 to 9999

### Wiring Diagram & Dimensions:



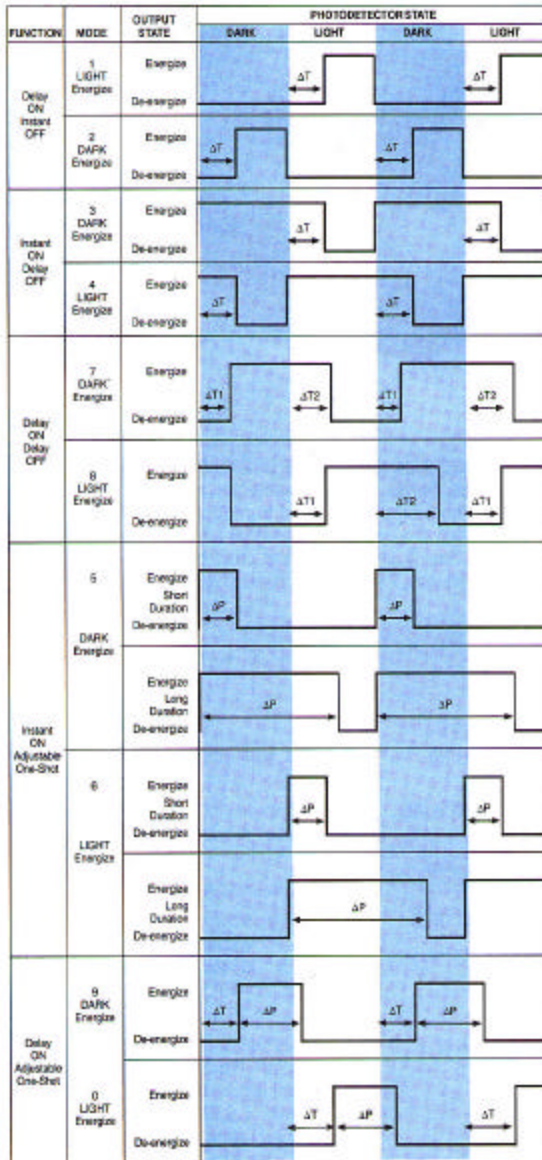
When an accessory board is used, jumper on control chassis must be moved to "Accy" position.

#### WIRING DETAIL-RELAY & SOLID STATE RELAY



# R47/R48 Series

## Time Delay Mode Chart:



### Time Delay Modes:

**MODE 1** is LIGHT, delay ON. If the photodetector is LIGHT for a period of time greater than set with the adjustment, the output will energize. It will remain energized until the photodetector is DARK, then it will immediately de-energize.

**MODE 2** is the same as MODE 1 except it will energize when the photodetector is DARK and will remain energized until the photodetector is LIGHT, then it will immediately de-energize.

**MODE 3** is LIGHT, delay OFF. If the photodetector is DARK the output will energize instantly. 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.

**MODE 4** is the same as MODE 3 except it will energize when the photodetector is LIGHT and will remain energized as long as the photodetector is LIGHT. When the photodetector is DARK for the period of time set with the adjustment, the output will de-energize.

**MODE 7** combines the delay ON and delay OFF in one control. The 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.

**MODE 8** is the same as MODE 7 except the output energizes after the photodetector has been LIGHT for a set time and de-energizes when the photodetector has been DARK for a set time. Again both times are independently adjustable.

### One-Shot Adjustable Pulse Modes:

These modes are available for either DARK or LIGHT energize operation and adjustable either shortened or lengthened pulse outputs.

**MODE 5** 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.

**MODE 6** is the same as MODE 5 except the output is energized when the photodetector is LIGHT.

**MODE 9** combines a delay ON, as in MODE 1, 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 times are independently adjustable.

**MODE 0** combines a delay ON as in MODE 2, and a pulse, as in MODE 6. When the photodetector is LIGHT for the period of time set with the adjustment, an output pulse will occur, as in MODE 6. Both the delay and pulse times are independently adjustable.

### Time Delay Range Chart:

Modes 1, 2, 3, 4, 7, 8 (ΔT)		Modes 5, 6, 9, 0 (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.