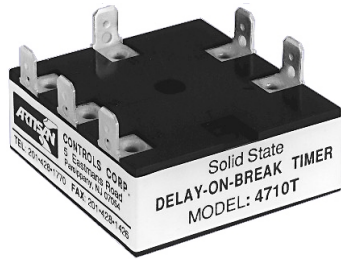




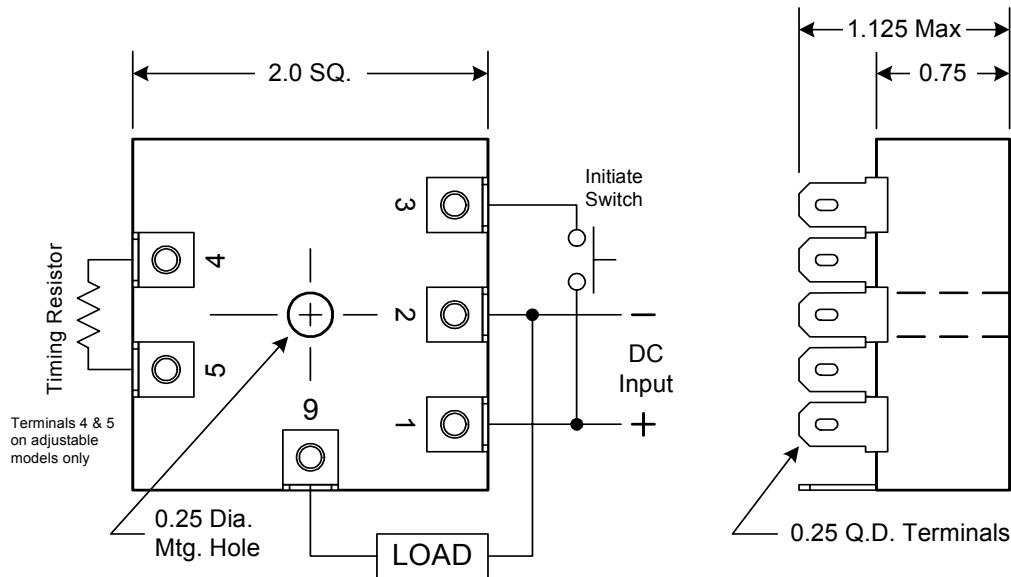
# Solid State Timers and Controllers

## 4710T Delay-On-Break Solid State Timing Module



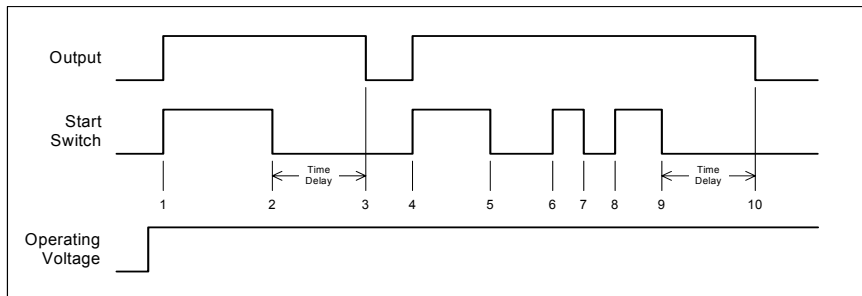
The model 4710T, developed from the standard Artisan Controls Corporation's model 4710 series is intended for applications on DC operating voltages as normally associated with locomotive, transit car, or rail system equipment. The 4710T series offers excellent transient protection and provides for reliable timing control. The model 4710T is capable of controlling remote DC loads to 1 ampere at voltages ranging from 22V to 90V DC. Closure of the Initiate Switch energizes the remote load circuit and resets the timing to zero. The timing will remain reset until the initiate switch is opened, at which time a preset timing period begins. The load circuit remains energized until the timing period has elapsed, then de-energizes. Should the initiate switch be reclosed before the timing period has been completed, the timing cycle will reset and the load circuit will remain energized. The model 4710T is available in both fixed and adjustable models.

### Mechanical & Wiring



### Timing Diagram

With Operating Voltage applied and the Initiate Switch open, the Output is OFF. At time #1, the Initiate Switch closes and the Output turns ON, energizing the load. At time #2 the Initiate Switch opens and the delay period begins. At time #3 the delay period ends, and the Output turns OFF. At time #4, the Initiate Switch closes and the Output turns ON, energizing the load. The Initiate Switch opens and closes at times #5, 6, 7, and 8, but re-closes before the end of the timing period keeping the Output ON and the load energized. At time #9 the Initiate Switch opens and remains open longer than the timing period causing the Output to turn OFF at time #10.



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# Solid State Timers and Controllers

## Specifications .....

**Operating Voltage:** 22V - 50V DC (-1), 50V - 90V DC (-2), See *Ordering Information*.

**Operating Current:** Less than 20 milliamperes plus external load current.

**Timing Mode:** Delay-On-Break - initiate switch activated. Delay-On-Break Timing period is fixed or remotely adjustable. See *Ordering Information*.

**Fixed Timing:** Factory fixed at any timing period from 0.1 seconds to 4,500 seconds.

**Tolerances On Fixed Timing:** ±10% of specified timing period.

**Adjustable Timing Ranges:** Five (5) ranges of adjustable delay-on-break timing from 0.1 seconds to 4500 seconds. See *Ordering Information*.

**Adjustable Timing Setting Accuracy:** Minimum Time -15%, +0% when timing resistor = 0 ohms.

Maximum Time - 0%, +15% when timing resistor = 1 Meg ohms,

**Timing Resistor Rating:** Worst case power dissipation never exceeds 3 milliwatts.

**Timing vs External Timing Resistor:** See *Timing vs External Resistance Curves*.

**Timing Variation:** Less than 5% of set point over full temperature and voltage range.

**Repeatability Of Timing Period:** ±1% nominal.

**Recycle Time:** Operating voltage must be removed for a minimum of 200 milliseconds to assure all timing and output circuits are reset.

**Initiate Switch:** Isolated SPST rated for 5 mA service - Load current does not flow through initiate switch.

**Output Rating:** Solid state switch switching the high side of the DC operating voltage rated for 5 milliamperes to 1 ampere inductive with inrush current to 15 amperes for 10 milliseconds.

### Voltage Drop Across Solid State

**Output Switch When Output ON:** 4 volts maximum at 1 Ampere.

### Leakage Current Through Solid State

**Output Switch When Output OFF:** 3 mA maximum.

**Transient Protection:** Protected by silicon transient suppressors responding to transients within  $1 \times 10^{-12}$  seconds to a peak pulse power dissipation of 1500 watts, with transient surge currents to 200 amperes for durations up to 1/120 second at 25°C. Maximum transient voltage protection is 6000 volts as delivered through a source resistance of 30 ohms with a maximum duration of 8.3ms.

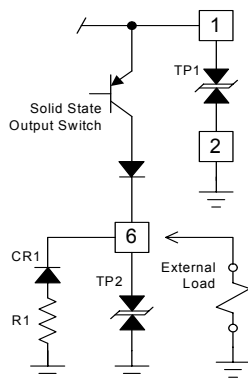
**Dielectric:** 1500V rms all terminals to case.

**Operating Temperature:** -40°C to +85°C

**Construction:** Encapsulated module with .25 quick connect wiring terminals.

**Data Sheet Revision Date:** December 19, 2005

## Internal Transient Protection For The Model 4710T Series .....



Shown in the schematic is a portion of the transient protection that is incorporated in the model 4710T series. Transient protector #1 (TP1) monitors the main DC operating voltage input terminal #1 and shunts all voltage transients that exceed the maximum rating for the timer circuit. Transient protector #2 (TP2) monitors the load circuit voltage output terminal #6 and shunts all voltage transients that might be generated by the inductive load circuit, or other external electrical transient generation equipment. Resistor R1, and diode CR1 act as shunts to flywheel any inductive current generated by the external load circuit when the solid state output switch turns off. The balance of the circuit incorporates additional transient protection devices at critical circuit locations.

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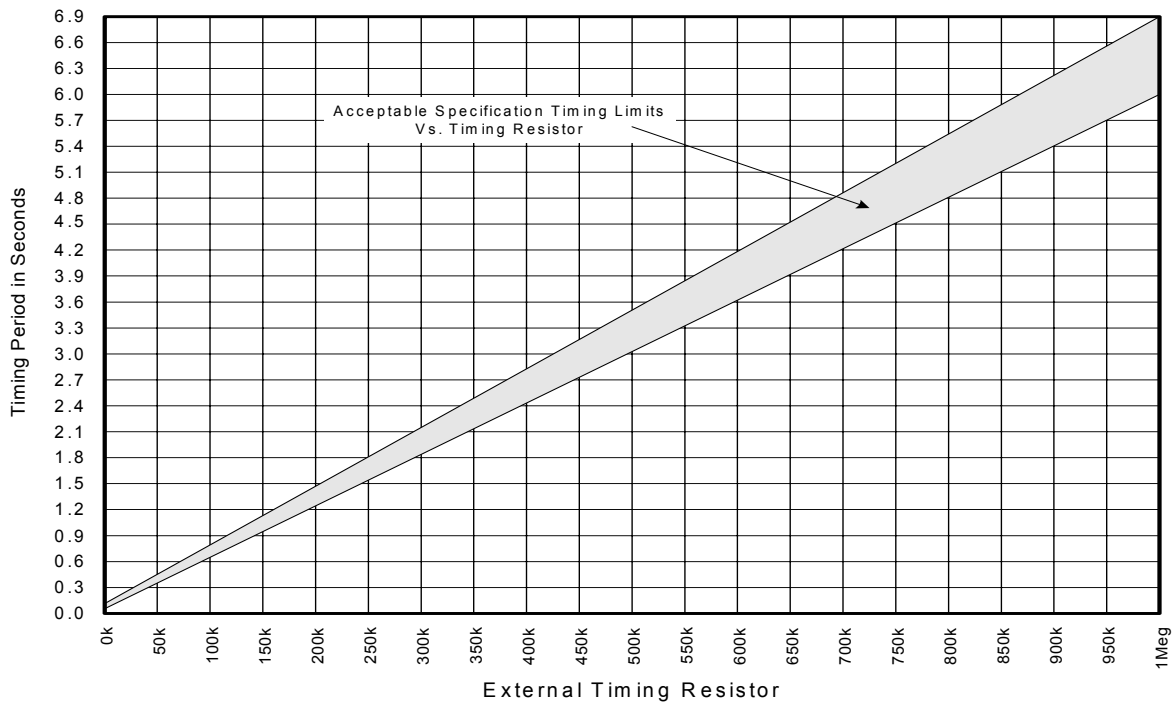
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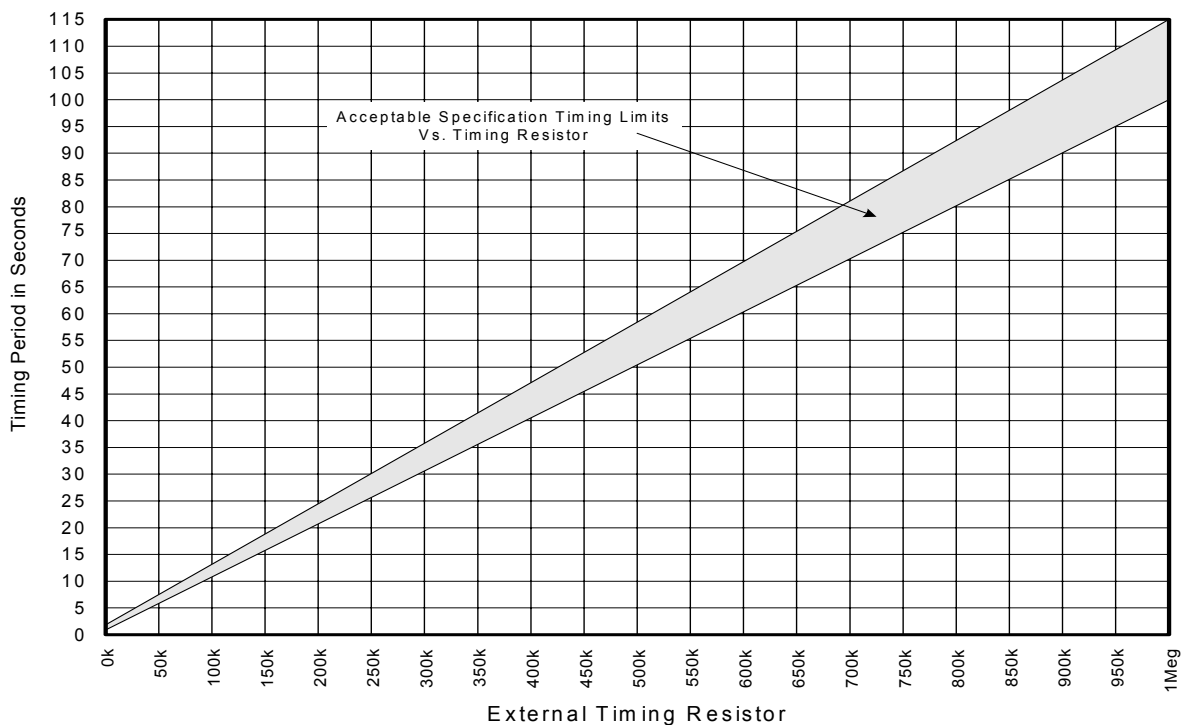
# Solid State Timers and Controllers

## External Resistance vs Timing Period Curves Model 4710T - A . . . . .

### Timing Range -1 (0.1 - 6.0 Seconds)



### Timing Range -2 (1 - 100 Seconds)



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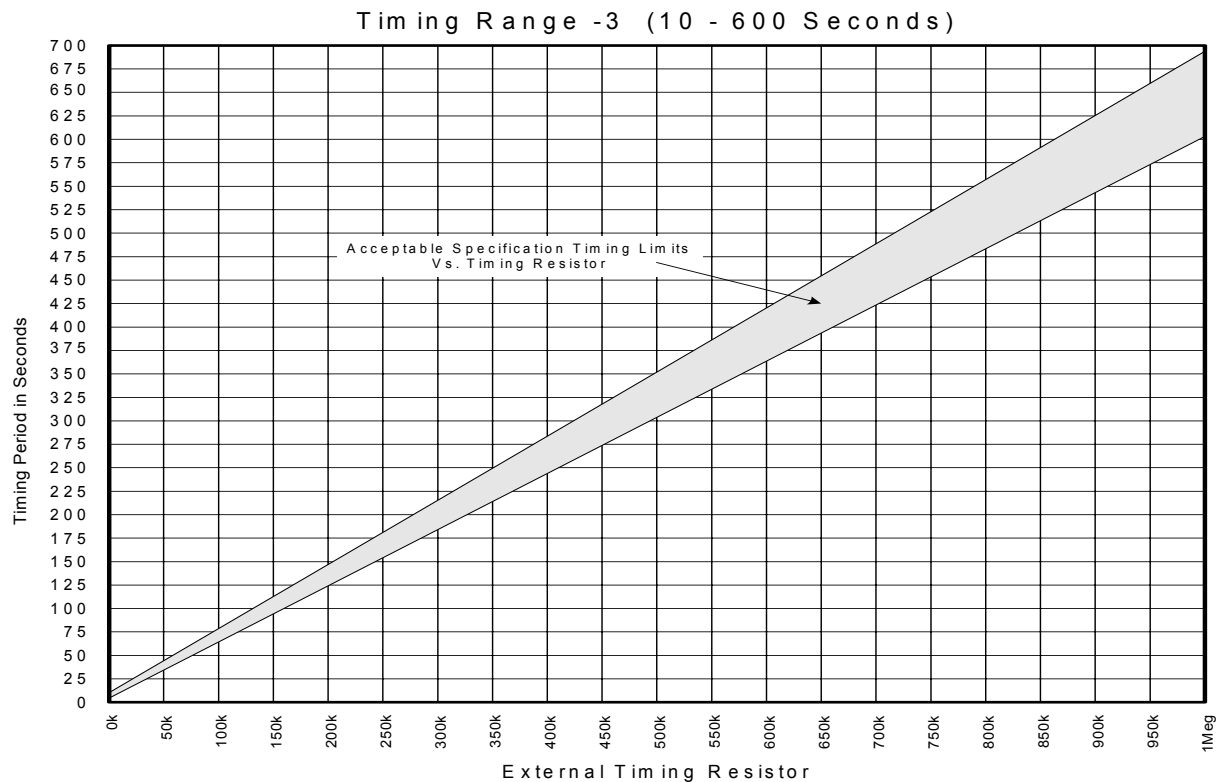
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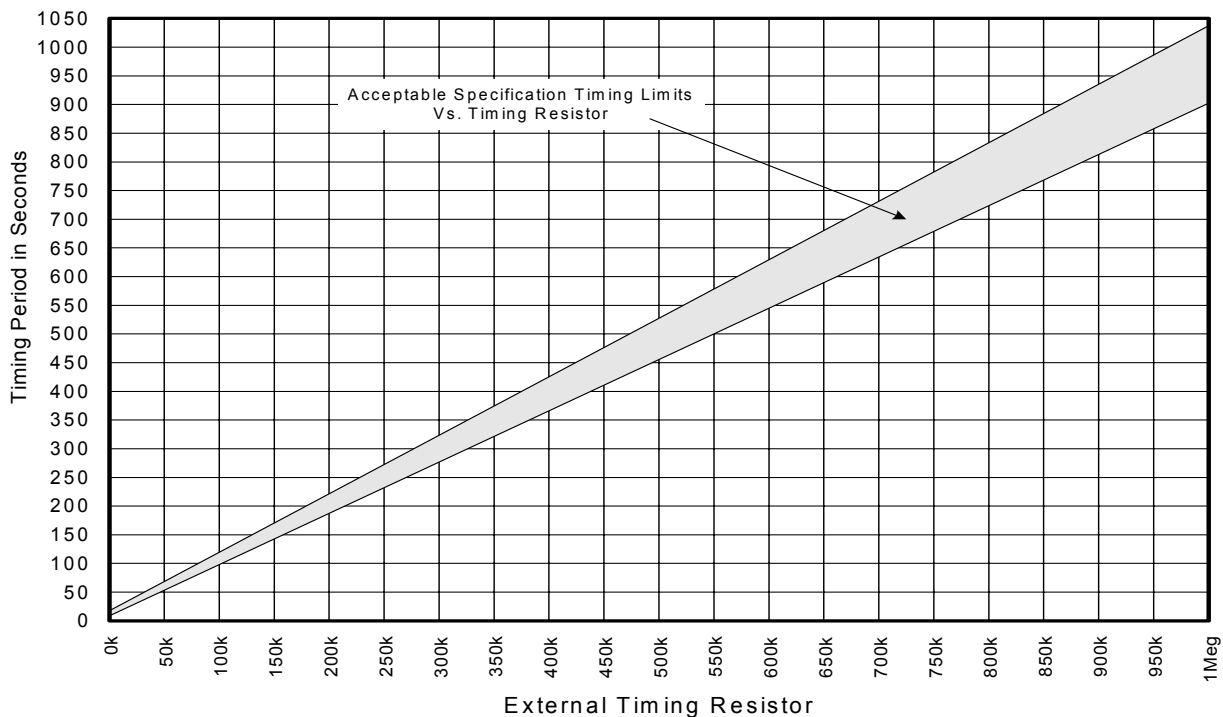


# Solid State Timers and Controllers

## External Resistance vs Timing Period Curves Model 4710T - A . . . . .



## Timing Range -4 (15 - 900 Seconds)



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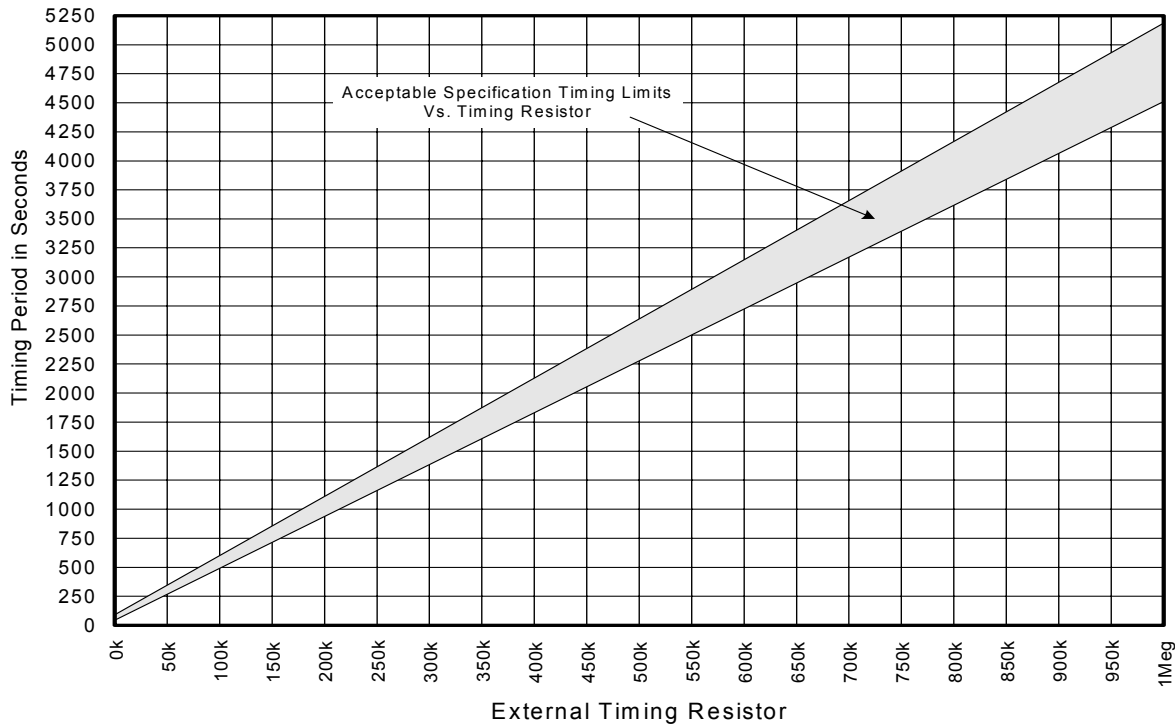
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# Solid State Timers and Controllers

## External Resistance vs Timing Period Curves Model 4710T - A . . . . .

Timing Range -5 (60 - 4500 Seconds)



## Ordering Information Fixed Timing Models . . . . .

Part Number	Operating Voltage	(X) Fixed Timing In Seconds
4710T - F - 1 - X	22V - 50V DC	Specify the fixed timing period in seconds from 0.1 to 4500.
4710T - F - 2 - X	50V - 90V DC	

Example: 4710T - F - 2 - 30: Operates from 50V to 90V DC, with fixed timing of 30 seconds

## Ordering Information Adjustable Timing Models . . . . .

Part Number	Operating Voltage	(X) Timing Range In Seconds
4710T - A - 1 - X	22V - 50V DC	-1 0.1 - 6
		-2 1 - 100
		-3 10 - 600
4710T - A - 2 - X	50V - 90V DC	-4 15 - 900
		-5 60 - 4500

Example: 4710T - A - 1 - 2: Operates from 22V to 50V DC, with adjustable timing from 1 to 100 seconds

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