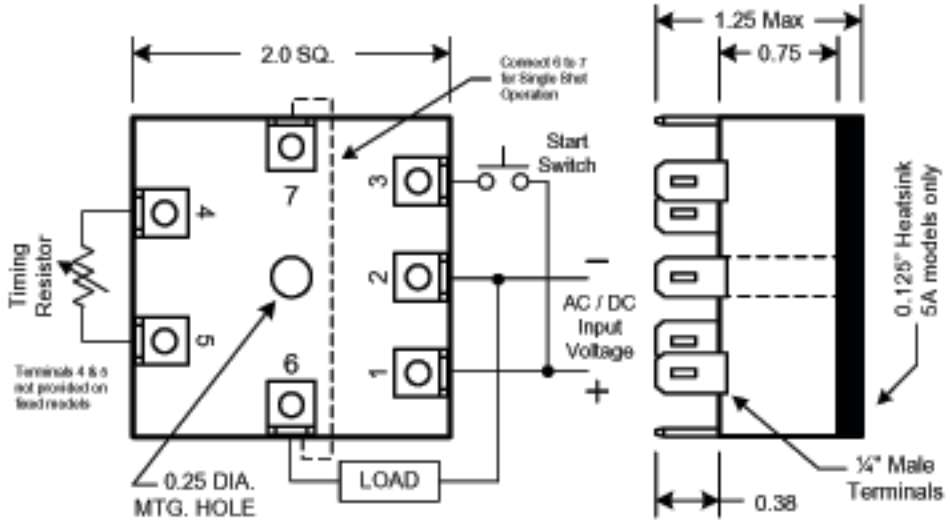
Solid State Timers and Controllers

4310

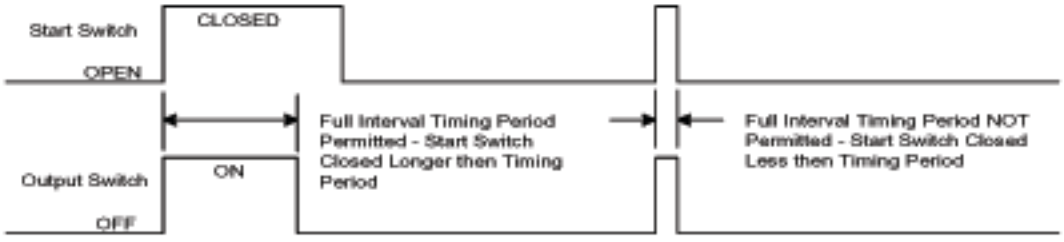
Interval / Single-Shot Timing Module

The model 4310 can perform as either an interval timer or as a single-shot timer. This model controls DC loads to 1 Ampere and AC loads to 10 Amperes. The AC models provide zero-voltage switching (standard) or random-voltage switching (cost effective) dependant on the output dash number selected. To use as a single-shot timer, install a jumper across terminals 6 & 7, then a full time delay is achieved with only a momentary start switch closure. Without the jumper, the unit operates as an interval timer, requiring the start switch to be closed for the entire timing period.

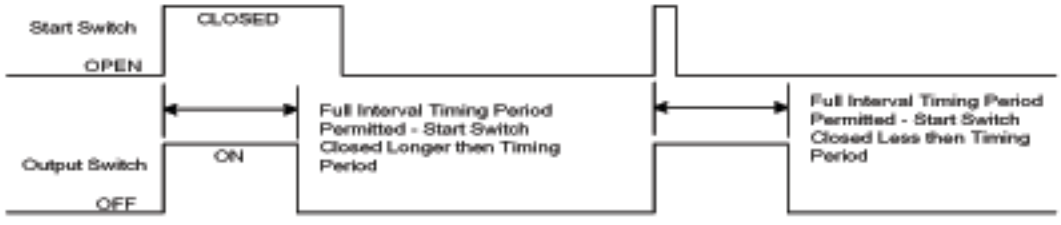
Mechanical & Wiring



Timing Diagram - Wired as Interval Timer



Timing Diagram - Wired as Single-Shot Timer



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Timing vs Resistance Chart

External Resistor (Ohms)	Timing Range Dash Number				
	-1	-2	-3	-4	-5
0	0.1	1	2	10	30
1 Meg	4	30	100	500	900
3 Meg	12	90	300	1,500	2,700
5 Meg	20	150	500	2,500	4,500
10 Meg	30	300	1,000	4,500	8,000

Ordering Charts: Fixed (4310F) & Adjustable (4310A)

Part Number	Operating Voltage	Output Rating	Fixed Time in Seconds	Fixed Time Tolerance
4310F	-2 (12VDC) -3 (24VDC) -4 (48VDC)	-A (1 Amp)	Specify the fixed timing period in seconds from 0.1 to 8000	-A (± 2%) -B (± 5%) -C (± 10%) -D (± 20%)
	-6 (24VAC) -7 (48VAC) -8 (120VAC) -9 (230VAC)	-A (1 Amp) -B (5 Amp) -C (1 Amp) -D (5 Amp) -A & -B = 0V switch (std) -C & -D = random switch		

Part Number	Operating Voltage	Output Rating	Timing Range
4310A	-2 (12VDC) -3 (24VDC) -4 (48VDC)	-A (1 Amp)	-1 (0.1 - 30) -2 (1 - 300) -3 (2 - 1000) -4 (10 - 4500) -5 (30 - 8000) All times in seconds
	-6 (24VAC) -7 (48VAC) -8 (120VAC) -9 (230VAC)	-A (1 Amp) -B (5 Amp) -C (1 Amp) -D (5 Amp) -A & -B = 0V switch (std) -C & -D = random switch	

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Specifications

Operating Voltage:	12V DC, 24V DC, 48V DC, 24V AC, 48V AC, 115V AC, 230V AC.
Voltage Tolerance:	±20%, AC 50/60 Hz.
Operating Current:	All voltages < 20mA plus load current requirements.
Timing Mode:	Interval or Single-Shot.
Fixed Timing:	From 0.10 seconds to 8,000 seconds.
Fixed Timing Purchase Tolerance:	±2%, ±5%, ±10%, and ±20%.
Adjustable Timing:	0.1 seconds to 8000 seconds covered by 5 ranges. Each range specified is covered from minimum to maximum using a 0 to 10 Meg ohm external timing resistance.
Timing Range Tolerance:	Minimum time - 15% +0%, maximum time - 0% +15%. Example: The -3 timing range operates in the 2 - 100 second range with 0 - 1 meg ohm external timing resistor could exhibit a minimum time of 1.7 seconds (2 seconds - 15%) with 0 ohms external timing resistance, and a maximum time of 115 seconds (100 seconds + 15%) with an external timing resistor of 1 meg ohm. The extended range to 1000 seconds using 10 meg ohms external timing resistance could be as high as 1150 seconds (1000 seconds + 15%).
Timing Resistor Rating:	Worst case power dissipation never exceeds 15 milliwatts.
Timing Resistor Tolerance:	Timing range specified is guaranteed as a minimum using 5% resistors.
Timing Variation:	Less than 6% of set point over specified temperature and voltage range.
Repeatability Of Timing Period:	±1% nominal.
Recycle Time:	Operating voltage must be removed for a minimum of 200 milliseconds to guarantee all timing and output circuits have reset.
Start Switch:	SPST-NO closes to initiate an output interval. Switch must be rated for low level operation down to 500 microamperes at 12V DC. When operating in the Single-Shot mode (terminals 6 & 7 jumpered) the Initiate switch must be closed for a minimum of 50mS to assure a full single-shot output timing interval. The Initiate switch may be reclosed 50mS after the timing interval has completed and the output switch turned off.
Output Rating:	-A & -C models rated for 70mA to 1A inductive with inrush currents to 15 A for 8 mS. -B & -D models rated for 70 mA to 5 A inductive with inrush currents to 40A for 8 mS. The -B & -D models can be extended to operate as high as 10A providing the metal base of the timer is maintained at a temperature no greater than 85°C. This can generally be achieved if ambient temperature does not exceed 30°C and the timer is mounted to a metal chassis that provides a minimum of 15 cubic inches of heat sink. Apply a thermal compound between the timer's base and the chassis.
Zero Voltage Switching:	-A & -B AC models provide zero voltage switching within ±50 microseconds of zero volts (standard), -C & -D AC models provide random voltage switching.
Output Voltage Drop in "ON" State:	2 volts maximum for DC models, 3 volts maximum for AC models.
Leakage Current in "OFF" State:	2 mA maximum for DC models, 4 mA maximum for AC models.
Transient Protection:	Protected by silicon transient suppressors which respond within 1×10^{-12} seconds to a peak pulse power dissipation of 1500 watts, with 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 8.3 milliseconds.
Dielectric:	1500V rms all terminals to case on -A & -C models, to heat sink on -B & -D.
Operating Temperature:	-20°C to +85°C.
Humidity:	95% non-condensing.
Construction:	Encapsulated module with .25 quick connect wiring terminals.
Agency Approvals:	UL File E47858: Component Appliance Controls ATNZ2(US) & ATNZ8(Can), Component Auxiliary Devices NKCR2(US) & NKCR2(Can).
Data Sheet Revision Date:	January 20, 2006

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