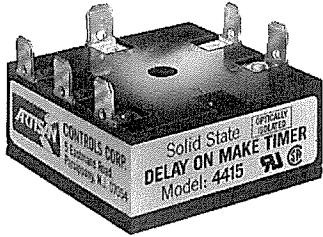




Solid State Timers and Controllers

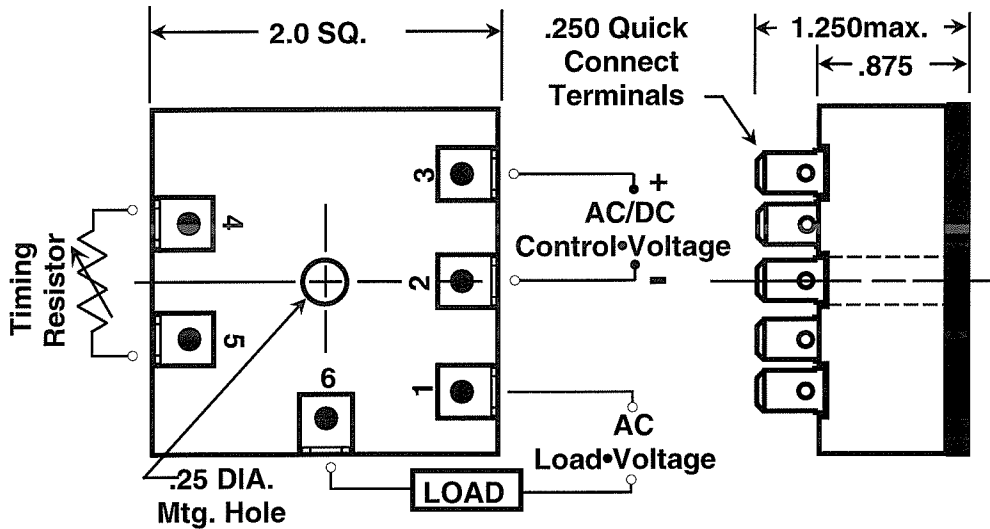
4415

Delay-On-Make Solid State Timing Relay



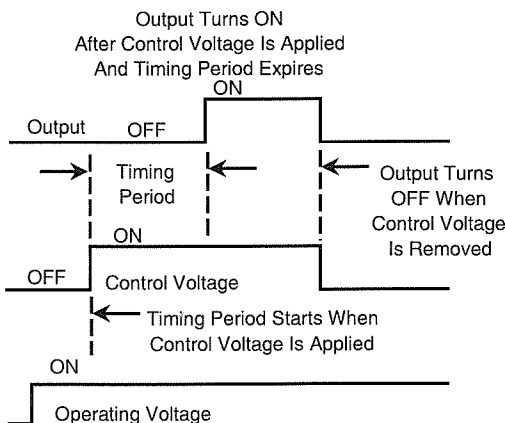
The model 4415 is a delay-on-make timing relay that provides AC or DC control of AC load circuits. Optical isolation between the input control voltage and output load voltage permits input control to be different from the output load voltage. When the control voltage is applied, the model 4415 remains in the OFF state permitting only leakage current to flow through the load circuit. When the preset timing period has elapsed, the timer switches ON permitting full load current to flow. The load circuit will remain energized for as long as the control voltage remains applied. The model 4415 provides zero voltage output switching of AC loads up to 10 amperes. Available in both fixed and adjustable timing models.

Mechanical & Wiring



Timing Diagram

External Timing Resistance Chart



External Resistor (Ohms)	DASH NO.				
	-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	5,000
10 Meg	30	300	1,000	5,000	8,000

How The Chart Works.

The -3 range indicates a timing range of 2 to 100 seconds when the external timing resistance varies from 0 to 1 meg ohm. The -3 extended range of 1000 seconds can be achieved by using a 0 to 10 meg ohm external resistance.

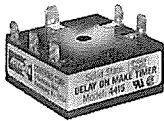
The model 4415 performs the same function as a solid state relay, except the output is delayed on turn on.





Solid State Timers and Controllers

Specifications



Control Voltage: DC (5, 12, 24, 48), AC (12, 24, 48, 115, 230) 50/60 Hz. @ 5mA max.

Load Voltage: AC only (12, 24, 48, 115, 230) 50/60 Hz.

Voltage Tolerances: ±20%.

Timing Mode: Delay-On-Make (opto Isolation between control & output voltage).

Fixed Timing: Factory fixed at any timing period from 0.1 seconds to 10,000 seconds.

Tolerances On Fixed Timing: 2%, 5%, 10%, and 20% available, see *Ordering Information*.

Adjustable Timing Ranges: Twenty (20) ranges from five (5) models of adjustable delay-on-break timing from 0.1 seconds to 8,000 seconds. See *Ordering Information*.

Adjustable Timing Setting Accuracy: Timing ranges shown on the *External Timing Resistance Chart* are guaranteed to be achieved using the external resistance range shown.

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

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

Timing Variation: Less than 6% of set point over full temperature and voltage range.

Repeatability Of Timing Period: ±1% at stabilized operating voltage temperature.

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

Output Rating: 50mA to 5A inductive with inrush current to 40A for 8 milliseconds.

Extending Rating: Operation to 10A by mounting the timer heat sink base on a metal surface and maintaining timer heat sink temperature to less than 90°C.

AC Zero Voltage Switching: Output turns ON within ±50 microseconds of line voltage 0°.

Output Switch Characteristics: 3 volt drop across output switch when ON, 4mA leakage when OFF.

Transient Protection: Output Switch protected by silicon transient suppressors responding to transients within 1×10^{-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 heat sink, 1500V rms from control voltage terminals to output terminals. Control voltage is optically isolated from the output switching terminals.

Operating Temperature: -20°C to +85°C

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

Agency Recognitions: UL File #E47858 (Component Appliance Controls #ATNZ2), CSA LR31931-3 (Industrial Control Equipment).

Data Sheet Revision Date: May 15, 1995

Ordering Information All Models

Part Number	Control Voltage	Load Voltage	Rating	Time Delay	Timing Tolerance
4415F - Fixed Timing	-1 (5V DC)	-5 (12V AC)	-A (1 Amp) -B (5 Amp)	-1 0.1-30	-A 2% -B 5% -C 10 % -D 20 % Fixed Timing Only
	-2 (12V DC)			-2 1-300	
	-3 (24V DC)			-3 2-2000	
	-4 (48V DC)			-4 10-4500	
	-5 (12V AC)			-5 30-8000	
4415A - Adjustable Timing	-6 (24V AC)	-8 (115V AC) -9 (230V AC)	-B (10 Amp) Requires Additional Heat sink	Specify	
	-7 (48V AC)			Fixed Time	
	-8 (115V AC)			.1-10,000	
	-9 (230V AC)			Seconds	

Examples Of Part Numbers

4415F - 1 - 9 - A - 30 - C Is the model 4415F with 5V DC Control Voltage, 230V AC load operating voltage, 1 ampere output switch, with a fixed timing period of 30 seconds ±10%.

4415A - 1 - 9 - B - 2 Is a model 4415A with 5V DC Control Voltage, 230V AC load operating voltage, 5A output switch, externally adjustable from 1 to 300 seconds.