

Solid State Timers and Controllers

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The model 4615 is a repeat cycle timer providing ten amperes of load control. Available in both remotely adjustable and fixed models, the 4615 series operates as a true repeat cycle timer, adjustment of the repeat cycle time will not effect the energize time, and adjustment of the energize time will not effect the repeat cycle time. When operating voltage is first applied to the model 4615, the output load circuit is energized for the energize time specified or set by remote resistors. This series is double encapsulated to provide a timing control module that is nearly impervious to environmental conditions, such as humidity and salt spray. In

Repeat Cycle

Timing Module

addition to the environmental protection afforded by the manufacturing technique, the 4615 series is also protected by high power voltage transient absorbing devices that permit operation in hostile electrical environments that might be found in systems such as locomotives, or transit car applications. The output contacts that control the external load circuit are also transient protected and provide additional service life.



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ACTEN Solid State Timers and Controllers

Specifications	
Operating Voltage:	12VDC (10V-16V), 24VDC (18V-30V), 48VDC (40V-60V) all DC models are non-polar and requires a maximum of 50mA of operating current. 12VAC (10V - 16V), 24VAC (18V - 30V), 48VAC (40V - 60V), 115VAC (95V - 135V), 230VAC (200V - 250V), 50/60Hz. (10mA). All AC voltages require a maximum of 30 mA of operating current.
Timing Mode:	Repeat Cycle Timing - Energize portion of cycle turns on with application of operating voltage.
Fixed Timing:	Repeat Cycle Time from 0.2 seconds to 86,400 seconds. Energize Time from 0.1 seconds to 90% of the Repeat Cycle Time.
Fixed Timing Purchase Tolerance Adjustable Timing Ranges: Energize Time Range Restrictions:	2%, 5%, 10%, and 20% available. 20 ranges of adjustable Repeat Cycle Times from 5 models. Adjustable energize times (ET) require a range restriction code 'A', or 'B' to be added to the part number. The '-A' restricts the Energize Time (ET) between 1% and 50% of whatever the Repeat Cycle Time (RCT) is set for. The '-B' restricts the Energize Time (ET) between 50% and 100% of whatever the Repeat Cycle Time (RCT) is set for.
Timing Range Tolerance:	Minimum time \pm 10%, maximum time \pm 10%. Example: The RCT adjustable timing range -3 operates in the 4 - 200 second range with 0 - 1 meg ohm external timing resistor. This model could exhibit a minimum time of 3.6 - 4.4 seconds with 0 ohms external timing resistance, and a maximum time of 180 - 220 seconds with an external timing resistor of 1 meg ohm. The extended range to 2000 seconds using 10 meg ohms external timing resistance is permitted to be 1800 - 2200 seconds, and still fall within the \pm 10% specification limit.
Timing Resistor Rating:	Worst case power dissipation never exceeds 15 milliwatts.
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
Output Switch: Output Rating:	SPST relay contact closed during the energize time. Contacts have UL/CSA rating of 10A 125V, 6A 277V AC, 1/8 HP, 125V, 277V AC, 5A 30V DC. Electrical life expectancy at 10A 125V AC, 6A 277V AC resistive is 100,000 operations minimum.
Transient Protection: Dielectric:	Protected by silicon transient suppressors which respond 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 8.3 milliseconds.
Operating Temperature:	-20°C to +85°C.
Humidity:	95% non-condensing.
Construction: Data Sheet Revision Date:	Encapsulated module with .25 quick connect wiring terminals. April 19, 1996



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External Timing Resistance Table (0 To 10 Meg Ohm Range).....

External Timing Resistor	REPEAT CYCLE TIME (RCT) DASH NO.					
In Ohms	- 1	- 2	- 3	- 4	- 5	
0	0.2	2	4	20	60	
1 MEG	8	60	200	1000	1800	
3 MEG	24	180	600	3000	5400	
5 MEG	40	300	1000	5000	9000	
10 MEG	60	600	2000	9000	16000	
Repeat Cycle Times (RCT) Shown In Seconds						

The *External Timing Resistor* value shown illustrates the range of RCT (Repeat Cycle Time) that can be achieved with any of the five dash numbers.

Ex: The -3 will have a RCT of 4 seconds when the external resistor is set to 0 ohms (a short). If a 1 meg ohm potentiometer is connected across the RCT timing terminals, the RCT will be able to be adjusted from 4 to 200 seconds. If a 10 meg ohm potentiometer is used, the range will be 4 to 2000 seconds.

Note: the ET (*Energize Time*) will range from 0 to 50% of the RCT for the -A *Range Restriction*, and 50% to 100% for the -B *Range Restriction* using the same value potentiometer as is used to set the RCT

See HOW TO SELECT THE CORRECT TIMING DASH NUMBERS FOR THE REPEAT CYCLE TIMING MODELS 4600, 4610, AND 4615

Ordering Information								
	Part Number	Operating Voltage	RCT Time In Seconds	RCT Timing Tolerance	ET Time In Seconds	ET Timing Tolerance		
	4615F - FIXED TIMING	-2 (12V DC) -3 (24V DC) -4 (48V DC) -5 (12V AC) -6 (24V AC) -7 (48V AC) -8 (115V AC) -9 (230V AC)	Specify The Fixed Repeat Cycle Time (RCT) In Seconds From 0.2 to 86,400	-A 2% -B 5% -C 10% -D 20%	Specify The Fixed Energize Time (ET) In Seconds From 0.1 to 90% Of The RCT	-A 2% -B 5% -C 10% -D 20%		
	Part Number	Operating Voltage	RCT Timing Range	ET Range Restriction				
	4615A -	-2 (12V DC) -3 (24V DC) -4 (48V DC) -5 (12V AC)	-1 0.2 - 60 -2 2 - 600	-A Energize Time is 1% - 50% of Repeat Cycle		P P		
	ADJUSTABLE TIMING	-6 (24V AC) -7 (48V AC) -8 (115V AC) -9 (230V AC)	-3 4 - 2,000 -4 20 - 9,000 -5 60 - 16,000	-B Energize Time is 50% - 100% of Repeat Cycle				

Example: 4615A - 8 - 3 - A Is a model 4615A with 115V AC operating voltage with an adjustable Repeat Cycle Time (RCT) from 4 to 2,000 seconds, and an adjustable Energize Time (ET) from 2 to 1,000 seconds. The ET is adjustable up to a maximum of 50% of whatever the Repeat Cycle Time (RCT) is set for.

Example No. 2: 4615A - 2 - 1 - B model 4615A with 24V DC operating voltage with an adjustable Repeat Cycle Time (RCT) from 0.2 to 60 seconds, with adjustable Energize Time (ET) from 0.2 to 60 seconds. The adjustable ET will always be added to 50% of whatever the Repeat Cycle Time (RCT) is set for. If the RCT were set to 10 seconds, the ET would be 5 - 10 seconds.

Example: 4615F - 6 - 600 - C - 150 - C Is a model 4615F with 24V AC operating voltage with a fixed Repeat Cycle Time (RCT) of 600 seconds, and a fixed Energize Time (ET) of 150 seconds. Both RCT and ET have a fixed 10% tolerance.