

DELAY-ON-DROPOUT TIME DELAY RELAYS

DOD Series Delay-On-Dropout Time Delay Relays



The DOD Series time delay relays feature solid state analog circuitry and true delay-on-dropout. Contacts are 2 form C (DPDT) and are rated 1000VA, 90W maximum switching power, 250V AC, 48V DC maximum switching voltage and 4 amperes maximum switching current. Power requirements: AC units-2 VA or less; DC units-2 watts or less. UL file #E96739(M). CSA file #LR62586. Mounting: 8-pin octal style plug. Spade terminal style available. Timing tolerance:fixed units +/- 5%, adjustable units 0 to +25% of max.specified delay time, min.specified delay time at low end. Repeatability: +/- 5%.

Ordering Information:

120 A .6 - 60 S L DOD
 ↑ ↑ ↑ ↑ ↑ ↑ ↑
 A B C D E F G

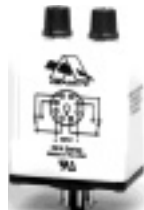
- A: Denotes nominal input voltage. Voltages Available: 24 & 120V AC; 24, 48 & 110V DC
Custom Voltages are available.
- B: Denotes type of input current required for operation: A = AC - Alternating Current, D = DC - Direct Current
- C & D: Denotes range of knob adjustability for timing (in seconds or minutes) where:
 C = Minimum time delay. D = Maximum time delay for adjustable TDR'S.
- Note: 1.) Contact factory for ranges available. **Custom Timing is available.**
 2.) Both values (C & D) can be replaced by a single value for a factory preset time delay in seconds or minutes from 0.1 secs. through 300 secs.
- E: Denotes use of seconds or minutes in timing value(s), S = seconds, M = minutes.
- F: Enter "L" if optional 11-pin spade terminals are required. Call factory for dimensional differences.
- G: Denotes DPDT (2 form C) 4 amp delay on dropout DOD Series Time Delay Relay.

Mfr. No.	Delay	Input Voltage	Mode of Operation
120A.1-10SDOD	.1-10 SEC	120V AC	DPDT
120A.6-60SDOD	.6-60 SEC	120V AC	DPDT
120A1.2-120SDOD	1.2-120 SEC	120V AC	DPDT
120A3-300SDOD	3-300 SEC	120V AC	DPDT
24D.1-10SDOD	.1-10 SEC	24V DC	DPDT
24D1.2-120SDOD	1.2-120 SEC	24V DC	DPDT
24D3-300SDOD	3-300 SEC	24V DC	DPDT

Many other configurations available;consult factory.

ADJUSTABLE RECYCLE TIME DELAY RELAYS (FLASHERS)

DFA Series Recycling Timers



The DFA Series recycling timer has solid state digital CMOS circuitry with DPDT isolated 10A relay contacts. The OFF and ON time is user adjustable over a 100:1 span. Adjustable cycling timers provide a continuously operating off/on cycle as long as power is applied to the input terminals. Two knob operated potentiometers provide user adjustment of both the flash rate and duty cycle. Contact rating:10 Amps @ 240V AC resistive. Operating temp. range: -45 C to +70 C. Mounting:8-pin octal style plug. Spade terminal style available. Timing tolerance:fixed units +/- 5%, adjustable units 0 to + 10% of maximum specified delay time, minimum.specified delay time at low end.Repeatability:+/- 1%. Reset:Upon interruption of power. Timing cycle interrupt transfer: None.

Ordering Information:

120 A A / A R* L DFA
 ↑ ↑ ↑ ↑ ↑
 A B C D E F

- A: Denotes nominal input voltage. Voltages Available: 12, 24, & 120V AC; 12, 24, 48 & 110V DC
Custom Voltages are available.
- B: Denotes type of input current required for operation: A = AC - Alternating Current, D = DC - Direct Current
- C: Denotes first timing period. Contact factory for timing ranges available. For standard units this is an "OFF" time delay. Fixed timing available. If fixed timing is desired, please indicate S for secs., M for mins. or H for hours.
- D: Denotes second timing period. For standard units this is an "ON" timing period. Fixed timing available.
- *Note: If the ON time delay period is desired to occur first upon application of input power, place an "R" after the second timing period code letter.
- E: Enter "L" if optional 11-pin spade terminals are required. Call factory for dimensional differences.
- F: Denotes 10 ampere 2 form C adjustable recycle flasher - DFA Series.

Mfr. No.	Recycle Delay	Input Voltage	Mode of Operation
120AA/ADFA	.1-10 SEC	120V AC	DPDT
120AC/CDFA	.6-60 SEC	120V AC	DPDT
120AF/FDFA	1-100 MIN	120V AC	DPDT
12DA/ADFA	.1-10 SEC	12V DC	DPDT
12DC/CDFA	.6-60 SEC	12V DC	DPDT
12DF/FDFA	1-100 MIN	12V DC	DPDT
24DA/ADFA	.1-10 SEC	24V DC	DPDT
24DC/CDFA	.6-60 SEC	24V DC	DPDT
24DF/FDFA	1-100 MIN	24V DC	DPDT

Many other configurations available;consult factory.

ADJUSTABLE RECYCLE TIME DELAY RELAYS (FLASHERS)

HDFA Series Recycling Timers



The HDFA Series low cost adjustable recycling timers are packaged in the familiar hockey-puck enclosure and may be used to alternately switch power to two independent loads. Both OFF and ON times are independently adjustable by means of built-in potentiometers. Load power is controlled by an isolated SPDT relay contact. Timing ranges are adjustable of a 100:1 span and cover 0.25 seconds to 100 minutes. Contact Rating: 10 amperes maximum @ 250V AC or 30V DC. Operating Temp. Range: -40 C to 65 C. Mounting: Single center hole mount. Timing cycle interrupt transfer: None.

Ordering Information:

120 A A / A R HDFA
 ↑ ↑ ↑ ↑ ↑
 A B C D E F

- A: Denotes nominal input voltage. Voltages available: 12V, 24V & 120V AC; 12V, 24V, 48V & 110V DC. **Custom voltages are available.**
- B: Denotes type of control input power required for operation: A = AC - Alternating Current; D = DC - Direct Current.
- C: Denotes first timing period which is an "OFF" time delay. See chart below. If fixed time is required, specify time followed by S=seconds; M=minutes; or H=hours.
- D: Denotes second timing period; see chart below. For fixed timing, specify time followed by S=seconds; M=minutes; or H=hours.
- E: Add "R" only if the "ON" time delay period is to occur first. When using "R" option, enter timing range for ON-Time in "C" & OFF-Time in "D".
- F: Denotes Amperite HDFA Series 10 ampere SPDT recycling timer.

Mfr. No.	Recycle Delay	Input Voltage	Mode of Operation
120AA/AHDFA	.25-10 SEC	120V AC	SPDT
120AC/CHDFA	.6-60 SEC	120V AC	SPDT
120AF/FHDFA	1-100 MIN	120V AC	SPDT
12DA/AHFA	.25-10 SEC	12V DC	SPDT
12DC/CHDFA	.6-60 SEC	12V DC	SPDT
12DF/FHDFA	1-100 MIN	12V DC	SPDT
24DA/AHDFA	.25-10 SEC	24V DC	SPDT
24DC/CHDFA	.6-60 SEC	24V DC	SPDT
24DF/FHDFA	1-100 MIN	24V DC	SPDT

Many other configurations available; consult factory.

FLASHERS



DFS Series Flashers

The DFS Series flasher has CMOS circuitry. Units are 100% solid state with no moving parts to wear out, units have three terminals and are packaged in the familiar 2" x 2" x 3/4" hockey puck enclosure, epoxy sealed. Numerous voltage ratings, both AC and DC, are available. Load current ratings available are 3 amps and 12 amps (except for 110V DC units). Flash rate is fixed and available over a range of 1 to 1000 flashes per minute, with a 50% duty cycle. UL and CSA approvals pending. Operating temp. range: -23 C to +60 C. Mounting: single center hole mount. Input voltage limits: +/- 10% of nominal.

Ordering Information:

Refer to model chart below. Select appropriate model number in accordance with the power input and load current required, and specify desired flash rate in flashes per minute (FPM). Standard flash rates: 30, 45, 60, 75, 90 and 120 FPM.

Note: Custom voltages and flash rates are available; consult factory.

MODEL	VOLTAGE	CURRENT
DFS123	12V AC	3 AMPERES
DFS124	12V AC	12 AMPERES
DFS143	24V AC	3 AMPERES
DFS144	24V AC	12 AMPERES
DFS152	120V AC	3 AMPERES
DFS154	120V AC	12 AMPERES
DFS162	230V AC	3 AMPERES
DFS163	230V AC	12 AMPERES
DFS164	110-230V AC	3 AMPERES
DFS166	110-230V AC	12 AMPERES

MODEL	VOLTAGE	CURRENT
DFS219	12V DC	3 AMPERES
DFS220	12V DC	12 AMPERES
DFS224	24V DC	3 AMPERES
DFS225	24V DC	12 AMPERES
DFS236	36V DC	3 AMPERES
DFS237	36V DC	12 AMPERES
DFS248	48V DC	3 AMPERES
DFS249	48V DC	12 AMPERES
DFS290	110V DC	0.5 AMPERES
DFS291	110V DC	2 AMPERES

EXAMPLE: DFS152- 60 denotes 120 volt AC power, 3 ampere load rating, 60 FPM.
 MODEL - FPM

FLASHERS



DFV Series Adjustable Flashers

The DFV Series adjustable flasher has solid state analog circuitry with DPDT relay output. Flash rate timing selection:Knob adjustable potentiometer. UL file #E96738(M). CSA File #LR62586. Contact rating:10 Amps @ 240V AC resistive. Operating temp.range:-45 C to +70 C. Mounting: 8-pin octal style plug. Spade terminal style available. Transient protection: 1 Joule MOV.

Ordering Information:

120 A F 10 - 120 L DFV
 ↑ ↑ ↑ ↑ ↑ ↑
 A B C D E F G

- A: Denotes nominal input voltage. Voltages Available: 12, 24 & 120V AC;
12, 24, 48 & 110V DC
Custom Voltages are available.
- B: Denotes type of input current required for operation:A = AC- Alternating Current,
D = DC- Direct Current
- C: Denotes flasher configuration.
- D & E: Denotes range of knob adjustability for flash rate where:
D= Minimum number of flashes per minute (FPM).
E= Maximum number of flashes per minute (FPM).
- Note: Standard rate is from 10 to 120 FPM. **Custom rates are available within ranges between minimum of 1 FPM and a maximum of 240 FPM .**
- F: Enter "L"if optional11-pin spade terminals are required.
Call factory for dimensional differences.
- G: Denotes 10A DPDT (2 form C) adjustable flasher - DFV Series.

Mfr. No.	FPM Adj.	Input Voltage	Mode of Operation
24AF10-120DFV	10-120	24V AC	DPDT
120AF10-120DFV	10-120	120V AC	DPDT
12DF10-120DFV	10-120	12V DC	DPDT
24DF10-120DFV	10-120	24V DC	DPDT
48DF10-120DFV	10-120	48V DC	DPDT

Many other configurations available;consult factory.



STOP-ALERT Automotive Lamp Pulsator

The STOP-ALERT is a 100% solid state device that is connected in series with one or more automotive lamps. The unit controls current to lamp to produce a pulsating illumination effect. Duty cycle:85%. Standard pulse rate:300 pulses per minute. Maximum surge voltage:50V. Maximum surge current: 160A.Enclosure Material:glass reinforced black Lexan plastic. Termination:two 0.250 quick connect terminals.

Ordering Information:

STOP-ALERT™ INSTALLATIONPROCEDURE:

- Locate existing 12V power wire feeding lamp.
- Cut and strip wire at convenient place.
- Crimp supplied terminals to exposed wires.
- Assemble power feed wire to terminal 1 of STOP-ALERT™.
- Assemble lamp wire to terminal 2 of STOP-ALERT™.

Mfr No.	Pulses Per Min.	Input Voltage	Mode of Operation
STOP-ALERT	300	12V DC	FLASHER

Many other configurations available;consult factory.



FREEDOM 10 TIME DELAY RELAY

The Freedom 10 Time Delay Relay features CMOS IC control circuitry and operates from any supply voltage from 24 to 240 volts AC or DC, 50/60 Hz. DPDT output contacts are rated from 5 Amps resistive or 1/10 HP motor load at 120/240 VAC. Timing is adjustable from 1 seconds to 15 minutes by using two calibrated controls together in any combination desired. The Freedom 10 is available with either octal or spade termination. UL/CSA Listed.

Freedom 10 Plug In Time Delay Relay 5 Ampere DPDT Output, Octal or Spade

Specify either FREEDOM 10/OCTAL or FREEDOM 10/SPADE

4210 AC FLASHER / 423 DC FLASHER

The model 4210 is an all solid state flasher for use in AC circuits only for loads up to 1 ampere. The output switch is On for as long as it is Off, and is available with fixed flash rates from 1 to 300 flashes per minute. To order, specify:

<u>Part Number:</u>	<u>Voltage</u>	<u>Flash Rate</u>
4210	-12VAC -24VAC -48VAC -115VAC -230VAC	Specify fixed flash rate 1-300 flashes per minute

The model 423 switches the high side of the DC operating voltage when it is "ON." The flash rate can be specified from 1 to 600,000 flashes per minute, with a 50% duty cycle, handling loads to 0.5 amperes. In ordering, specify 423 - operating voltage from 5 - 48 VCD Flash rate in flashes per minute.

<u>Part Number:</u>	<u>Voltage</u>	<u>Flash Rate</u>
423	-5VDC -12VDC -24VDC -48VDC	Specify fixed flash rate required from 1-600,000 flashes per minute

MODEL 4608 ON-OFF REPEAT CYCLE TIMER

The model 4608 operates a set of 20 Ampere high power contacts on a repeat cycle basis. The adjustable ON and OFF times are set by the means of a ten position binary coded dip switch on the front of the timer. Both the ON and OFF times can be set from 1 - 1024 seconds in one second increments. Setting the ON portion of the cycle time will not affect the OFF portion and likewise setting the OFF Portion will not affect the ON time setting. It is available in either 115 or 230 volts AC. The output is a set of SPST - NO contacts U/L rated at 20 amperes.

Specify either 4608A-115, or 4608A-230.



10 T I M E R S & F L A S H E R S

4310 INTERVAL / SINGLE SHOT TIMER

The model 4310 can perform as either an interval timer, or as a single shot timer. To use as a single shot timer, jumper across terminals 6 & 7, the load will remain ON for the full timing duration even if the initial switch closure is momentary. Without the jumper, the initial switch must be closed longer than the timing period. The 4310 model controls DC load circuits to 1 Ampere, and AC load circuits up to 10 Amperes with zero voltage switching. This model is available in 12, 24, 48 volts DC, 24, 48, 115, & 230 volts AC in five timing periods. UL, CSA listed.



<u>Part Number</u>	<u>Operating Voltage</u>	<u>Output Rating</u>	<u>Timing in seconds</u>
4310A	-2 (12V DC)	-A (1 Amp)	-1 (0.1 - 30)
	-3 (24V DC)		-2 (1 - 300)
	-4 (48V DC)		-3 (2 - 1000)
	-6 (24V AC)	-B (5 AMP)	-4 (10 - 4500)
	-7 (48V AC)		-5 (30 - 8000)
	-8 (115VAC)		
	-9 (230VAC)		

4710 DELAY ON BREAK SOLID STATE TIMER

The model 4710 is a Delay-On-Dropout timer. Closure of the initiate switch will energize the load. The timing period begins when the initiate switch opens and resets when the switch is reclosed. The load circuit remains energized until the timing period has elapsed, then de-energizes. The model 4710 controls DC loads to 1 ampere, and AC loads to 10 amperes.



<u>Part Number</u>	<u>Operating Voltage</u>	<u>Output Rating</u>	<u>Timing in seconds</u>
4710A	-2 (12V DC)	-A (1 Amp)	-1 (0.1 - 30)
	-3 (24V DC)		-2 (1 - 300)
	-4 (48V DC)		-3 (2 - 1000)
	-6 (24V AC)	-B (5 AMP)	-4 (10 - 4500)
	-7 (48V AC)		-5 (30 - 8000)
	-8 (115VAC)		
	-9 (230VAC)		

4600 & 4610 REPEAT CYCLE TIMERS

This series of timers are a true repeat cycle timer, not an ON-OFF cycle timer. They are used to "turn on" a load circuit for a predetermined period of time, turns off for a period of time and then repeats this cycle for as long as voltage is applied. Once the repeat cycle time window has been established, the energized time can be moved in and out without effecting the length of the repeat cycle time. The model 4600 can control 1 ampere loads and is available in both AC and DC voltages. The model 4610 controls only AC loads up to 10 amperes. There are two different energized ranges available. (-A) has an adjustable energized time in seconds from 0.1 to 50% of the Repeat Cycle time. With the (-B) model the energized time can be set from 50 to 100% of the Repeat Cycle Time. Both models are UL and CSA listed.



<u>Part Number</u>	<u>Operating Volt.</u>	<u>RCT Time Range</u>	<u>ET Time Range</u>	<u>ET Restriction</u>
4600A (1amp)	-1 (12VDC)	-1 (0.2 - 60)	-1 (0.1 - 30)	-A
	-2 (24VDC)	-2 (2 - 600)	-2 (1 - 300)	Energize Time
	-3 (48VDC)	-3 (4 - 2000)	-3 (2 - 1000)	1 - 50% RCT
	-4 (24VAC)	-4 (20 - 9000)	-4 (10 - 4500)	-B
	-5 (48VAC)	-5 (60 - 16,000)	-5 (30 - 8,000)	Energize Time
4610A(10Amp)	-6 (115VAC)			50 - 100% RCT
	-7 (230VAC)			