

The FSU1000 incorporates an onboard adjustable flash rate of 10 to 100 FPM and a universal input voltage in one device. Its circuitry is encapsulated and is capable of controlling loads of up to 20A. The versatility of the FSU1000 makes it ideal for applications where various flash rates and operating voltages are required.

#### Operation

When input voltage is applied to terminal 2 and the load (lamp), the load energizes steadily. When input voltage is applied to terminal 3, the output flashes.

#### Optional Low Current Switch (S1)

This low current switch could be a limit switch or contact. While open, the operator sees the load (lamp) ON and operating. When the limit switch closes, the load (lamp) flashes to attract attention.

For more information see:

Appendix A, page 164 for Flasher (NC) function.

Appendix B, page 165, Figure 4 for dimensional drawing.

Appendix C, page 168, Figure 1 for connection diagram.

#### Order Table:

Rating	Inrush Rating	Part Number
1A	10A	FSU1000
6A	60A	FSU1003
10A	100A	FSU1004
20A	200A	FSU1005

#### Specifications

##### Technical Data

Operation . . . . . ON/OFF recycling solid-state flasher (continuous duty)

Flash Rate . . . . . Adjustable 10 - 100 FPM

ON/OFF Ratio . . . . .  $\approx 50\%$

##### Input

Range/Frequency . . . . . 24 to 240VAC/50/60Hz

##### Output

Load Type . . . . . Inductive, resistive, or incandescent

Maximum Load Rating . . . . . 1, 6, 10, or 20A steady state

Inrush . . . . . 10 times steady state current

##### Mechanical

Mounting\* . . . . . Surface mount with one #10 (M5 x 0.8) screw

Dimensions . . . . . 2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)

Termination . . . . . 0.25 in. (6.35 mm) male quick connect terminals

##### Protection

Circuitry . . . . . Encapsulated

##### Environmental

Operating / Storage Temperature . . -20° to 60°C (240VAC +50°C) / -40° to 85°C




Weight . . . . . 1A units:  $\approx 2.4$  oz (68 g)

$\geq 6A$  units:  $\approx 3.9$  oz (111 g)

\*Units rated  $\geq 6A$  must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C.

#### Features:

- All solid state - no moving parts or contacts
- Onboard adjustable flash rate
- Loads up to 20A
- High inrush up to 200A
- Universal voltage 24 to 240VAC

Approvals:   

#### Auxiliary Products:

##### Female quick connect:

P/N: P1015-13 (AWG 10/12)

P/N: P1015-64 (AWG 14/16)

P/N: P1015-14 (AWG 18/22)

##### Quick connect to screw adaptor:

P/N: P1015-18

#### Available Models:

FSU1000

FSU1003

FSU1004



The FS100 Series (low amp) may be used to control inductive, incandescent or resistive loads. This series offers a 1A (fullwave) or a 2A (halfwave) steady state, 10A inrush solid-state output and may be ordered with an input voltage of 24 or 120VAC. The FS100 Series offers a factory fixed flash rate of 75 FPM or may be ordered with a fixed, custom flash rate ranging from 45 to 150 FPM. Ideal for OEM applications where cost is a factor.

#### Operation

Upon application of input voltage, the T2 OFF time begins. At the end of the OFF time, the T1 ON time begins and the load energizes. At the end of T1, T2 begins and the load de-energizes. This cycle repeats until input voltage is removed.

Reset: Removing input voltage resets the output and the sequence to T2.

For more information see:

Appendix A, page 164 for Flasher (OFF First) function.

Appendix B, page 165, Figure 12 for dimensional drawing.

Appendix C, page 168, Figure 2 for connection diagram.

#### Order Table:

Input	Output Rating	Output Type	Load Type*	Part Number
120VAC	1A	AC, Fullwave	A	FS126
120VAC	1A	AC, Fullwave	B	FS126RC
120VAC	2A	AC, Halfwave	A	FS127
24VAC	1A	AC, Fullwave	A	FS146
24VAC	1A	AC, Fullwave	B	FS146RC
24VAC	2A	AC, Halfwave	A	FS147

\*Load Type:




A-Incandescent & Resistive

B-Incandescent, Resistive & Inductive

Add the suffix "-##" to any part number to indicate the custom flash rate.

#### Features:

- Fixed flash rate 75 FPM
- Custom flash rate 45 - 150 FPM
- 1 or 2A output
- 24 or 120VAC
- Small size: 1.5 x 0.94 in. (38 x 23.9 mm)

Approvals:   

#### Available Models:

FS126

FS126RC-90

FS126-45

FS127

FS126-60

FS146

FS126RC

FS146RC

#### Specifications

##### Technical Data

Operation . . . . . OFF/ON solid-state flasher (continuous duty)

Flash Rate . . . . . Factory fixed at 75 FPM  $\pm 20\%$

Custom Flash Rates Available . . . . . From 45 - 150 FPM  $\pm 20\%$

ON/OFF Ratio . . . . .  $\approx 50\%$

##### Input

Voltage . . . . . 24, 120VAC,  $\pm 15\%$

AC Line Frequency . . . . . 50/60Hz

##### Output

Output . . . . . Fullwave AC or Halfwave rectified AC

Load Type . . . . . Incandescent, resistive, or inductive  
(Choose RC suffix for inductive loads)

Maximum Load Rating . . . . . Fullwave: 1A steady state

Halfwave: 2A steady state

Inrush . . . . . 10A

##### Mechanical

Mounting . . . . . Removable mounting bracket, use one #8 (M4 x 0.7) screw

Connection/Wires . . . . . 18 AWG (0.82mm<sup>2</sup>) wires 6 in. (15.2cm)

Dimensions . . . . . 1.5 x 0.94 in. (38.1 x 23.9 mm)

##### Protection

Circuitry . . . . . Encapsulated

##### Environmental

Operating / Storage Temperature . . -20° to 60°C / -40° to 85°C

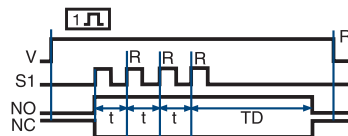
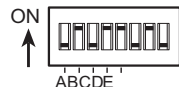
Humidity . . . . . 95% relative, non-condensing

Weight . . . . .  $\approx 1.1$  oz (31 g)

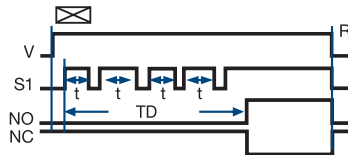
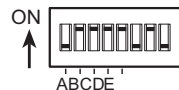
# Appendix A - Timer/Flasher Functions

## Single Functions

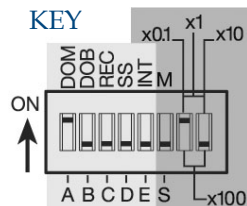
### Retriggerable Single Shot



### Accumulative Delay-on-Make



### KEY



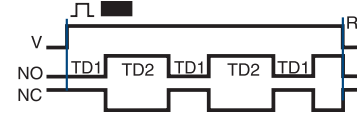
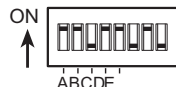
V=Voltage, R=Reset, S1=Initiate Switch, NO=Normally Open Contact, NC=Normally Closed Contact, TD,TD1,TD2=Complete Time Delay, t=Partial Time Delay, DOM=Delay-on-Make, DOB=Delay-on-Break, REC=Recycle, SS=Single Shot, INT=Interval, M=Minutes, S=Seconds, = Undefined time

5 Switches for Function Selection  
3 Switches for Time Delay Range

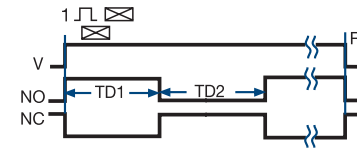
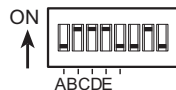
NOTE: The time delay range is the same for both functions when dual functions are selected.

## Dual Functions

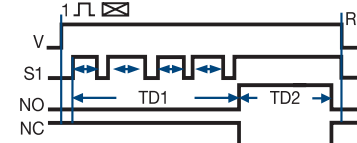
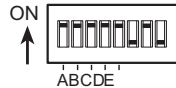
### \* Recycle (OFF Time First) Both Times Adjustable



### \* Interval Delay-on-Make



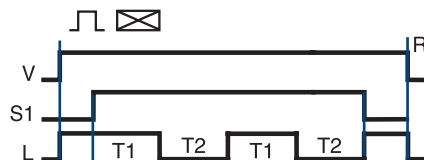
### Accumulative Delay-on-Make Interval



\* 9 Functions included in the 8 pin DPDT models

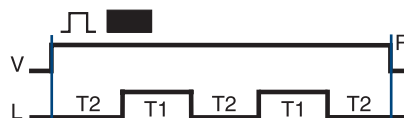
## Flasher Function Diagrams

### Flasher (NC)



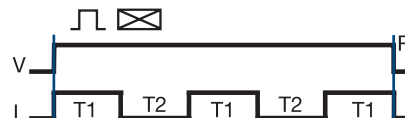
V = Voltage S1 = Initiate Switch L = Load  
R = Reset T1 = ON Time T2 = OFF Time  
T1  $\cong$  T2

### Flasher (OFF First)



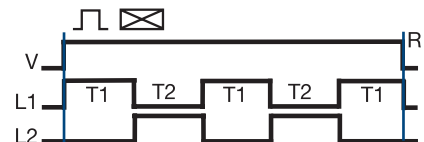
V = Voltage R = Reset L = Load  
T1 = ON Time T2 = OFF Time  
T1  $\cong$  T2

### Flasher (ON First)



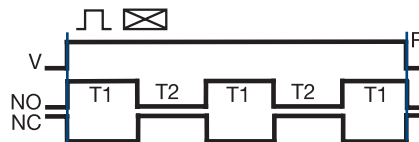
V = Voltage R = Reset L = Load  
T1 = ON Time T2 = OFF Time T1  $\cong$  T2  
ON time plus OFF time equals one complete flash.

### Flasher (Alternating)



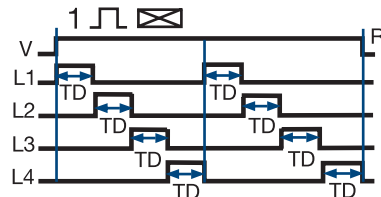
V = Voltage L1 = Load 1 L2 = Load 2  
R = Reset T1 = ON Time T2 = OFF Time  
T1  $\cong$  T2

### Flasher (ON First-DPDT)



V = Voltage R = Reset  
T1 = ON Time T2 = OFF Time  
NO = Normally Open NC = Normally Closed

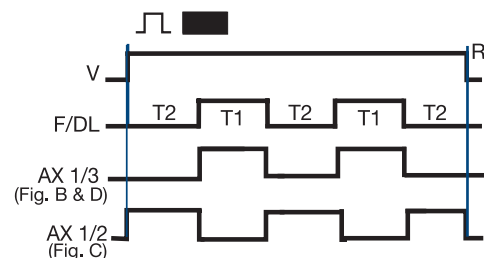
### Flasher (Chasing)



SC4 shown; SC3, L4 is eliminated  
and L1 TD begins as soon as L3 TD is  
completed.

V = Voltage R = Reset L (1...4) = Lamps  
TD = Time Delay (all are equal)

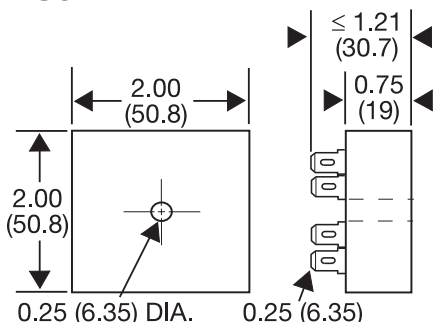
### Flashers & Aux. Modules



V = Voltage L = Load T1 = ON Time  
T2 = OFF Time R = Reset  
T1  $\cong$  T2

# Appendix B - Dimensional Drawings

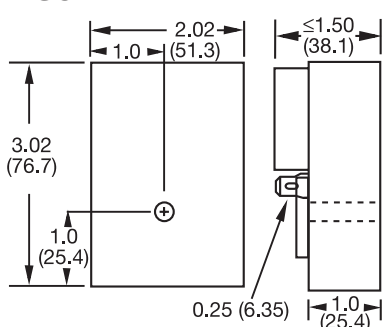
FIGURE 1



0.25 (6.35) DIA. 0.25 (6.35)

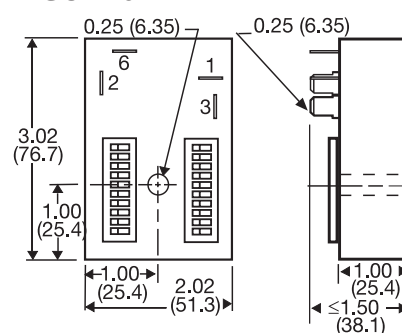
CT; ESD5; ESDR; FS100; FS200; FS300; KRD3; KRD9; KRDB; KRDI; KRDM; KRDR; KRDS; KRDP; KRPS; KSD1; KSD2; KSD3; KSD4; KSDB; KSDR; KSDS; KSDU; KSPD; KSPS; KSPU; KVM; T2D; TA; TAC1; TAC4; TDU; TDUB; TDUI; TDUS; TL; TMV8000; TS1; TS2; TS4; TS6; TSB; TSD1; TSD2; TSD3; TSD4; TSD6; TSD7; TSDB; TSDR; TSDS; TSS; TSU2000

FIGURE 2



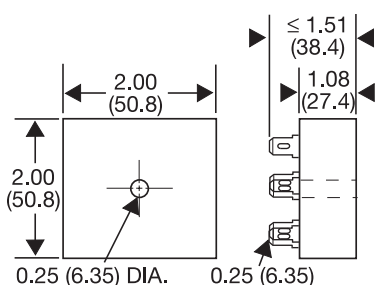
HLV; HRD3; HRD9; HRDB; HRDI; HRDM; HRDR; HRDS; HRID; HRIS; HRIU; HRPD; HRPS; HRPV; HRV; RS

FIGURE 3



HSPZ

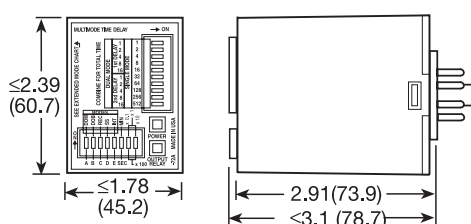
FIGURE 4



FA; FS; FSU1000\*; NHPD; NHPS; NHPV; NLF1\*; NLF2\*; PHS\*; PTHF\*; SIR1; SIR2; SLR1\*; SLR2\*; TH1; TH2; THC; THD1; THD2; THD3; THD4; THD7; THDB; THDM; THDS; THS

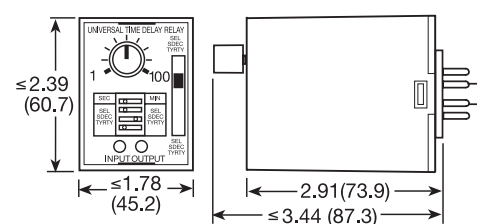
\*If unit is rated @ 1A, see Figure 1

FIGURE 5



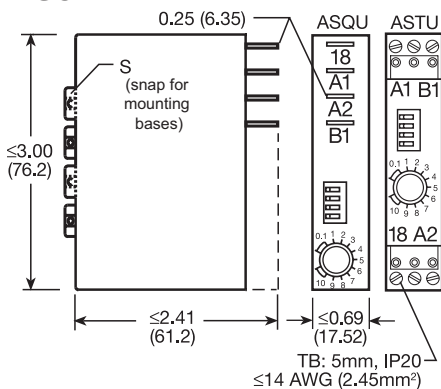
TRDU

FIGURE 6



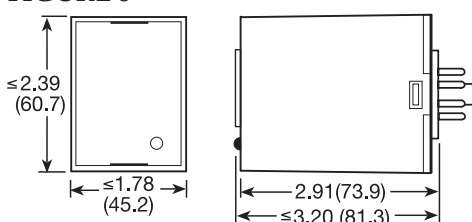
TRU

FIGURE 7



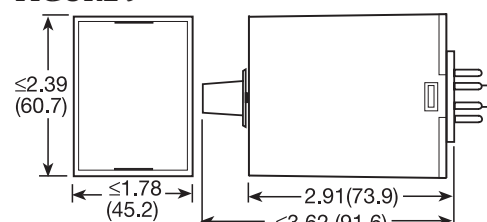
ASQU; ASTU; DSQU; DSTU

FIGURE 8



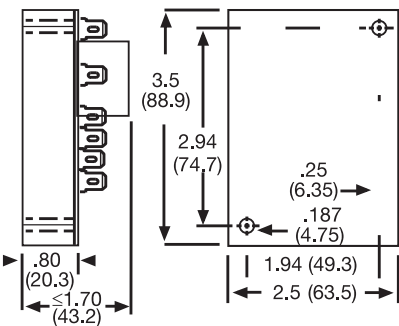
PLM; PLR; TDB; TDBH; TDBL; TDI; TDIH; TDIL; TDM; TDMB; TDMH; TDML; TDR; TDS; TDSH; TDSL

FIGURE 9



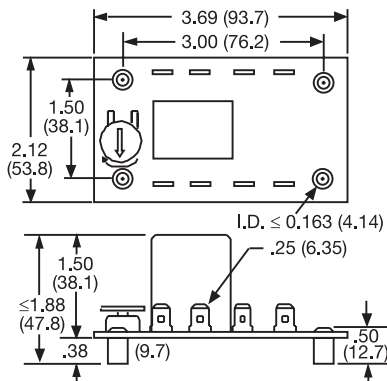
FS500; PRLB; PRLM; PRLS; TRB; TRM; TRS

FIGURE 10



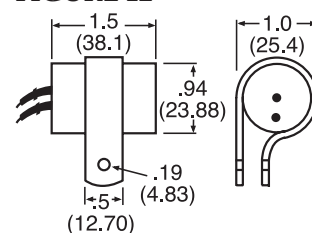
ERD3; ERDI; ERDM

FIGURE 11



ORB; ORM; ORS

FIGURE 12



FS100; FS400

inches (millimeters)

# Appendix C - Connection Diagrams

FIGURE 1 - FSU1000 Series

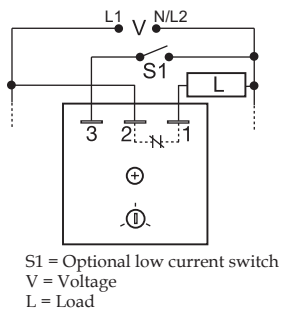


FIGURE 2 - FS100 Series

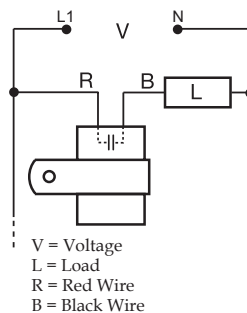


FIGURE 3 - FS100 Series

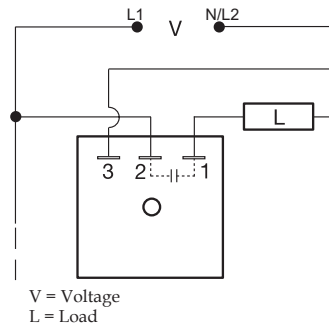


FIGURE 4 - FS200 Series

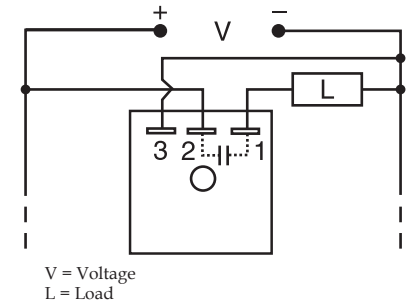


FIGURE 5 - FS300 Series

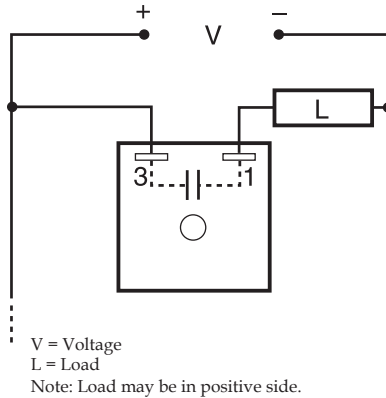


FIGURE 6 - FS400 Series

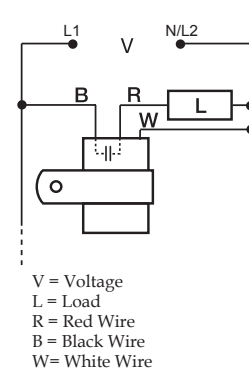


FIGURE 7 - AF Series

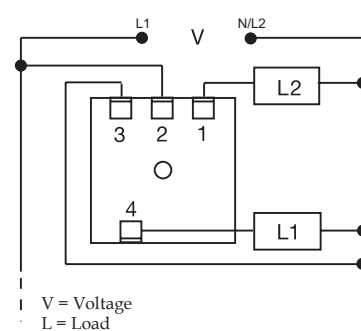


FIGURE 8 - FS500 Series

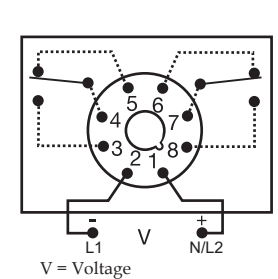


FIGURE 9 - SC3/SC4 Series

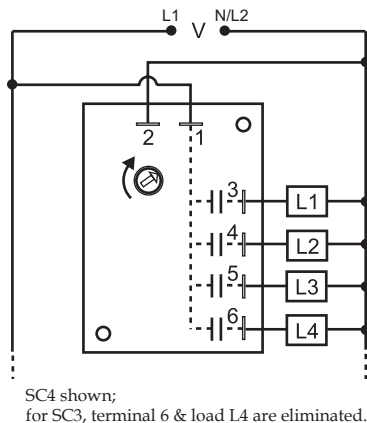


FIGURE 10 - WVM Series

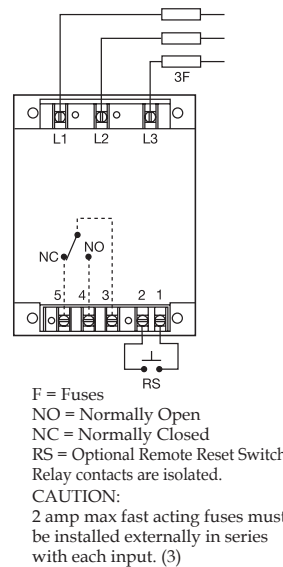


FIGURE 11 - DLMU Series

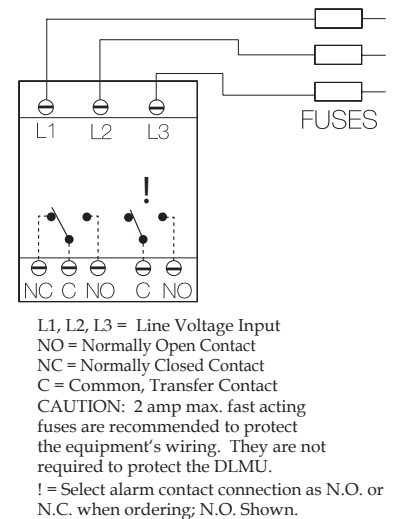


FIGURE 12 - HLMU Series

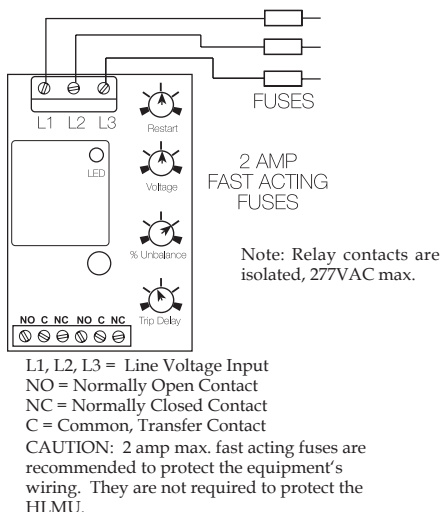


FIGURE 13 - PLMU/PLM/PLR/PLS Series

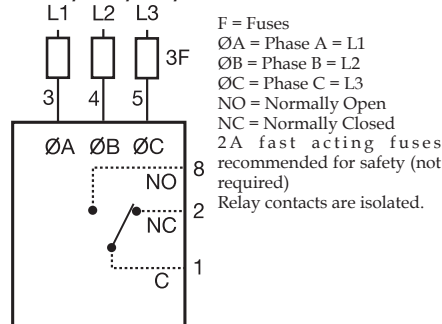


FIGURE 14 - TVM/TVW Series

