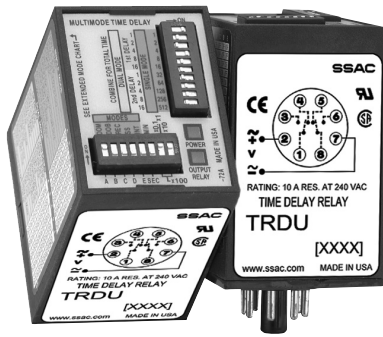
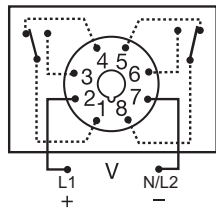
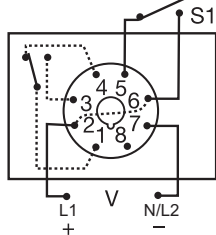




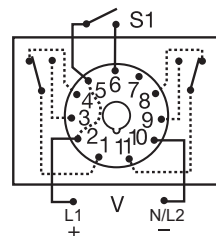
Connection:



8-pin DPDT



8-pin SPDT



11-pin DPDT

V = Voltage
S1 = Initiate Switch

The TRDU Series is a versatile universal time delay relay with 21 selectable single and dual functions. The dual functions replace up to three timers required to accomplish the same function. Both the function and the timing range are selectable with switches located on the face of the unit. Two LED's indicate input voltage and output status. This device offers full 10A isolated relay output contacts in either SPDT or DPDT. The TRDU replaces hundreds of part numbers, thereby, reducing your stock inventory requirements.

21 Functions:

Five switches are provided to set one of 10 single or 11 dual modes of operation.

Single Functions-

- * Delay-on-Make
- * Delay-on-Break
- * Recycle (ON time first, equal recycle delays)
- * Single Shot
- * Interval
- * Trailing Edge Single Shot
- * Inverted Single Shot
- * Inverted Delay-on-Break
- * Accumulative Delay-on-Make
- * Retriggerable Single Shot (motion detector)

Dual Functions -

- * Delay-on-Make/Delay-on-Break
- * Delay-on-Make/Recycle (ON time first, equal recycle delays)
- * Delay-on-Make/Interval
- * Delay-on-Make/Single Shot
- * Interval/Recycle (ON time first, equal recycle delays)
- * Delay-on-Break/Recycle (ON time first, equal recycle delays)
- * Single Shot/Recycle (ON time first, equal recycle delays)
- * Recycle - both times adjust. (ON time first)
- * Recycle - both times adjust. (OFF time first)
- * Interval/Delay-on-Make
- * Accumulative Delay-on-Make/Interval

For more information see:
Appendix A, page 163-164 for function diagrams.
Appendix B, page 165, Figure 5 for dimensional drawing.

Features:

- Microcontroller $\pm 0.1\%$ repeat accuracy
- Multifunction - 21 timing functions
- Multirange - 0.1s - 1,705h in 8 ranges
- Switch selectable modes, time delay, & ranges
- AC & DC input voltages are available
- Isolated, 10A, SPDT or DPDT output contacts

Approvals:

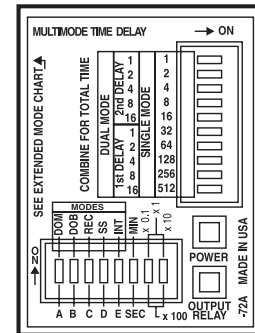
Auxiliary Products:

- **Panel mount kit:** P/N: BZ1
- **Hold-down clips (sold in pairs):**
P/N: PSC8 (NDS-8)
P/N: PSC11 (NDS-11)
- **11-pin socket:** P/N: NDS-11
- **Octal 8-pin socket:** P/N: NDS-8
- **DIN rail:**
P/N: C103PM (AI)

Available Models:

TRDU120A1	TRDU230A2
TRDU120A2	TRDU24A1
TRDU120A3	TRDU24A2
TRDU12D1	TRDU24A3
TRDU12D3	

If desired part number is not listed, please call us to see if it is technically possible to build.



Order Table:

TRDU	X	X
	Input Voltage	Base Connection
	12D - 12VDC	1 - 8-pin DPDT*
	24A - 24VAC/DC	2 - 8-pin SPDT
	120A - 120VAC	3 - 11-pin DPDT
	230A - 230VAC	

*Limited to 9 operating functions in 8-pin DPDT units

Specifications

Time Delay	Microcontroller
Type	Single Functions: 0.1s - 1,705h in 8 ranges
Range: Switch Selectable**	Dual Functions: 0.1s - 3,100m each in 8 ranges
Adjustments	Multiplier: 3 position DIP switches select 0.1, 1, 10, or 100 in s or m
Setting Accuracy	$\pm 1\%$ or 50ms, whichever is greater
Repeat Accuracy	$\pm 0.1\%$ or 20ms, whichever is greater
Timing Functions	Five switches are provided to set one of twenty-one single or dual functions
Reset Time	≤ 50 ms
Initiate Time	120VAC: 75ms
Time Delay vs Temp. & Voltage	$\pm 1\%$
Indication	
Two LEDs indicate	1) Input voltage applied 2) Output relay status
Input Voltage	12VDC, 24VAC/DC, 120VAC, or 230VAC
Tolerance 12VDC & 24VAC/DC	-15% - -20%
120 & 230VAC	-20% - -10%
AC Line Frequency	50/60Hz
Power Consumption	24 to 230V ≤ 3 W; 12VDC ≤ 2 W

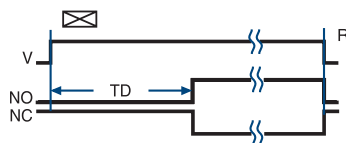
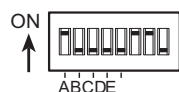
Output	
Type	Electromechanical relay
Form	SPDT or DPDT
Rating	10A resistive @ 120/240VAC & 28 VDC; 1/3 hp @ 120/240VAC
Life	Mechanical - 1×10^7 ; Electrical - 1×10^6
Protection	
Isolation Voltage	≥ 1500 V RMS input to output
Insulation Resistance	≥ 100 M Ω
Polarity	DC units are reverse polarity protected
Mechanical	
Mounting	Plug-in socket
Dimensions	3.1 x 2.39 x 1.78 in. (78.7 x 60.7 x 45.2 mm)
Termination	Octal 8-pin plug-in or magnal 11-pin plug-in
Environmental	
Operating / Storage Temperature	-20° to 65° C / -40° to 85° C
Weight	≈ 5.8 oz (164 g)

**For CE approved applications, power must be removed from the unit when a switch position is changed.

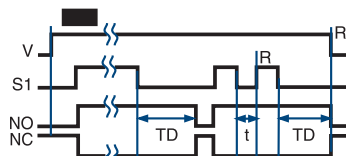
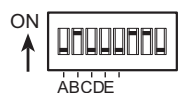
TRDU Function Diagrams

Single Functions

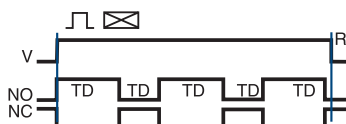
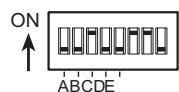
* Delay-on-Make



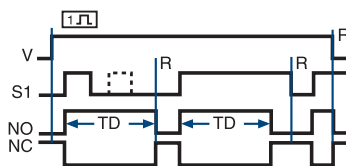
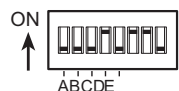
Delay-on-Break



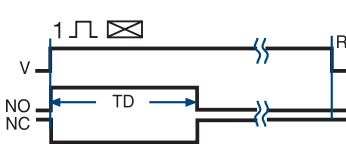
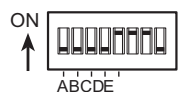
* Recycle (ON Time First, Equal Delays)



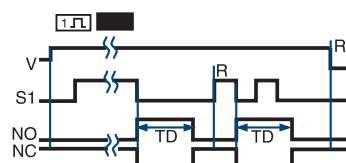
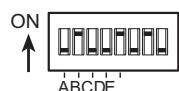
Single Shot



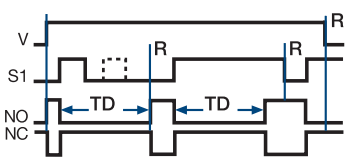
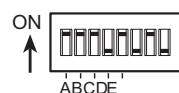
* Interval



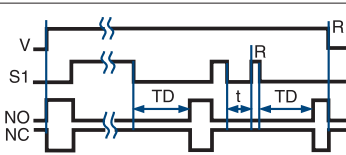
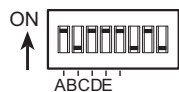
Trailing Edge Single Shot



Inverted Single Shot

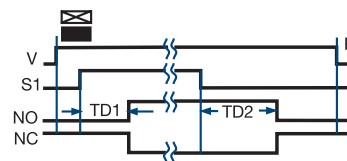
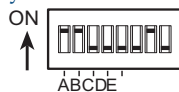


Inverted Delay-on-Break

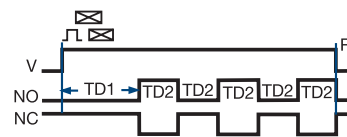
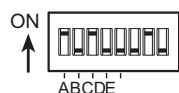


Dual Functions

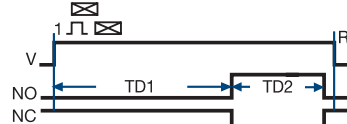
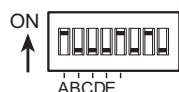
Delay-on-Make Delay-on-Break



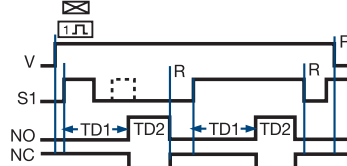
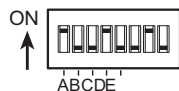
* Delay-on-Make Recycle (ON Time First)



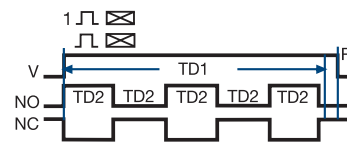
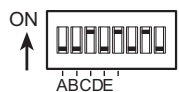
* Delay-on-Make Interval



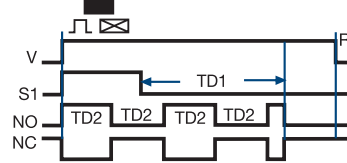
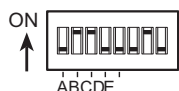
Delay-on-Make Single Shot



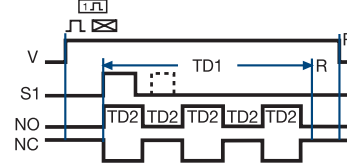
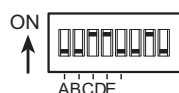
* Interval Recycle (ON Time First)



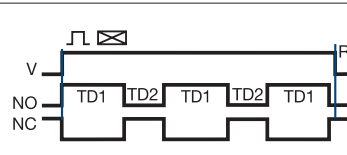
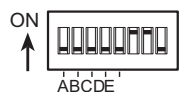
Delay-on-Break Recycle (ON Time First)



Single Shot Recycle (ON Time First)



* Recycle (ON Time First) Both Times Adjustable



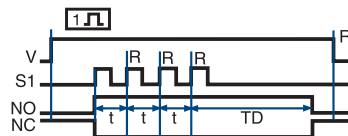
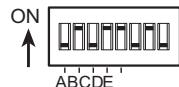
* 9 Functions included in the 8 pin DPDT models

Continued on next page...

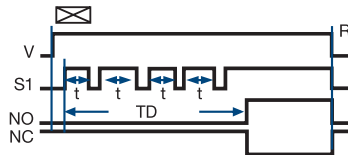
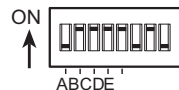
Appendix A - Timer/Flasher Functions

Single Functions

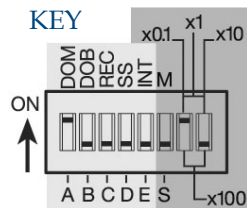
Retriggerable Single Shot



Accumulative Delay-on-Make



KEY



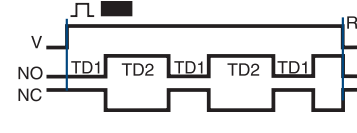
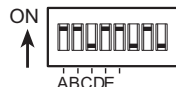
V=Voltage, R=Reset, S1=Initiate Switch, NO=Normally Open Contact, NC=Normally Closed Contact, TD,TD1,TD2=Complete Time Delay, t=Partial Time Delay, DOM=Delay-on-Make, DOB=Delay-on-Break, REC=Recycle, SS=Single Shot, INT=Interval, M=Minutes, S=Seconds, = Undefined time

5 Switches for Function Selection
3 Switches for Time Delay Range

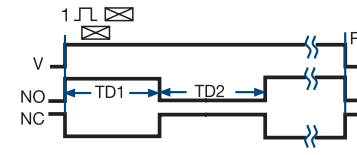
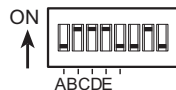
NOTE: The time delay range is the same for both functions when dual functions are selected.

Dual Functions

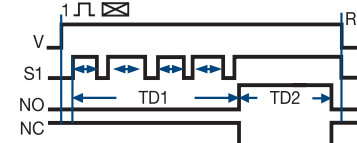
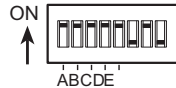
* Recycle (OFF Time First) Both Times Adjustable



* Interval Delay-on-Make



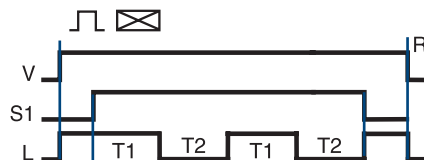
Accumulative Delay-on-Make Interval



* 9 Functions included in the 8 pin DPDT models

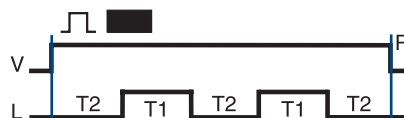
Flasher Function Diagrams

Flasher (NC)



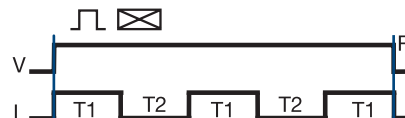
V = Voltage S1 = Initiate Switch L = Load
R = Reset T1 = ON Time T2 = OFF Time
T1 $\cong$ T2

Flasher (OFF First)



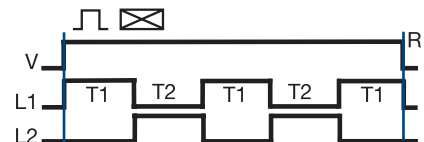
V = Voltage R = Reset L = Load
T1 = ON Time T2 = OFF Time
T1 $\cong$ T2

Flasher (ON First)



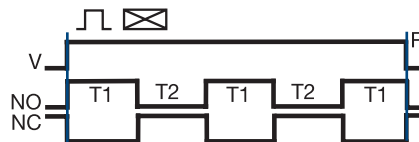
V = Voltage R = Reset L = Load
T1 = ON Time T2 = OFF Time T1 $\cong$ T2
ON time plus OFF time equals one complete flash.

Flasher (Alternating)



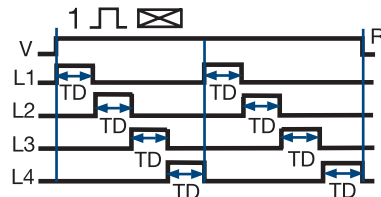
V = Voltage L1 = Load 1 L2 = Load 2
R = Reset T1 = ON Time T2 = OFF Time
T1 $\cong$ T2

Flasher (ON First-DPDT)



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

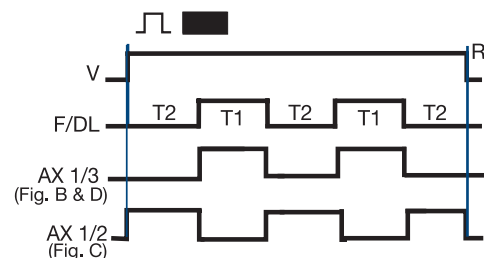
Flasher (Chasing)



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

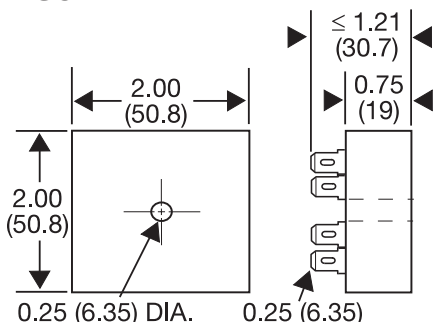
V = Voltage R = Reset L (1...4) = Lamps
TD = Time Delay (all are equal)

Flashers & Aux. Modules



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

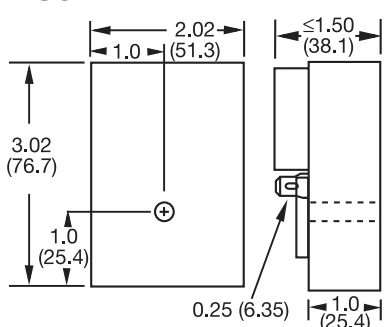
FIGURE 1



0.25 (6.35) DIA. 0.25 (6.35)

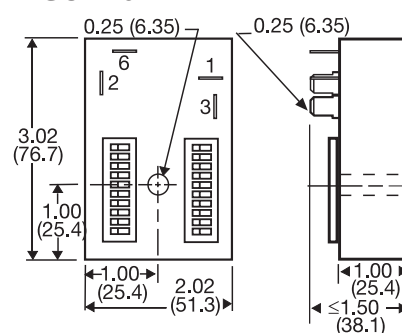
CT; ESD5; ESDR; FS100; FS200; FS300; KRD3; KRD9; KRDB; KRDI; KRDM; KRDR; KRDS; KRDP; KRPS; KSD1; KSD2; KSD3; KSD4; KSDB; KSDR; KSDS; KSDU; KSPD; KSPS; KSPU; KVM; T2D; TA; TAC1; TAC4; TDU; TDUB; TDUI; TDUS; TL; TMV8000; TS1; TS2; TS4; TS6; TSB; TSD1; TSD2; TSD3; TSD4; TSD6; TSD7; TSDB; TSDR; TSDS; TSS;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

FIGURE 2



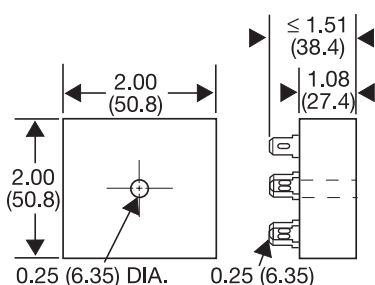
HLV; HRD3; HRD9; HRDB; HRDI; HRDM; HRDR; HRDS; HRID; HRIS; HRIU; HRPD; HRPS; HRPV; HRV; RS

FIGURE 3



HSPZ

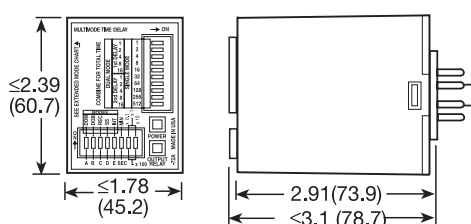
FIGURE 4



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

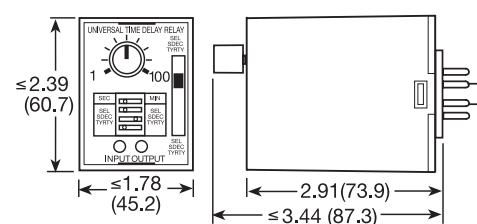
*If unit is rated @ 1A, see Figure 1

FIGURE 5



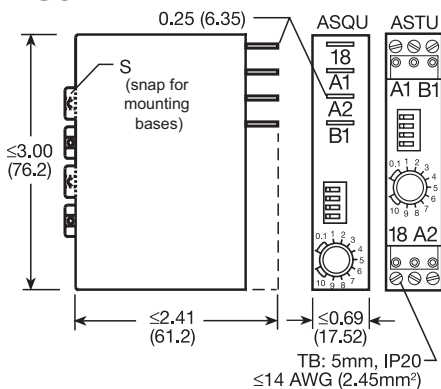
TRDU

FIGURE 6



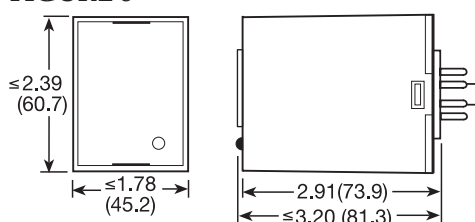
TRU

FIGURE 7



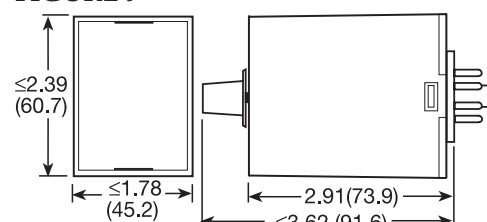
ASQU; ASTU; DSQU; DSTU

FIGURE 8



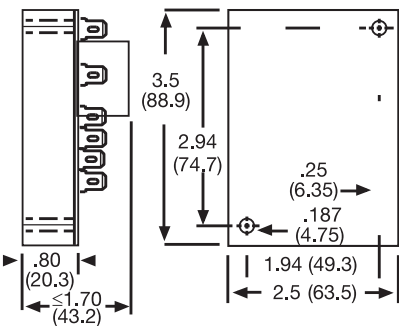
PLM; PLR; TDB; TDBH; TDBL; TDI; TDIH; TDIL; TDM; TDMB; TDMH; TDML; TDR; TDS; TDSH; TDSL

FIGURE 9



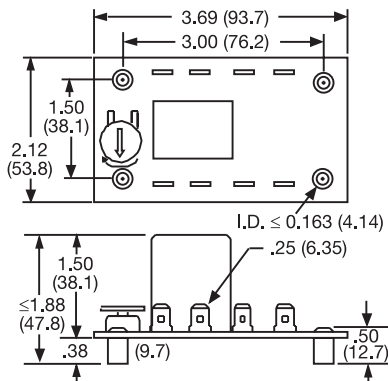
FS500; PRLB; PRLM; PRLS; TRB; TRM; TRS

FIGURE 10



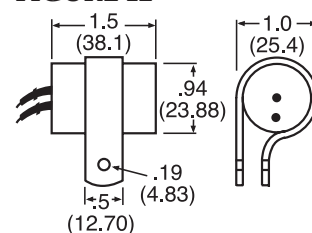
ERD3; ERDI; ERDM

FIGURE 11



ORB; ORM; ORS

FIGURE 12



FS100; FS400

inches (millimeters)