DIGITAL TIMER : TD1D

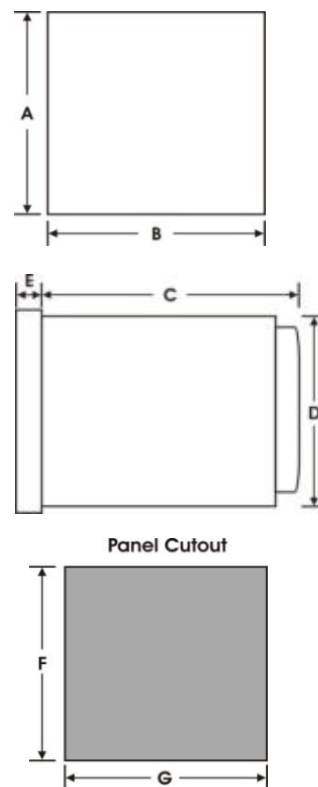| FEATURES	TIME RANGES
• Single Set point • ON Delay / Interval / Cyclic on first / Cyclic off first modes • Time range: 0.01sec to 999 hours • Output Contacts 2 C/O • Front Panel reset • Up/Down counting • High Reliability • Battery backup	0 - 9.99 Sec 0 - 99.9 Sec 0 - 999 Sec 0 - 9.59Min:Sec 0 - 99.9Min 0 - 999 Min 0 - 9.59Hr:Min 0 - 99.9Hr 0 - 999Hr (Programmable)

OPERATING MODES	ON Delay, Interval, Cyclic on first, Cyclic off first (Configurable by keys)	
SUPPLY	SUPPLY VOLTAGE	85 to 270V AC , 50 – 60Hz / 24V AC/DC* (Recommended fuse **:** 1A, 230V AC Fast blow)
	POWER CONSUMPTION	3VA Max
	INRUSH CURRENT	Max. 2A@240V AC for 20ms / 5A@24VDC
INPUT SPECIFICATIONS	DISPLAY	7 segment LED(Red)**,** Height **:** 0.5''
	TIME SETTING	Programmable by keys
	DIGITS	3 digits
	START INPUT	Pulse Start : upon contact closure (15msec minimum), Gate Start
	ACCURACY	±0.05% of Set Time or 50msec (whichever is greater) Repeat **:** ±0.05%
	RESET	Front, Remote, On interruption of power Reset time < 100msec
OUTPUT SPECIFICATIONS	OUTPUT CONTACT	DPDT (2 C/O)
	CONTACT RATING	5A@250V AC
	INDICATION	LED Status Indicator **:** Relay ON
ISOLATION	Supply Terminals – Contacts **:** 1.5KV, 1min Contact Set1 – Contact Set2 **:** 1.5KV, 1min Supply Terminal – Start/Reset **:** 1.5KV, 1min Start/Reset – Contacts **:** 1.5KV, 1min	
ENDURANCE	RELAY	MECHANICAL **:** 10,000,000 ops. Minimum (1800 ops./hr.) ELECTRICAL **:** 100,000 ops. Minimum (1200 ops./hr.)
AMBIENT CONDITIONS	OPERATING AMBIENT	0 to 55°C
	STORAGE AMBIENT	-5°C to 50°C
	HUMIDITY	95% RH non condensing
GENERAL SPECIFICATIONS	TERMINATIONS	Screw type, for 2.5mm sq. wire
	MOUNTING	Panel Mount
	PROTECTION LEVEL	IP20

*Refer ordering information on page 2.

Panel Cutout

DIM MODELS	A	B	C	D	E	F	G
TD1D-48	48	48	95	46	4	46	46
TD1D-72	72	72	115	68	10	69	69
TD1D-96	96	96	75	90	10	92	92

Dimensions

All dimensions in mm

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ORDERING INFORMATION

TD1D – 48 – Z

DESIGN NAME	SIZE	SUPPLY VOLTAGE	WEIGHT
TD1D	48 : 48mm x 48mm	Z : 85 to 270V AC , 50 – 60Hz	150 gms
	72 : 72mm x 72mm	24V : 20V to 30V AC(50 – 60Hz)/DC	210 gms
	96 : 96mm x 96mm		230 gms

TERMINAL CONNECTIONS

TD1D-48

L(+) :6
N(-) :7
NO1 :3
COM1 :4
NC1 :5
NO2 :11
COM2 :1
NC2 :2
CONFIG :8
RST :9
GND :10
START :12

TD1D-72

TD1D-96

PROGRAMMING SCHEME

CONFIGURATION SCHEME :

1) At power OFF, short terminals to enter in configuration menu.
   For TD1D-48, short terminals 8 & 10.
   For TD1D-72, short terminals 5 & 6.
   For TD1D-96, short terminals 7 & 8.
2) Turn ON power.
3) Program configuration settings as per instructions below.

1. SCALE — Default Setting : 9.99

OPERATION	DISPLAY	DESCRIPTION
PRESS 'MODE' KEY	9.9 9	0 – 9.99
PRESS 'MODE' KEY	9 9.9	0 – 99.9
PRESS 'MODE' KEY	9 9 9	0 – 999
PRESS 'MODE' KEY	9.5 9	0 – 9.59

➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED

2. RANGE — Default Setting : Sec

OPERATION	DISPLAY	DESCRIPTION
PRESS 'MODE' KEY	SEC	SECOND
PRESS 'MODE' KEY	n - S	MINUTE - SECOND
PRESS 'MODE' KEY	n IN	MINUTE
PRESS 'MODE' KEY	H - n	HOUR - MINUTE
PRESS 'MODE' KEY	H r	HOUR

➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED

3. DELAY MODE — Default Setting : On Delay

OPERATION	DISPLAY	DESCRIPTION
PRESS 'MODE' KEY	On	ON DELAY
PRESS 'MODE' KEY	INt	INTERVAL DELAY
PRESS 'MODE' KEY	C.On	CYCLIC (ON FIRST)
PRESS 'MODE' KEY	C.OF	CYCLIC (OFF FIRST)

➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED

4. COUNTING DIRECTION — Default Setting : Down

OPERATION	DISPLAY	DESCRIPTION
PRESS 'MODE' KEY	dN	**DOWN:** Counting starts from set point and proceed down to 0.
PRESS 'MODE' KEY	UP	**UP:** Counting starts from 0 and proceed towards set point.

➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED

5. START INPUT — Default Setting : Pulse Start

OPERATION	DISPLAY	DESCRIPTION
PRESS 'MODE' KEY	PUL	**PULSE:** Timing starts on momentary closure of switch connected between start and ground.
PRESS 'MODE' KEY	GAt	**GATE:** Timing starts on power ON. When switch between start & ground is closed, timing freezes & resumes only after release of switch

➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED

6. POWER ON RESET — Default Setting : Yes

OPERATION	DISPLAY	DESCRIPTION
PRESS 'MODE' KEY	Pr.y	**YES :** Unit is reset on power interruption.
PRESS 'MODE' KEY	Pr.n	**NO :** Unit is not reset on power interruption.

➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED

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7. FRONT PANEL RESET		Default Setting : Yes	8. DEFAULT SETTING		Default Setting : No
OPERATION	DISPLAY	DESCRIPTION	OPERATION	DISPLAY	DESCRIPTION
PRESS 'MODE' KEY	`F n.y`	**YES :** Time can be reset from the front panel.	PRESS 'MODE' KEY	`d F.n`	**NO :** Parameters remain unchanged.
PRESS 'MODE' KEY	`F n.n`	**NO :** Time can- not be reset from the front panel.	PRESS 'MODE' KEY	`d F.y`	**YES :** All parmeters are set to factory set values.
➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED			➢ PRESS 'ENT / RST' KEY TO STORE & PROCEED (roll over back to first parameter)		

AFTER CONFIGURATION SETTING :

1) Turn power OFF.
2) Remove connection between the terminals.
    For TD1D-48, remove connection between 8 & 10.
    For TD1D-72, remove connection between 5 & 6.
    For TD1D-96, remove connection between 7 & 8.
3) Turn power ON.

TO PROGRAM SET VALUE

OPERATION	DISPLAY	Description
Press **'SET'** key for 2sec to enter into time setting mode	Mode : On delay / Interval SET 1st digit SET 2nd digit SET 3rd digit	• Press 'SET' key repeatedly to select digit. Selected digit will start blinking. • Press 'MODE' key to change set value. The corresponding digit will increment from 0 to 9 and roll over back to 0. • Press 'ENT / RST' key to store the set value. **Note :** The unit will auto exit from set value mode after 60sec in case of key inactivity.
	Mode : Cyclic Displayed for 1sec SET 1st digit SET 2nd digit SET 3rd digit ENT / RST Displayed for 1sec SET 1st digit SET 2nd digit SET 3rd digit	• In cyclic mode, display shows parameter name for 1sec and then its value. • Press 'SET' key repeatedly to select digit. Selected digit will start blinking. • Press 'MODE' key to change set value. The corresponding digit will increment from 0 to 9 and roll over back to 0. • Press 'ENT / RST' key to store the set value. **Note :** The unit will auto exit from set value mode after 60sec in case of key inactivity.

MODE OF OPERATION

Pulse start input :
   i. Refer terminal connections for start input.
   ii. Timing starts on momentary closure of start switch.

ON Delay, Interval modes :

t = Set Time

Cyclic ON first, Cyclic OFF first modes :

t1 = ON Time, t2 = OFF Time

Typical application of Gate start (eg. On delay) :
   Time will start at every power ON or after applying reset input.

t1 + t2 = t (set time),   th = hold time

Typical application of continuous Start input (eg. On delay)
   If start switch is kept closed continuously, then time will start at every power ON.

t = Set Time

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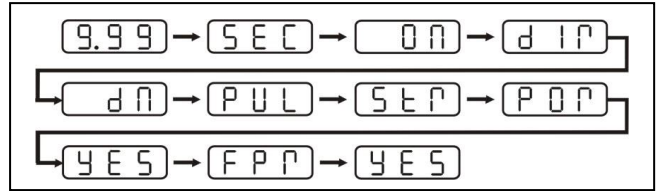
VIEW MODE

1. **To view preset time :**
  i. Press 'SET' key on front panel (< 1sec).
  ii. If set parameters are, Mode=On delay, Range=9.99sec, Set time=5.00sec then, timer will display parameters (each for 1sec) in following sequence.
	2. **To view set parameters from configuration**
	  i. Press mode key on front panel (< 1sec).
	  ii. Timer will display parameters (each for 1sec) in following sequence.

$$\boxed{5.00} \rightarrow \boxed{SEC} \rightarrow \boxed{On}$$

$$\boxed{9.99} \rightarrow \boxed{SEC} \rightarrow \boxed{On} \rightarrow \boxed{dir}$$
$$\rightarrow \boxed{dn} \rightarrow \boxed{PUL} \rightarrow \boxed{Str} \rightarrow \boxed{Por}$$
$$\rightarrow \boxed{YES} \rightarrow \boxed{FPr} \rightarrow \boxed{YES}$$
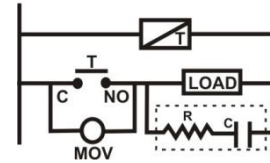
RESETTING THE TIMER

1. FRONT RESET : Timer can be reset from front panel by pressing 'RST/ENT' key (min. 1sec). (valid only if front panel reset is enabled in config setting).

2. REMOTE RESET : Timer can be reset by pressing switch connected between terminals 'RST' & 'GND' on rear side of timer (refer terminal connections).

POWER DOWN RESET (YES/NO)

YES : Time resets on power interruption. On power ON, timing starts accordingly with start input.

NO : On power interruption timer keeps backup of its current running status(i.e timing status, relay status), so on power resumption timer restores previous operation.

LOAD CONNECTION

Note : For inductive load , use of snubber and MOV, as shown above, is recommended.

(Specifications subject to change as development is a continuous process)

KEYS	FUNCTIONS
● SET	1. To enter into time setting mode. 2. To view preset time. 3. Selects the digit to be altered. Selected digit blinks. With every press of this key, next digit towards right starts blinking.
● MODE	1. Scrolls up to next option of config. sub parameter. 2. To increment value of blinking digit. 3. To view set parameters from configuration.
● ENT / RST	1. Scrolls to next option of config. parameter and to store previous parameter setting. 2. Front panel reset (RST). 3. To store set value and to exit from time setting mode.

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