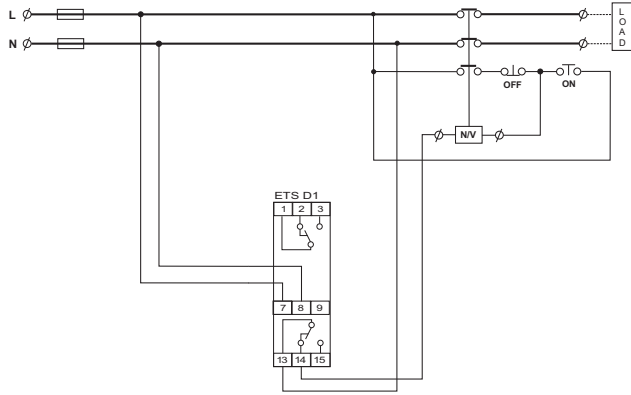


ELECTRICAL CONNECTION IN POWER AND CONTROL WIRING

Figure 2

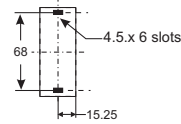


NOTE:
RELAY CONTACTS SHOWN FOR DELAY ELAPSED CONDITION.

MOUNTING DIMENSIONS

Fig. 5A

DRILLING DETAILS



D1 TYPE BOX

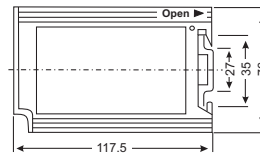
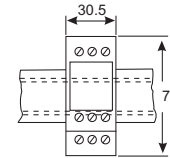
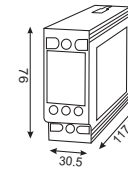


Fig. 5B : DIN RAIL MOUNTING

D1 TYPE BOX



D1 TYPE BOX



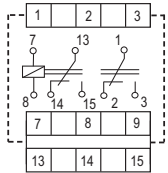
INSTALLATION INSTRUCTION MANUAL FOR ELECTRONIC TIME DELAY RELAY

ETS D1



ELECTRICAL CONNECTION DIAGRAM

Fig. 3



INDICATIONS

- L1 (Green) : POWER ON
- L2 (Red) : Delay Elapsed

TERMINAL DETAILS

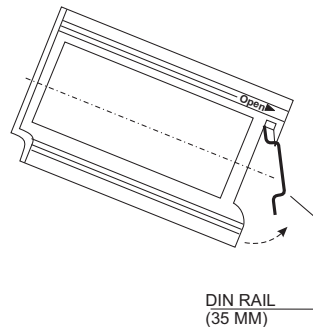
TERMINAL NO.	ETS D1
7 - 8	AUX. SUPPLY (AS MARKED ON UNIT)
13 - 14 - 15	C1 - NO1 - NC1
1 - 2 - 3	C2 - NO2 - NC 2
9	DUMMY

NOTES :

- AUX. SUPPLY TO BE CONNECTED AS MENTIONED ON THE UNIT.
- RELAY CONTACTS SHOWN FOR DELAY ELAPSED CONDITION.

MOUNTING ON DIN RAIL

Fig. 4A



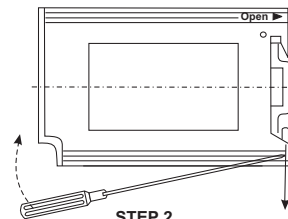
RELEASING FROM DIN RAIL

Fig. 4B

REAR VIEW



STEP 1
INSERT SCREW DRIVER
IN THIS SLOT TO
RELEASE FROM DIN RAIL



STEP 2
USE SCREW DRIVER NO. 936
OR EQUIVALENT TO PUSH
THROUGH THE SLOT AS SHOWN.



IF THE PRODUCT IS NOT
INSTALLED AS PER GIVEN
GUIDELINES, **MINILEC** WILL NOT
BE RESPONSIBLE FOR ANY
WRONG CONNECTION,
DAMAGE, INJURY, ACCIDENT ETC.

WARRANTY

AGAINST ALL MANUFACTURING
DEFECTS FOR 18 MONTHS FROM
DATE OF SUPPLY OR
12 MONTHS FROM INSTALLATION
WHICHEVER IS EARLIER

Manufactured by :

minilec[®]
www.minilecgroup.com

S. NO. 1073/1-2-3,
AT POST : PIRANGOOT,
TAL : MULSHI, DIST. : PUNE (INDIA)
PIN : 412 111

VERSION 05 (12/01/11)

INSTALLATION INSTRUCTIONS FOR ETS D1

INTRODUCTION

Thank you for selecting and purchasing MINILEC make Electronic Time Delay Relay (TDR). The following installation instructions would guide you in installing ETS D1 and making the best use of it. This relay is auxiliary relay and should be used in control circuit only.

MOUNTING

ETS D1 can be RAIL mounted or PANEL mounted. (see Fig.4 for mounting ON and for releasing from DIN RAIL. Also see Fig. 5 for PANEL mounting and Drilling Details Dimensions.)

CAUTION

Ensure that ETS D1 is -

- Not installed near any heat sources like burner, sunlight, electric arc etc.
- Not subjected to abnormal vibrations.
- Not subjected to direct heat, sunlight, rain, stormy wind and dust.
- Installed as near to starter/solenoid as possible.

RESETTING

The ETS D1 resets only when you cut off its auxiliary supply voltage and will restart its set timing cycle when the auxiliary supply is switched ON again.

ELECTRICAL CONNECTIONS

See Fig.3 for electrical connection details of ETS D1. See Fig.2 for power and control wiring. Connect the Aux. Supply at terminal 7 & 8 as per marked on front cover plate. The output relay contacts 1 & 2, 13 & 14 are to be connected in series with, the no - volt coil of the contactor / solenoid.

FUNCTIONING

Set the desired time by front potentiometers i.e. Range select, multiplier and adder pots. Before Aux. Supply voltage is switched ON, the O/P relay contacts at 13 & 14 and at 1 & 2 are in de-energised state (NO). After switching ON the supply the timer start counting the timing and when set time delay elapses the O/P contacts change their state from the original status (from NO to NC). It is suitable for On time delay from 0.1 sec to 209 hrs with help of front pots.

TIME SETTING

Set the desired time by combination of three front Potentiometers. By using these three knobs we can set ON Delay for 0.1sec to 209 hrs. Following are the selection pots:

1. Range Selection:
This will help user to switch between time range starting from 0.1 sec to 20 hrs.

2. Multiplier :
It is having 1 to 10 marking, using this we can achieve the range which will be multiple of select time range.

3. Adder:
It have 0 to 9 marking. We can use this adder to achieve exact required time period.

If Time Range Selection knob is on seconds range, adder is also in seconds. If Time Range Selection knob is on minute range, adder is also in minutes and if Time Range Selection knob is on hours range, adder is also in hours.

NOTE: Adder does not add millisecond, though range select is on millisecond, it adds seconds.

Set the required time as per following formula,

$$\text{Total Time} = \text{Range Selector} \times \text{Multiplier} + \text{Adder}$$

EXAMPLES OF ON TIME SETTING:

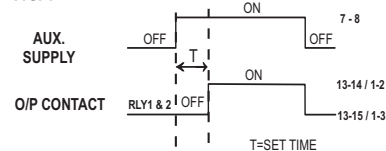
SR.NO.	Required Time Selection	Position of front pot		
		Range Selection pot	Multiplier pot	Adder pot
1.	0.3 sec	0.1 s	3	0
2.	1.3 sec	0.1 s	3	1
3.	3 sec	1 s	3	0
4.	3 sec	0.1s	10	2
5.	5 min.	1 M	5	0
6.	105 min	10 M	10	5
7.	1 hour	1 H	1	0
8.	57 hours	10 H	5	7
9.	100 hours	10 H	10	0
10.	204 hours	20 H	10	4

TECHNICAL SPECIFICATIONS

- Aux. Supply :**
12/24 VDC $\pm 10\%$
24/110 /220/230/240/415 VAC $\pm 20\%$
- Frequency :** 50 Hz/ 60 Hz. $\pm 3\%$
- Output Relay Contacts :** 2CO
- Output contact rating :** 5 Amp @ 240VAC [Resistive]
- Time Range:**
0.1 to 10 sec, 1 to 19 sec, 10 to 109 sec, 20 to 209 sec,
1 to 19 min, 10 to 109 min, 20 to 209 min,
1 to 19 hrs, 10 to 109 hrs, 20 to 209 hrs.
- Operating Mode:** On Delay
- Time Accuracy :** $\pm 5\%$ (for seconds and minutes range),
 $\pm 2\%$ (for HRS range)
- Repeat Accuracy: $\pm 1\%$ (at normal Aux. Supply at 25°C)**
a. For temperature variation of 25°C to 60°C :
 $\pm 3\%$ max of set value
b. For supply variation of 10% :
 $\pm 3\%$ max of set value.
c. For frequency variation of 1% :
 $\pm 2\%$ max of set value
- Resetting :** Power On
- Resetting Time :** 200 msec.(max.)
- Indications:**
L1 : Power On
L2 : Relay On (Delay elapsed.)
- Range Selection :** 1. Range selector (10 positions)
2. Multiplier (1 to 10 positions)
3. Adder (0 to 9 count, 10 positions)
- Life Expectancy :** 0.5×10^6 operations at 100% rating
- Enclosure :** ABS
- Dimensions (mm) :**
Overall : 76 X 30.5 X 117.5
Mounting : 68 center to center
- Mounting :** 35mm Rail Mounting & Panel Mounting
- Unit Weight (Approx.) :** 175 gms.
- Operating Conditions :**
Temperature : -5°C To $+60^\circ\text{C}$

TIMING DIAGRAM

FIG. 1



TESTING PROCEDURE

