

INSTALLATION INSTRUCTION MANUAL ELECTRONIC TIME DELAY RELAY



ETS D1



This relay is auxiliary relay and should be used in control circuit only.

MOUNTING

ETS D1 can be RAIL mounted or PANEL mounted.

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

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 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 209 hrs.

2. Multiplier :

Is having 1 to 10 marking, using this we can achieve the range which will be multiple of select time range.

3. Adder:

Is having 0 to 9 marking. We can use this adder to achieve exact required time period.

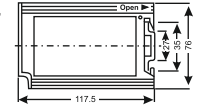
If Time Range Selection knob is on seconds range, adder is also in seconds. If Time Range Selection knob is on minute range, adder is also in minutes and if Time Range Selection knob is on hours range, adder is also in hours.

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

Set the required time as per following formula,

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

* To get accurate setting, please set arrow knob exact on the marking line & while setting unit must be horizontal to eyesight.



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

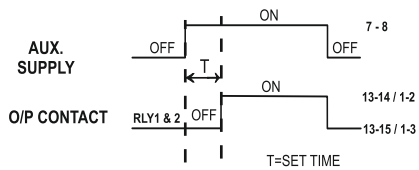
TECHNICAL SPECIFICATIONS		
1.	Aux. Supply :	12/24 VDC ± 10 % 24/110 /220/230/240/415 VAC ± 20 %
2.	Frequency :	50 Hz/ 60 Hz. ± 3%
3.	Output Relay Contacts :	2CO
4.	Output contact rating :	5 Amp @ 240VAC [Resistive]
5.	Time Range:	0.1 to 10 sec, 1 to 19 sec, 10 to 109 sec, 20 to 209 sec, 1 to 19 min, 10 to 109 min, 20 to 209 min, 1 to 19 hrs, 10 to 109 hrs, 20 to 209 hrs.
6.	Operating Mode:	On Delay
7.	Time Accuracy :	± 5 % (for seconds and minutes range). ± 2 % (for HRS range)
8.	Repeat Accuracy:	± 1% (at normal Aux. Supply at 25°C)
	a. For temperature variation of 25°C to 60°C :	± 3 % max of set value
	b. For supply variation of 10% :	± 3 % max of set value
	c. For frequency variation of 1% :	± 2 % max of set value
9.	Resetting :	Power On
10.	Resetting Time :	200 msec.(max.)
11.	Indications:	L1 : Power On L2 : Relay On (Delay elapsed.)
12.	Range Selection :	1. Range selector (10 positions) 2. Multiplier (1 to 10 positions) 3. Adder (0 to 9 count, 10 positions)
13.	Life Expectancy :	0.5 X 10 ⁶ operations at 100% rating
14.	Enclosure :	ABS
15.	Dimensions (mm) : Overall :	76 X 30.5 X 117.5
	Mounting :	68 center to center
16.	Mounting :	35mm Rail Mounting & Panel Mounting
17.	Unit Weight (Approx.) :	175 gms.
18.	Operating Conditions :	
	Temperature :	5 °C To + 60 °C
	Humidity :	Up To 95 % Rh

COMPLIANCE TO STANDARDS

TEST	IEC STD.
1. EFT Test of Auxiliary Supply	61000-4-4
2. Surge Test of Auxiliary Supply	61000-4-5
3. Voltage Interruption, Variation & Dip Test	61000-4-11
4. ESD Test (Contact Discharge)	61000-4-2
5. ESD Teast (Air Discharge)	61000-4-2
6. H.V. Test (Dielectric Test)	60255-5
7. Insulation Resistance Test	60255-5
8. Dry Heat Test	60068-2-2
9. Damp Heat test (Steady State)	60068-2-30
10. Damp Heat test (cyclic test)	60068-2-78

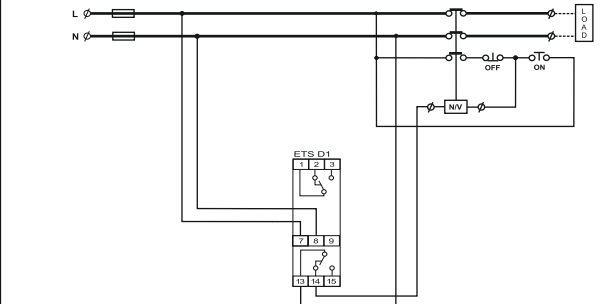
TIMING DIAGRAM

FIG. 1



ELECTRICAL CONNECTION IN POWER AND CONTROL WIRING

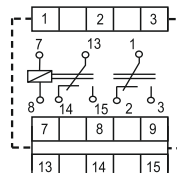
Figure 2



NOTE: RELAY CONTACTS SHOWN FOR DELAY ELAPSED CONDITION.

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.

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