

## BOILER SEQUENCE CONTROLLER (MODEL 107-S-TO)

### GENERAL

This Burner Controller is designed for Fuel Oil firing with Gas (LPG) Pilot. The Fuel Oil is used for main combustion. The Flame sensing is done by means of Light Detecting Resistor (LDR) Sensor. The Controller has a built-in Flame Sensor Amplifier for sensing of the flame.

The Controller uses microprocessor based design and is housed in a ABS plastic enclosure with over all size of 150(L) x 70(B) x 110(H) mm. The mounting is by means of standard 35 mm DIN rail or on back panel with two screws. The outputs are relay based, with contact ratings of 230V AC, 5 A resistive load.

### 1. SEQUENCE SPECIFICATIONS:

When the power supply is connected to the Sequence Controller and the Start push button is depressed, the sequence and timings for a NORMAL Startup are as given below:

<u>Step No</u>	<u>Time in Secs</u>	<u>Operation</u>	<u>Term Ref.</u>
I	t = 0	Run Indicator ON	(3)
<b>Wait for Safety Start I/L to close</b>			
	t = 0	Blower ON	(8)
II	t = 0 + TO *	Ignition ON	(10)
III	t = TO + 2	Main Solenoid valve OPEN	(11)
IV	t = TO + 2 + 5	High Flame valve OPEN Ignition OFF	(12) (10)

TO\* - Purge timing option ( 10 / 60 / 120 / 180 ) as set by jumpers at terminals 29 - 32  
The Purge Time (TP) can be set as below:

- TP = 10 seconds, if Terminals 29-30 and 31-32 are not looped.
- TP = 60 seconds, if Terminals 29-30 is Looped and 31-32 is not Looped
- TP = 120 seconds, if Terminals 29-30 is not Looped and 31-32 is Looped
- TP = 180 seconds, if Terminals 29-30 and 31-32 are Looped

### LOCK OUT CONDITIONS

#### False Flame Check:

If the flame is sensed during Steps I and II, all outputs are shut off. The Lock Out terminal (13) is energized for Alarm Annunciation. Manual RESET is required.

#### Flame Failure:

If the Flame is NOT present at the end of Step IV OR if the Flame Failure occurs during normal operation; then all circuits are turned OFF and Lock Out (Term 13) is energized.

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The Blower is turned OFF after a **Post Purge time of TO\* seconds as set by Time option at terminals 29 - 32**

Manual Restart is required to star the sequence again. THE LOCK OUT CONDITION IS DANGEROUS AND MUST BE CHECKED THOROUGHLY BEFORE RESTARTING.

### SAFETY INTERLOCK / POST PURGE

The Safety Loop is typically formed by connecting Pressure/ Temperature switch contacts in series across Terminals 6 and 7. The contacts **MUST BE POTENTIAL FREE**. Mains supply is provided internally by the Sequence Controller.

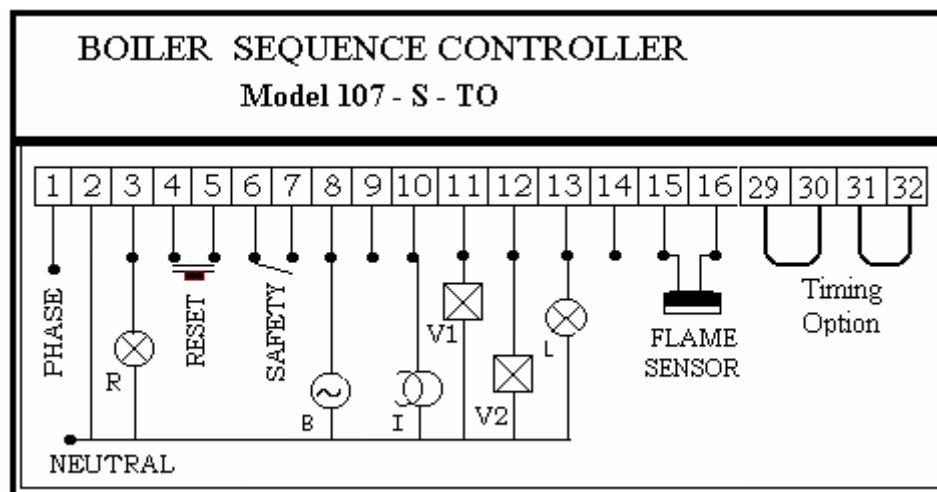
If the Safety Loop is OPEN at the end of Step I OR at any time during normal operation, then all circuits are turned OFF except the Blower. The Blower is turned OFF after a **Post Purge time of TO\* seconds as set by Time option at terminals 29 - 32**

The Sequence Controller now waits for SAFE operating conditions to return and starts the sequence from Step II. During the wait period the RUN indicator is ON.

### 2.0 OPERATING INSTRUCTIONS: \*\*\* IMPORTANT \*\*\*

1. It is important to note that the FUSE RATING should not exceed 5 Amps. The fuse has been provided essentially to protect against short circuits external to the Sequence Controller, namely in a contactor, solenoid, etc. Hence, it is recommended to investigate the panel wiring before replacing the fuse. Use of higher fuse would cause severe damage to the Sequence Controller.
2. It is recommended to use shielded wire for LDR connection. 230V SUPPLY SHOULD NEVER BE CONNECTED TO FLAME SENSOR TERMINALS.
3. Safety circuit is formed by potential free contacts. 230 V supply is provided internally thru Terminals 6 and 7.

### 3.0 SCHEMATIC DIAGRAM:



For more details and clarifications, please feel free to contact us.