Gas Burner Controller
(MODEL NO. 307 GI - AD)

General:

The Controller is designed for Automatic start up of Gas Burner with Pilot flame proven start up sequence and capable of sensing flame using both UV flame sensor and Flame electrode. The controller is suited for oil/gas dual fire systems. The Controller offers a safe start up of burners with complete with air pressure and Damper position proved start up.

The controller is housed in elegant ABS plastic enclosure with over all size of 150 X 70 X 110 mm. (LXBXH) . The controller can be mounted on standard 35 mm DIN rail or on back panel with two screws

Description:

The Controller is state of art microprocessor based Controller. The Controller's basic functionality is to manage a safe start up of the Burner and continuous monitoring of the flame thereafter.

The outputs are in the form of Relay contact and are rated 6 A, resistive load at 230 VAC. Inputs are Potential free contacts. Flame monitoring is carried out by either UV detector or Flame electrode method. A visual indication is also provided on the Controller, which will make supervision of the Sequence very simple.

Sequence Specification:

When all connections are done as shown in the electrical schematic and supply voltage 230 V AC, 50 Hz is provided to Terminal No 1, the Controller starts the safe firing sequence as follows.

Prerequisites for the start up:

1. Supply to the controller present.
2. Start interlock (ST) consisting of all safety interlocks, wired across terminals 7 & 8 closed indicating he necessity of a fresh Burner start up.
3. Air pressure switch (AP), wired across terminal 6 & 4, closed to N/C position indicating "No Air" condition. Fuel valves closed position can also be wired in series along with air pressure switch to Terminal 4.
4. Damper Motor position switch wired across terminal 32-31, closed to indicate " Damper close" position.

Note 1: The Controller will not start if the above conditions are not fulfilled. If Air switch and Damper contract fail to establish within 20 seconds, the controller will go to lock out.

5. Flame sensor is not sensing the Flame.

Note 2: The Controller will go to lockout within in 5 seconds if Flame is sensed at the beginning of the sequence.

The following table summarizes the steps of operation in chronological order. The corresponding timings are in seconds and the outputs and their respective terminals are indicated.

Step No	Time in Seconds	Operation	Terminal No
1	$T1 = 0$	Blower ON (B)	9
		Damper open	29

Now the Controller checks for the Damper open position wired at terminal 29 - 32 through the damper open position limit switch on the motor. The controller will wait for 60 seconds for Damper movement, on failure Lockout will be initiated.

2	$T2 = Tw + 5$	Air pressure check (AP)	5

Note 3: If Air pressure switch is not changed over to terminal 5 indicating Air flow, the Controller will go to Lockout. Presence of air flow is necessary for the operation thereon. If air pressure is not proved at any instant, the Controller will go to Lockout.

3	$T3 = T2+10//30/60^*$	Damper close	30

* optional
Now the Controller checks for the Damper close position wired at terminal 30-32 through the damper close position limit switch on the motor. The controller will wait for 60 seconds for Damper movement, on failure Lockout will be initiated

3	$T4 = T3 + Tw$	Ignition ON (I)	10
4	$T5 = T4 + 2$	Pilot Valve ON (P)	11

Note 4: If the flame sensor senses the pilot flame, the sequence continues. In the absence of flame, the Controller will go to lockout.

5	$T5 = T4 + 5$	Fuel Valve 1 ON (V1)	12
6	$T6 = T5 + 3$	Ignition switches OFF	10
7	$T7 = T5 + 5$	Fuel Valve 2 ON (V2)	13

Damper Motor terminals, 29-30-31, are now potential free and modulation controller can take over the damper movements.

Now, the normal Burner start up is complete and the Controller will monitor the existence of flame continuously. Any loss of flame as sensed by the flame sensor will result in Lockout.

Lockout Conditions:

Whenever the Controller goes to Lockout state, All the outputs are switched off and Alaram is initiated at Terminal No 14.

When in Lockout, the controller can be reset by momentarily by pressing the Reset P.B.(R) wired across terminals 3 & Phase.

Momentary interruption in power supply to the controller will also have the same reset effect on the controller.
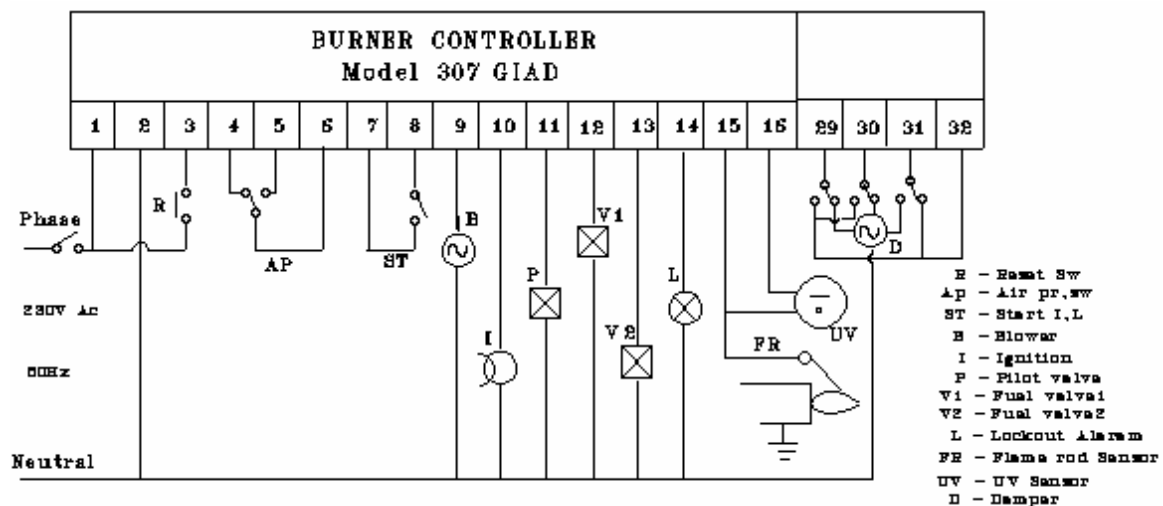
Controller shut down:

The controller can be shut down automatically by opening the control loop across terminals 7 & 8. When interlock loop is open, all the outputs are switched OFF, except the Blower (B) at terminal 9. And Damper full open supply at 29.
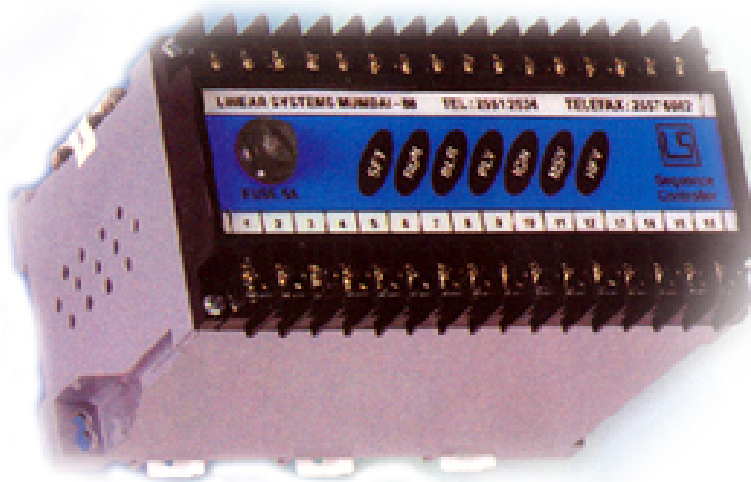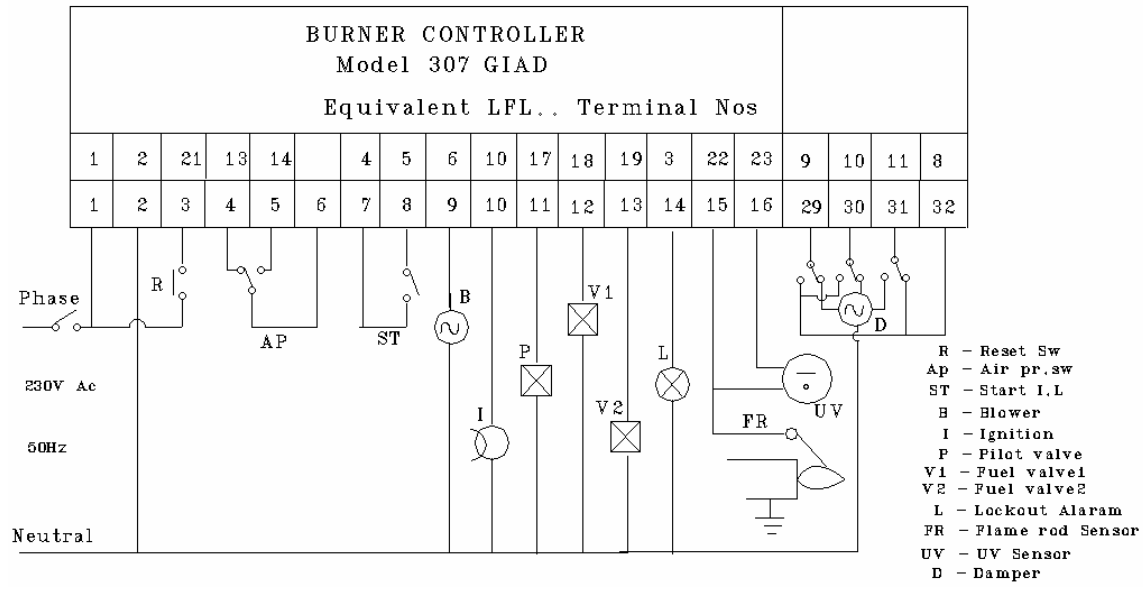
The Controller now does a post purge for 10 seconds to purge off the waste fuel in the chamber. During the post purge flame check facility is disabled in order to allow after burn where in flame may be present for few seconds.

When Post purge is finished the Controller will be ready and waits for a fresh starts up. Upon closure of loop across terminal 6 & 7 the Controller will start a fresh sequence from STEP 1.

Schematic Diagram:

Equivalent LFL Terminals

BURNER CONTROLLER Model 307 GIAD Equivalent LFL.. Terminal Nos																				
1	2	21	13	14		4	5	6	10	17	18	19	3	22	23	9	10	11	8	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	29	30	31	32	

Phase

230V Ac

50Hz

Neutral

R — Reset Sw
Ap — Air pr.sw
ST — Start I.L
B — Blower
I — Ignition
P — Pilot valve
V1 — Fuel valve1
V2 — Fuel valve2
L — Lockout Alaram
FR — Flame rod Sensor
UV — UV Sensor
D — Damper

* For further details please call or fax Linear Systems.