ASCO™ FlameLogic
P122AFL with UV & FR Flame Amplifiers, Valve Proving Feature and Modbus

General Description

The P122AFL FlameLogic is a compact, microprocessor based, primary flame safeguard control system designed to provide the proper burner sequencing, ignition and flame monitoring for on-off, multistage, or modulating burners used in commercial heating and process equipment firing oil and gas fuels.

Features

- Non-volatile lockout capability
- Air-flow proving, gas valve proving
- A run/check feature allows the operator to stop the program sequence in different positions for system troubleshooting
- Modbus-RTU communication via RS485
- Two built-in amplifiers (Ultraviolet, Flame Rod)
- Smart LEDs provide on board diagnostic lockout information
- Extended temperature operation (-40°C to 60°C)
- High capacity relay contacts

Specification

Supply Voltage		110 VAC (+20%, -15%) 50/60 Hz, single phase 230 VAC (+10%, -15%) 50/60 Hz, single phase
Power Consumption		7 VA
Temperature Rating	**Operating**	-40°C to +60°C
	Storage	-50°C to +85°C
Flame Amplifier Rating	**UV**	Terminals 22 & 23, 300VDC/ 3mA
	FR	Terminals 24 & Earth, 330VAC (max), 3uA min/10uA max flame current
Protection Category		IP40 standard version
Control Dimensions		With wiring base (P122AFLAPA); 105 L x 105 W x 127 H (mm)
Shipping Weight		Approx. 1.13kg
Relative Humidity		90% R.H. (Non-Condensing)

Ordering Information

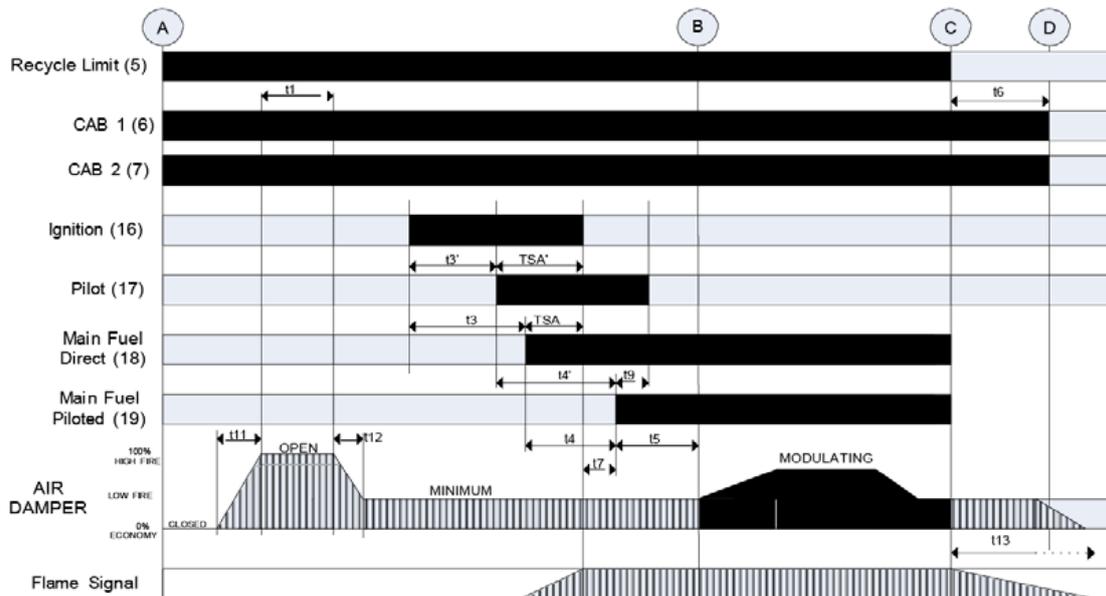| Item	Part Number	Description
1	P122AFLAB1000FH	FlameLogic, series 1 timings, 230VAC 50/60Hz
2	P122AFLAB2000FH	FlameLogic, series 2 timings, 230VAC 50/60Hz
3	P122AFLAB3000FH	FlameLogic, series 3 timings, 230VAC 50/60Hz
4	P122AFLAB4000FH	FlameLogic, series 4 timings, 230VAC 50/60Hz
5	P122AFLABXM00FH	FlameLogic, user defined timings, with Modbus, 230VAC 50/60Hz
6	P122AFLABXMP0FH	FlameLogic, user defined timings, with Modbus & VPS, 230VAC 50/60Hz
7	P122AFLAB1M00FH	FlameLogic, series 1 timings, with Modbus, 230VAC 50/60Hz
8	P122AFLAB1MP0FH	FlameLogic, series 1 timings, with Modbus & VPS, 230VAC 50/60Hz
9	P122AFLAB2M00FH	FlameLogic, series 2 timings, with Modbus, 230VAC 50/60Hz
10	P122AFLAB2MP0FH	FlameLogic, series 2 timings, with Modbus & VPS, 230VAC 50/60Hz
11	P122AFLAB3M00FH	FlameLogic, series 3 timings, with Modbus, 230VAC 50/60Hz
12	P122AFLAB3MP0FH	FlameLogic, series 3 timings, with Modbus & VPS, 230VAC 50/60Hz
13	P122AFLAB4M00FH	FlameLogic, series 4 timings, with Modbus, 230VAC 50/60Hz
14	P122AFLAB4MP0FH	FlameLogic, series 4 timings, with Modbus & VPS, 230VAC 50/60Hz

Ordering Information

Item	Part Number	Description
15	P122AFLAB1000EY	FlameLogic, series 1 timings, 110VAC 50/60Hz
16	P122AFLAB2000EY	FlameLogic, series 2 timings, 110VAC 50/60Hz
17	P122AFLAB3000EY	FlameLogic, series 3 timings, 110VAC 50/60Hz
18	P122AFLAB4000EY	FlameLogic, series 4 timings, 110VAC 50/60Hz
19	P122AFLABXM00EY	FlameLogic, user defined timings, with Modbus, 110VAC 50/60Hz
20	P122AFLABXMP0EY	FlameLogic, user defined timings, with Modbus & VPS, 110VAC 50/60Hz
21	P122AFLAB1M00EY	FlameLogic, series 1 timings, with Modbus, 110VAC 50/60Hz
22	P122AFLAB1MP0EY	FlameLogic, series 1 timings, with Modbus & VPS, 110VAC 50/60Hz
23	P122AFLAB2M00EY	FlameLogic, series 2 timings, with Modbus, 110VAC 50/60Hz
24	P122AFLAB2MP0EY	FlameLogic, series 2 timings, with Modbus & VPS, 110VAC 50/60Hz
25	P122AFLAB3M00EY	FlameLogic, series 3 timings, with Modbus, 110VAC 50/60Hz
26	P122AFLAB3MP0EY	FlameLogic, series 3 timings, with Modbus & VPS, 110VAC 50/60Hz
27	P122AFLAB4M00EY	FlameLogic, series 4 timings, with Modbus, 110VAC 50/60Hz
28	P122AFLAB4MP0EY	FlameLogic, series 4 timings, with Modbus & VPS, 110VAC 50/60Hz

Wiring Base	
P122AFLAPA00000	Wiring base for P122AFLAB FlameLogic

Sequence Timing

Legend			
A	Start command (Call for Heat)	t4	Interval between voltage on Pilot/Main Fule Direct and Main Fuel Piloted
B	Release to modulation	t4'	Interval between Pilot and the Main Fuel Piloted
C	End of burner fuel cycle	t5	Interval between Main Fuel Piloted and release to Mo dulation
D	End of operating sequence	t6	Post-purge time
t1	Purge time	t7	Pilot stabilization period
t3	Pre-ignition time (direct fired)	t9	Second safety time (MTFI)
t3'	Interval between ignition and pilot valve (piloted)	t11	Air damper running time to the HIGH FIRE position
TSA'	First safety time (PTFI)	t12	Air damper running time to the LOW FIRE position
TSA	First safety time (Direct ignition)	t13	Permissible afterburn time

Expanded Timings Table

Times Are In Seconds		FlameLogic Series Timings			
Timing	Description	S1	S2	S3	S4
t1	Purge time	36	31	37	60
t3	Pre-ignition time (direct fired)	4	6	5	5
t3'	Pre-ignition time (piloted)	4	6	2.5	2.5
TSA	Ignition safety time (direct ignition)	2	3	2.5	2.5
TSA'	Ignition safety time (PTFI)	2	3	5	5
t4	Interval between voltage on Pilot/Main Fuel Direct and Main Fuel Piloted	10	11.5	12.5	12.5
t4'	Internal between start of TSA and the main fuel piloted	10	11.5	15	15
t5	Interval between Main Fuel Piloted and release to Modulation	10	11.5	12.5	12.5
t6	Post-purge time	12	18	15	15
t7	Pilot stabilization period	8	8.5	10	10
t9	Interval between Main Fuel Piloted and removal of Pilot (MTFI)	2	3	5	5
t11	Air damper running time to the HIGH FIRE position	OPTIONAL			
t12	Air damper running time to the LOW FIRE position	OPTIONAL			
t13	Permissible afterburn time (Post-purge + 60s)	72	78	75	75
FFRT	Flame Failure Response Time (FFRT)	1.0[b]			

NOTE: unless stated as minimum or maximum, timings are nominal values.
    a: Minimum time
    b: Maximum time

Part Numbers and Approvals

Table: Agency Approvals		
Part Number	c(UL)US LISTED	C E
Control		
P122AFLAB1000FH		●
P122AFLAB2000FH		●
P122AFLAB3000FH		●
P122AFLAB4000FH		●
P122AFLABXM00FH		●
P122AFLABXMP0FH		●
P122AFLAB1M00FH		●
P122AFLAB1MP0FH		●
P122AFLAB2M00FH		●
P122AFLAB2MP0FH		●
P122AFLAB3M00FH		●
P122AFLAB3MP0FH		●
P122AFLAB4M00FH		●
P122AFLAB4MP0FH		●
P122AFLAB1000EY	●	●
P122AFLAB2000EY	●	●
P122AFLAB3000EY	●	●
P122AFLAB3000EY	●	●
P122AFLABXM00EY	●	●
P122AFLABXMP0EY	●	●
P122AFLAB1M00EY	●	●
P122AFLAB1MP0EY	●	●
P122AFLAB2M00EY	●	●
P122AFLAB2MP0EY	●	●
P122AFLAB3M00EY	●	●
P122AFLAB3MP0EY	●	●
P122AFLAB4M00EY	●	●
P122AFLAB4MP0EY	●	●

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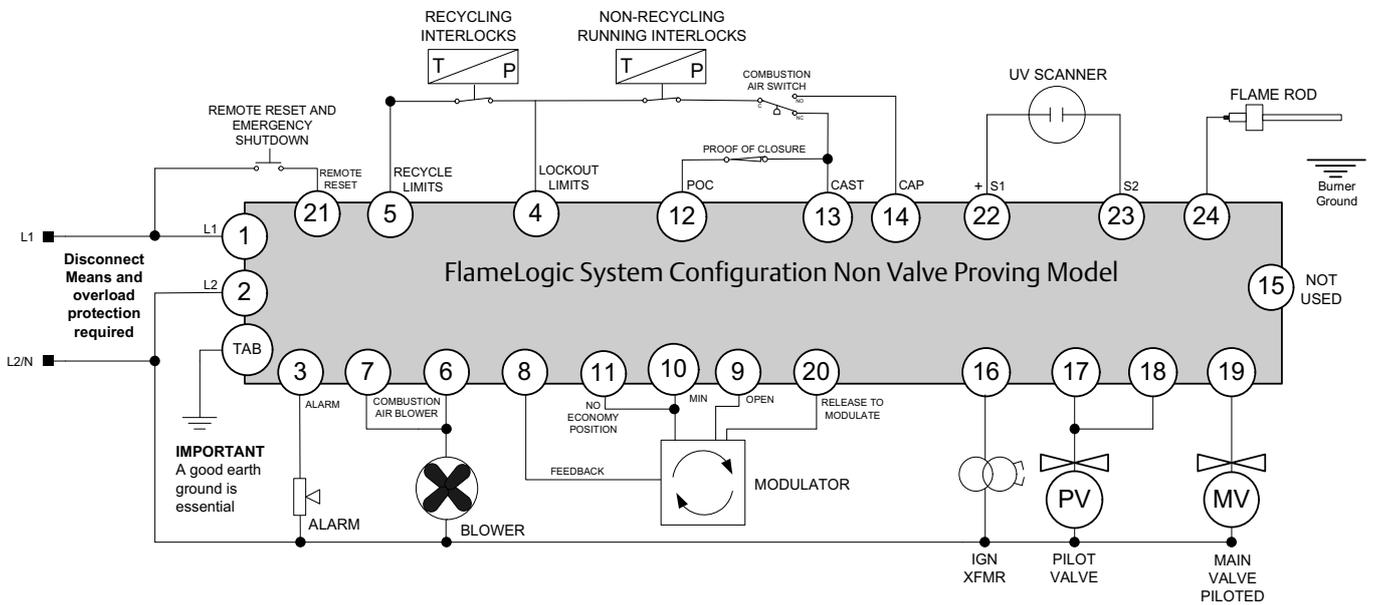| Agency Approvals		
Part Number	c(UL)US LISTED	CE
Wiring Base		
P122AFLAPA00000	●	●

● = Certification in Hand
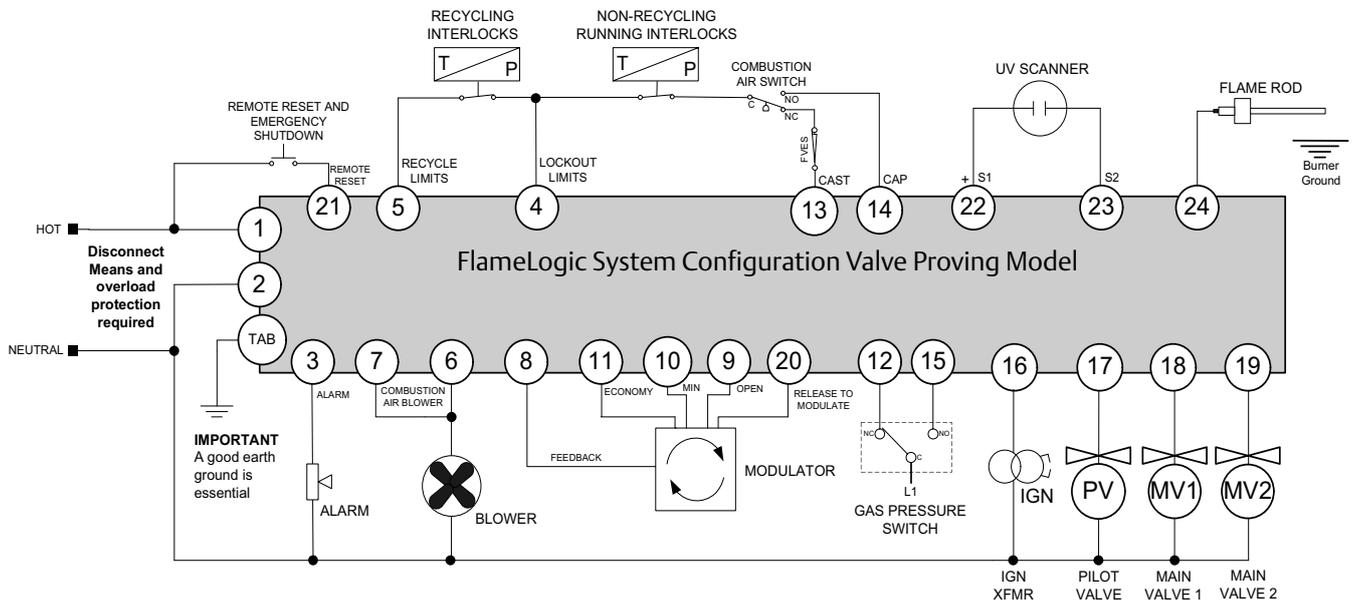**Approval/Certification**
UL: MCCZ File MP1537 Controls, Primary Safety - Listed
           MCCZ7 File MP1537 Controls, Primary Safety Certified for Canada
CE: CE-0063CS1687

Wiring Diagram

Example Wiring Diagram for Modulating Burner w/Intermittent Pilot

Example Wiring Diagram for Modulating Burner w/Interrupted Pilot Configured for Valve Proving
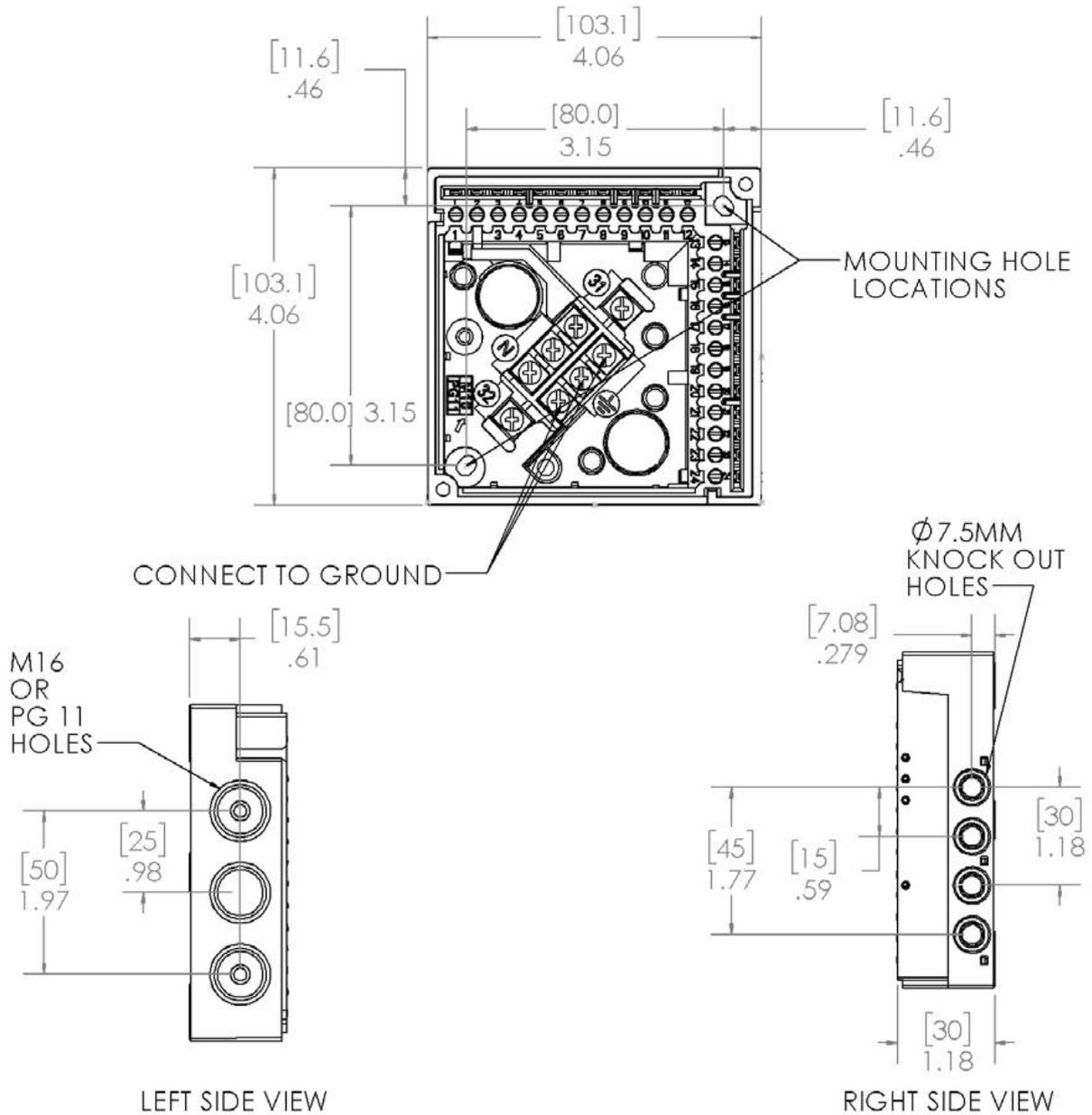
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Dimensions (mm)

MOUNTING HOLE
LOCATIONS

CONNECT TO GROUND

Ø 7.5MM
KNOCK OUT
HOLES

M16
OR
PG 11
HOLES

LEFT SIDE VIEW

RIGHT SIDE VIEW