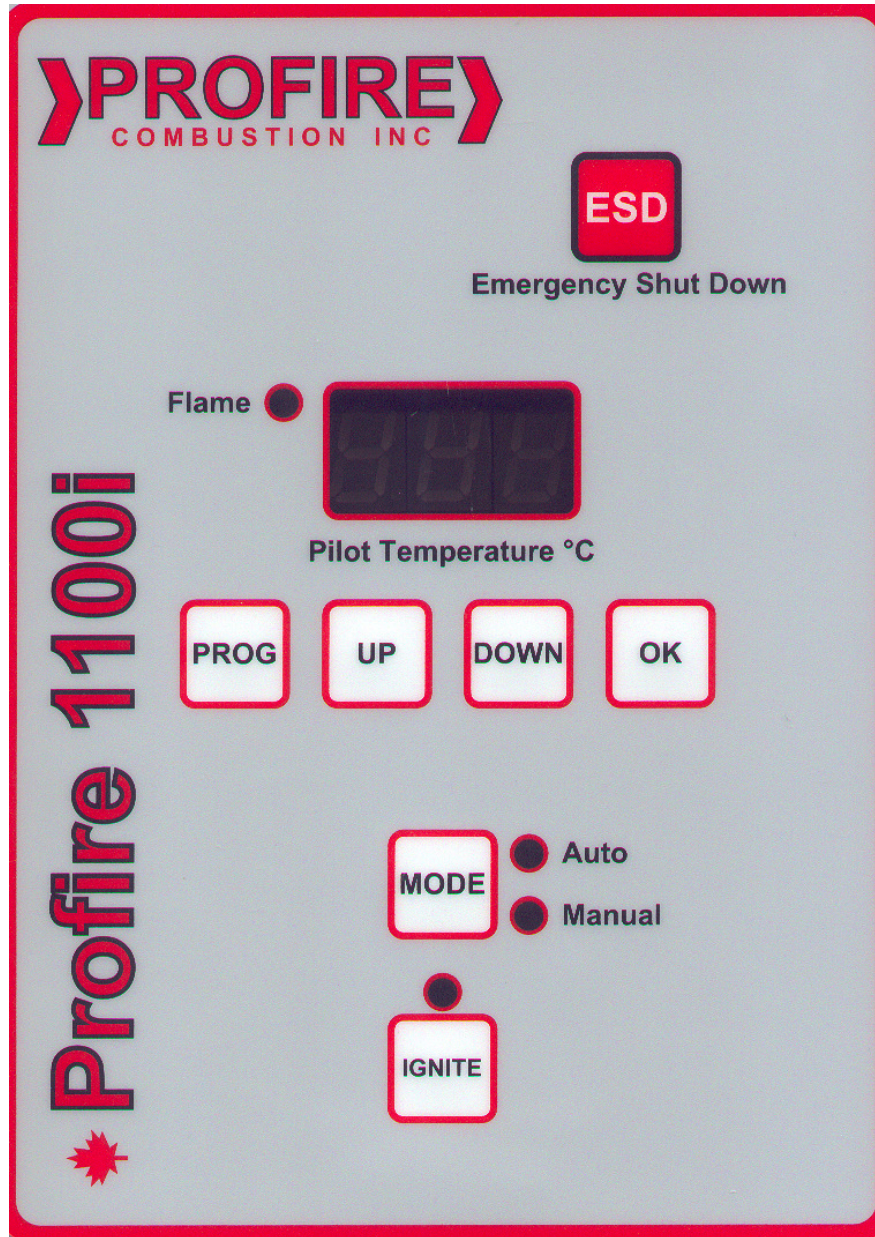


PROFIRE 1100i



IGNITION FLAME SAFETY CONTROLLER

Cautions

WARNING:

- EXPLOSION HAZARD-** **-DO NOT SERVICE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS**
- DO NOT OPEN WHEN ENERGIZED**
- EXPLOSION HAZARD-** **-SUBSTITUTION OF COMPONENTS MAY IMPAIR THE SUITABILITY FOR DIVISION 2/ ZONE 2**
- REPLACEMENT FUSES MUST BE SAND-FILLED**
- DO NOT OPEN WHEN ENERGIZED**

INSTALLATION WARNING

- Terminal Connections:** **Connections must conform to the directions in this manual.**
- The unit must be properly connected to earth-ground for effective ionization operation.**
- Electrical devices connected to the controller must meet electrical standards and be within voltage limits.**

Contact Number

For any questions call:

780-960-5278

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Features of the Profire 1100i

- CSA compliant for:
 1. Class 1, Division 2 locations approval (CSA 213-92).
 2. Industrial Process Equipment approval (CSA 14-95).
- Input Power +10 to +28 VDC.
- Dual Flame-sensing modes:
 1. Thermocouple (type K thermocouple).
 2. Flame Rod (ionization circuit)
- Rapid 1.8 second shut-down on flame-out.
- DC Voltage spark generator.
- Low-power design to incorporate solar panels or TEG applications.
- Auto relight or manual operation, push button selectable.
- Remote Start/Stop control.
- Large, easily-accessible terminal connections.
- Equipped with AVD (Advanced Visual Display) for improved operating functions and signals.
- START-LOCKOUT input for connections to safety interlock devices.
- All circuits are transient protected and are fail-safe.

Specifications

ENCLOSURE

- Fiberglass 8" x 6" x 4"
- CSA and UL compliant for Class 1, Division 2 locations
- Enclosure type 4, 4X, 12, 13

CIRCUIT BOARDS

- All solid state, CPU base
- CSA compliant for Class 1, Division 2 locations

IGNITION BASE AND COIL

- For non-classified area only

POWER REQUIREMENTS

- +10 to + 28 volts DC

SUPPLY CURRENT

- 2.0 amps surge (limited), 0.015 - 2 amps run

POWER CONSUMPTION

- 1100i only:
 - 12 volts - Display on - 106 ma or 1.3 watts
 - 12 volts - Display off - 43 ma or 0.6 watts
 - 24 volts - Display on - 66 ma or 1.6 watts
 - 24 volts - Display off - 35 ma or 0.9 watts
-

- **Operating Conditions: -40°C to +55°C**
-

Installation

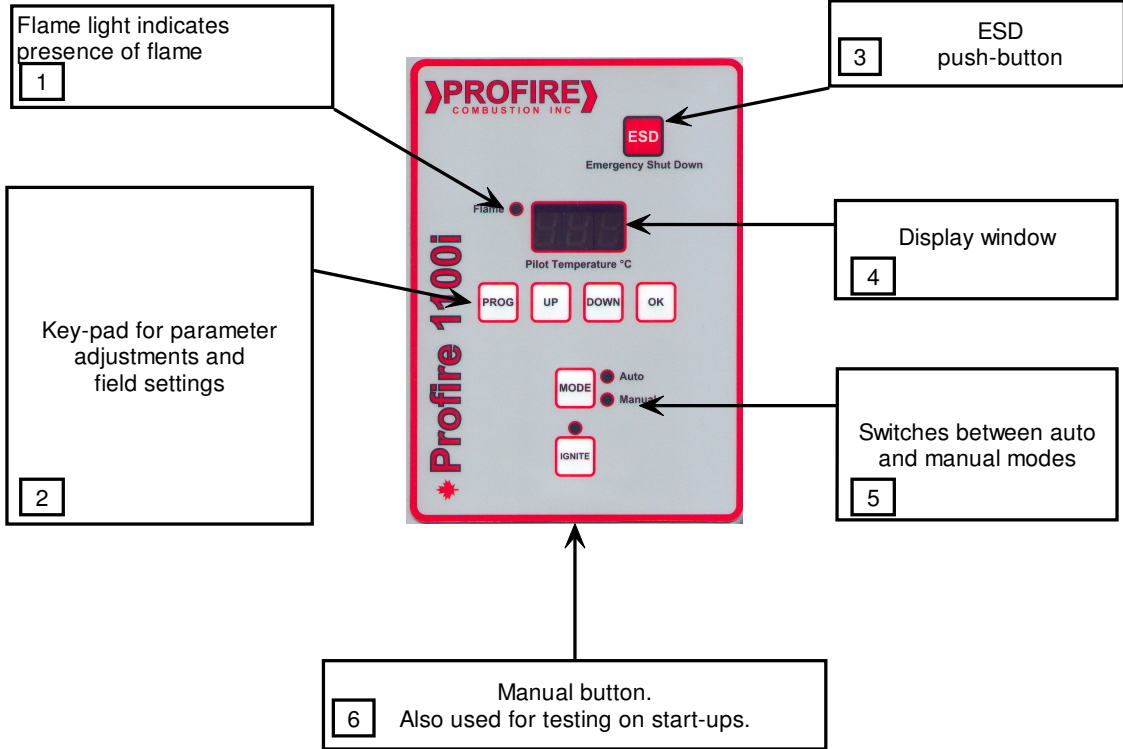
Site Selection

The Profire 1100i system enclosure is CSA compliant for a Class 1, Division 2 (C&D) area classification. This means the system enclosure must be mounted outside any Class 1, Division 1 area. The system can be mounted on the unit skid or on a building wall as long as it does not infringe on a Class 1, Division 1 area.

The Profire 1100i system enclosure is a fiberglass box 8" x 6" x 4", complete with mounting tabs. The enclosure weighs less than 5 pounds, so heavy duty supports are not required, but the unit should be firmly mounted as the push buttons on the front panel have to be operated. The enclosure should be mounted in a location that faces away from the burner housing so that the operator is facing both the enclosure and the burner housing while operating the unit. Other considerations are panel access, traffic, wire-runs, and visibility. The enclosure should be mounted about 5 1/2 feet above ground level.

The spark generators, however, must be mounted in a non-classified area, as there is a potential of a spark arcing across the output terminals of the coil or along the insulated high voltage leads. The ideal location for the spark generator is inside the burner housing or in an approved enclosure for the area.

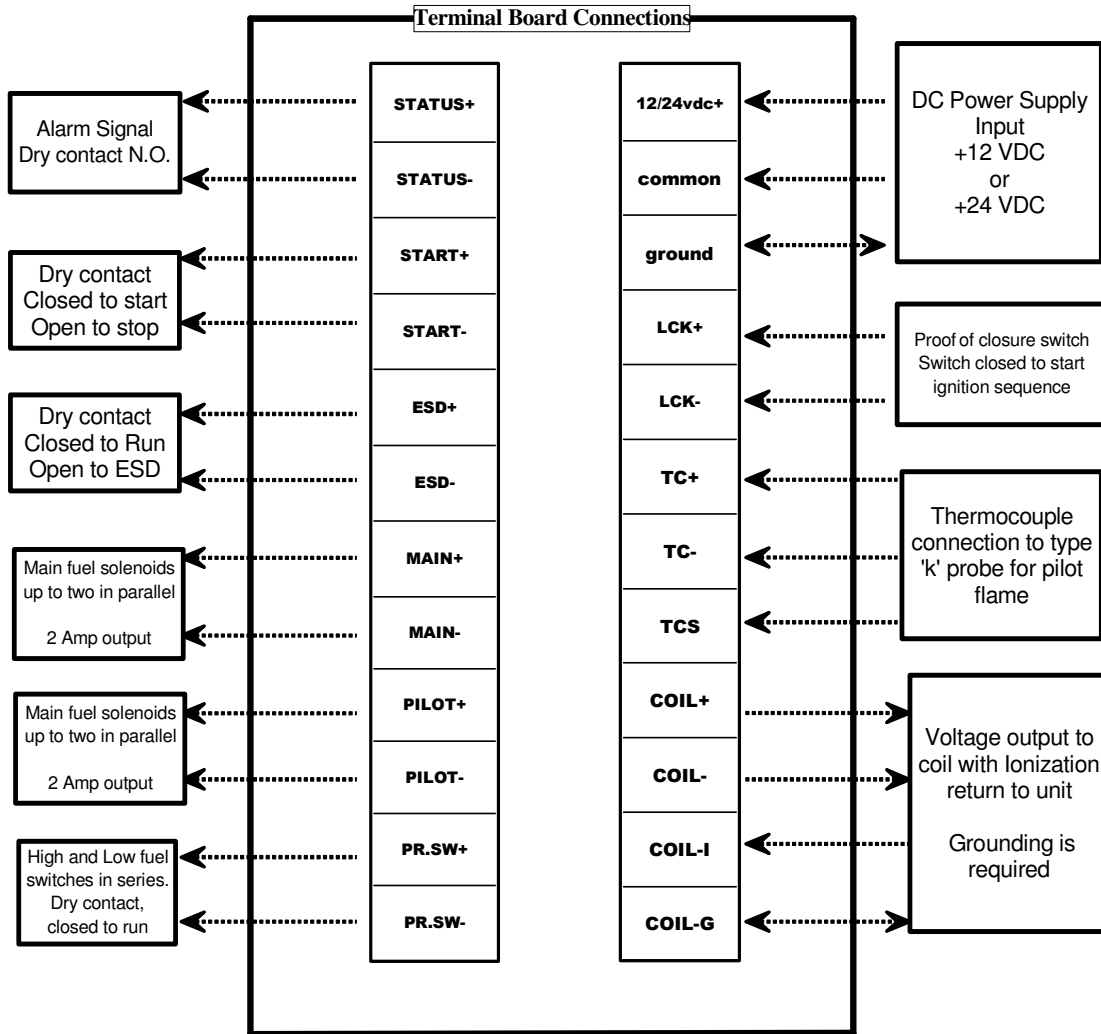
Key-pad function



1	Flame light indication: Allows operator to see that the pilot is lit.
2	Key-pad: Allows operator to select adjustable field parameters on the unit. "PROG" button selects the mode in which the adjustments are allowed. "UP" button scrolls up through the menu. "DOWN" button scrolls down through the menu. "OK" button will allow system to accept changes.
3	ESD: Allows operator to manually shut unit down, and alarm.
4	Display window: Allows operator to read pilot flame temperature, menu, and errors that have occurred.
5	Mode: Allows operator to switch unit into a manual mode to check pilot ignitor and pilot solenoid, providing all safety interlocks have been met. LED's indicate the state the unit is in.
6	IGNITE button: Allows operator to activate ignition, providing all safety parameters are met and unit is in manual mode.

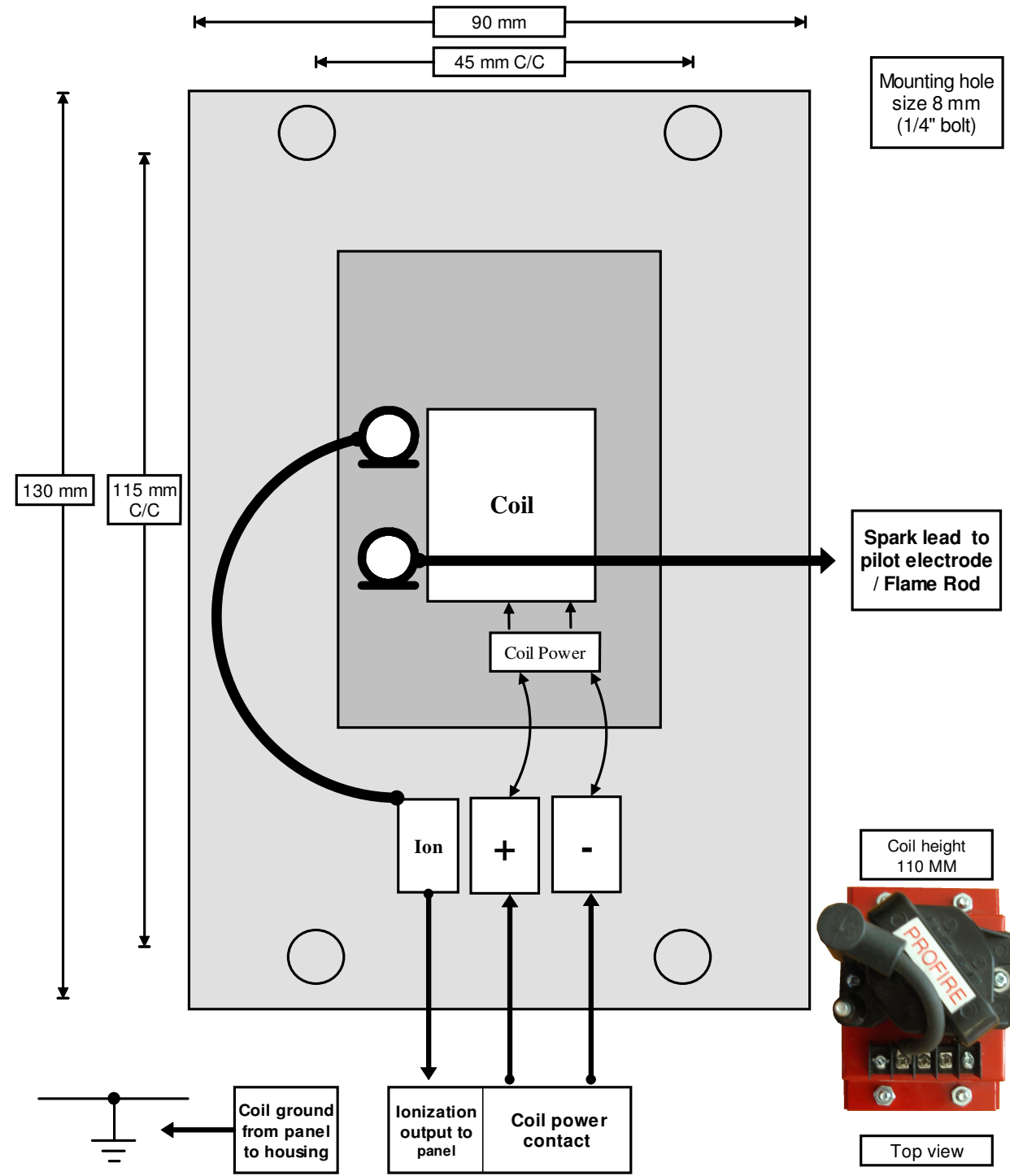
Wiring connections for the Profire 1100i

For good connections, spade connectors should be used and wires should be clearly marked.

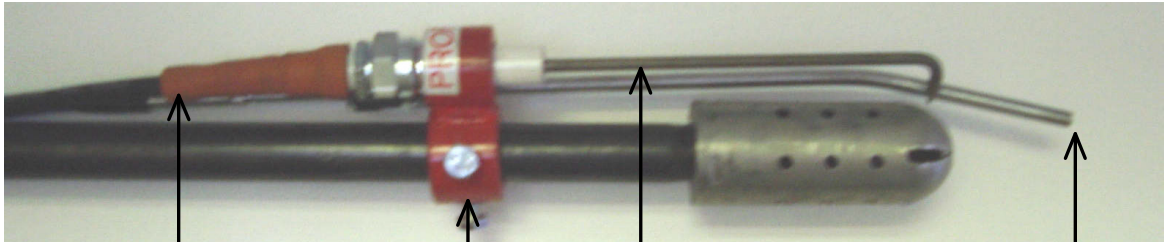


Rev. 4.09

*** Coil must be mounted in a NON-HAZARDOUS location.**
Coil requires solid ground from Profire 1100 to ensure ionization operates properly.



Pilot bracket assembly



Ignition cable. Five foot carbon lead with end connections for electrode and coil.

Pilot mounting bracket. Standard size for 1/2" pipe. Comes with electrode bushing and probe fitting.

Kanthol electrode, ignitor and flame rod. Bend in a fashion that the gas will ignite.

Type "K" thermocouple probe 2" past pilot nozzle with a 30° bend

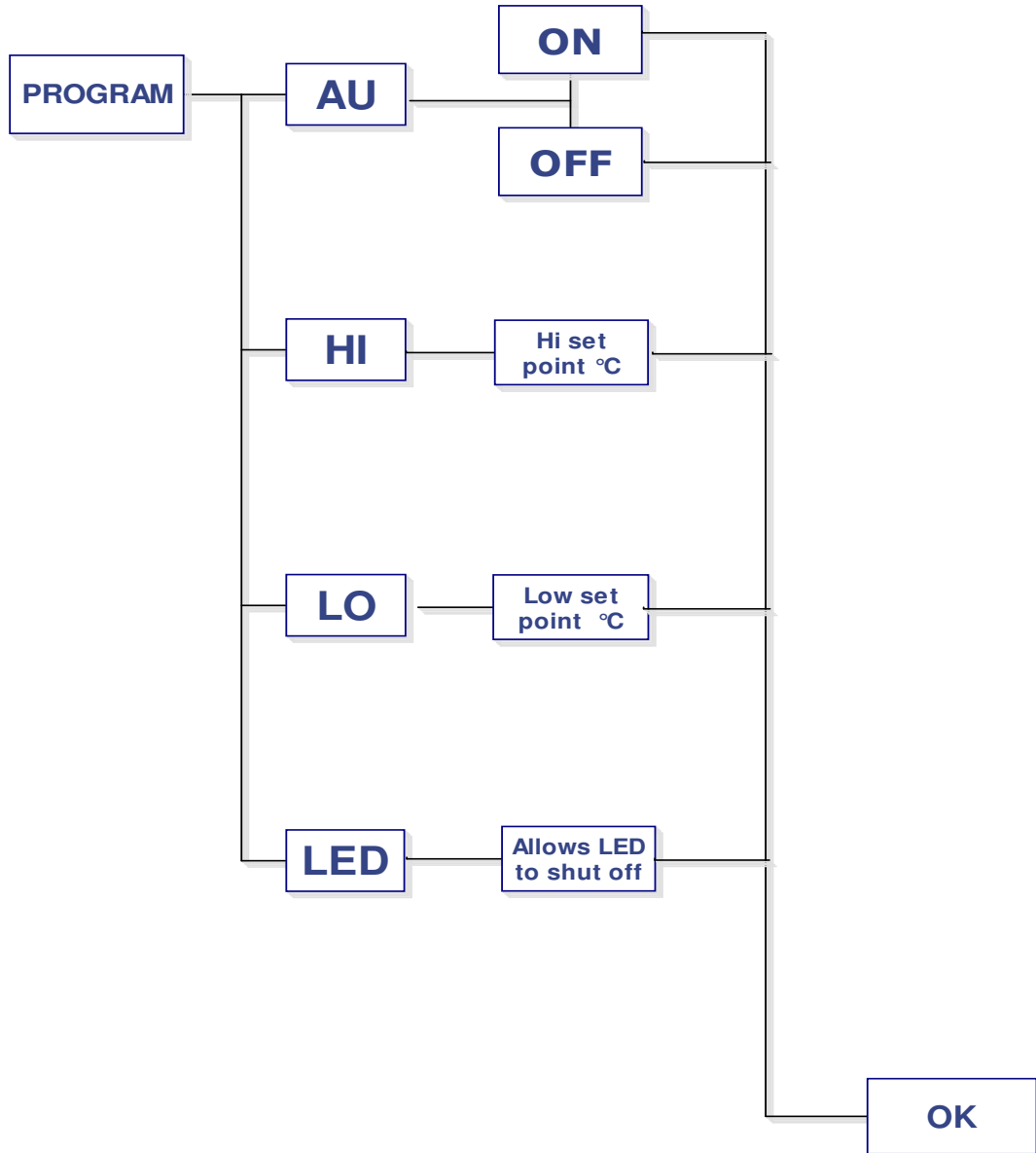
Pilot bracket assembly can be mounted on existing pilot. Brackets can be ordered to fit pilots 1/2" and up. Slip-stream applications are also acceptable, but may require custom length probe and ignition electrode.

Pilot burner is **not included**. Available as option

Program Mode

On Screen	Description	Function	Default setting
AU	Enables unit to automatically start on power-up	ON= Auto start enabled OFF = Auto start disabled	Off
HI	High set point (Spark)	Signal setting for a spark trigger point in °Celsius. Sparks when below this setting.	600
LO	Low set point (Alarm)	Signal setting for a prove point↑ / alarm point↓ in °Celsius	200
LEd	Power saving	Allows unit to turn LEDs off	on

Program Menu



Changing settings

Changing settings can only be done when unit is in **manual** mode and displaying **RDY**.

Using the front key-pad buttons, select **PRG**. Scroll through pushing the **DOWN** key to the menu that will be changed. Once the system displays the menu, changes can be selected by the **UP** or **DOWN** buttons.

The change will only be accepted if the **OK** button is pushed.

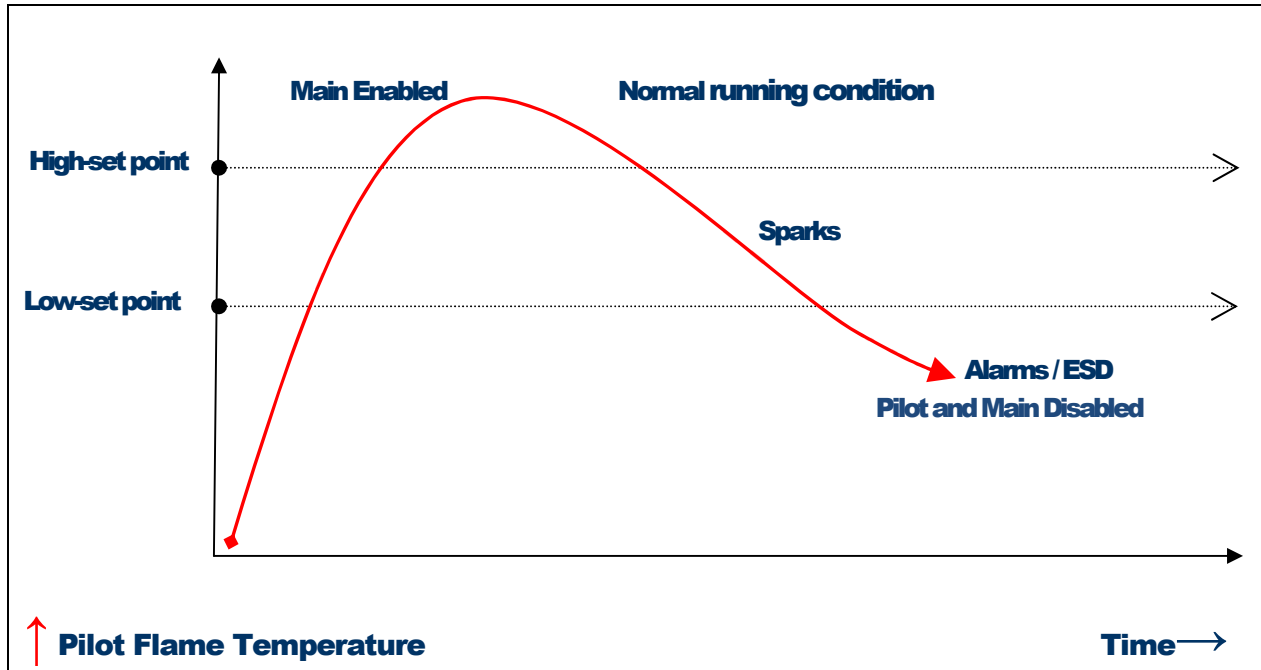
Flame mode

The Profire 1100i has two method of flame detection: (1) Type K thermocouple probe, (2) Flame rod (ionization). Combined, they provide a safe and reliable flame detection system. The thermocouple probe provides low and a high set points, which indicate the flame temperature of the pilot. Running the Ionization circuit in conjunction with the probe, detects a flame-out within 1.8 seconds.

Hi and Low set points

Setting the high set point can be done once the lowest running temperature of the flame has been established. This can be done on the initial start-up of the unit. Typically the pilot temperature can be used, but on occasion, the main burner can effect the flame temperature of the pilot. If that is the case, one should use the lower of the two flame temperatures as a guideline to setting the Hi set point. The unit should then be shut down ensure the setting is where it needs to be. Only under special circumstances will the low set point need adjustment.

Function Diagram № 1



Type 'K' Thermocouple Output Chart

TEMP °C	TYPE K MV	TC OUTPUT
40	1.611	.401
60	2.436	.605
100	4.095	1.015
140	5.733	1.420
160	6.539	1.620
200	8.137	2.015
240	9.745	2.413
260	10.560	2.614
300	12.207	3.022
340	13.874	3.434
360	14.712	3.641
400	16.395	4.057
440	18.088	4.476
460	18.938	4.686
500	20.640	5.107
540	22.346	5.529

TEMP. °C	TYPE K MV	TC OUTPUT
560	23.198	5.740
600	24.902	6.161
640	26.599	6.581
660	27.445	6.790
700	29.128	7.206
740	30.799	7.619
760	31.629	7.825
800	33.277	8.232
840	34.909	8.636
860	35.718	8.836
900	37.325	9.233
940	38.915	9.626
960	39.703	9.821
1000	41.269	10.209
1060	43.585	10.781
1100	45.108	11.158

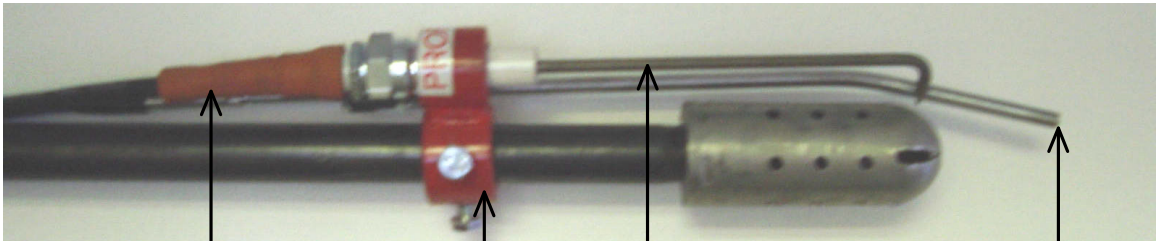
Default settings are bolded.

Standard Parts Sheet

Call 780-960—5278

Enclosure	Part Number	Description
Profire 1100i	780021i	Complete standard package
Door pad with electronics	780022i	Front key-pad c/w electronics
Door card	780023i	Electronics only for the door
Terminal card	780024i	Terminal card only
Coil	Part Number	Description
Coil assembly	780034i	Complete coil assembly with base mount
Coil base	780038i	Base mount
Coil	780040i	Ignition coil
Pilot	Part Number	Description
Pilot bracket assembly	780086i	Complete pilot assembly with probe and electrode
Probe fitting	780088i	Tube fitting
Electrode	780089i	Ignitor rod with porcelain
Electrode bushing	780087i	Mounting bushing for electrode
Pilot bracket	780040i	Welded bracket
Accessories	Part Number	Description
Probe	5 FT. 780010i	All probes come 12” with optional extension length available.
	6 FT 780011i	
	8 FT. 780012i	
	Custom Custom	
Ignition Extension cable	5 FT. 780100i	Extension wires come complete with ends. Optional lengths available.
	6 FT. 780101i	
	8 FT 780102i	
	Custom Custom	

Recommended spare parts



1 Pilot mounting bracket. Standard size for 1/2" pipe. Comes with electrode bushing and probe fitting.

2 Type "K" thermocouple probe 2" past pilot nozzle with a 30° bend

3 Ignition cable. Five foot carbon lead with end connections for electrode and coil.

4 Kanthol type electrode, ignitor and flame rod. Bend in a fashion that the gas will ignite.

1	Bracket	part# 780086
2	Probe 12" with 6' lead	part# 780011
3	Ignition wire extension 5'	part# 780100
4	Ignition rod	part# 780089

Trouble Shooting

Always ensure proper voltage is applied; +10 to +28 VDC. Earth ground is required.

<u>Symptom</u>	<u>Cause</u>	<u>Action</u>
Screen flashes 999	Check probe connections. Check probe.	Replace probe.
Err 1	Start sequence initiated while FLAME is detected.	Check pilot for flame. Reset system
Err 2	Configuration memory failure.	Replace door card.
Err 3	PILOT button pressed for more than 30 seconds.	Clear and restart sequence.
Err 5	Thermocouple connection disconnected.	Check Probe.
Err 20	Internal self-check fault.	Replace door.
No spark	Check pilot electrode gap. Check ignition wire.	Replace ignition wire.
Pilot light on but solenoid will not open.	Check terminal board output to solenoid. If there is no power on terminals, reset system.	Replace door card.
Flame light on in Fail mode	Ionization circuit is closed. Clean pilot. Check coil connections.	Check pilot for flame. Reset system.
Have pilot but no flame light	Ionization circuit does not see flame	Check ignition cable connections and ignition gap