FLARE STACK IGNITER

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FSI MANUAL & INSTALLATION GUIDE

1 | PRODUCT INFORMATION

The Flare Stack Igniter (FSI) is designed to eliminate cumbersome installation, poor flame detection, and burned-up wires and nozzles. It efficiently ignites and reignites flares in the most demanding and extreme flare stack environments. The inline assembly makes it fast and easy to replace parts and renders it unnecessary to remove the pilot from the flare. Wires are safely tucked away 5 feet from the tip of the FSI, and its heavy wall nozzle is built to take a beating.

1.1 | Features

The Profire Energy Flare Stack Igniter is designed for the following:
Dependable ignition even in extreme flare-stack environments
Simple installation
Reliable flame detection
Durable weather resistant exterior
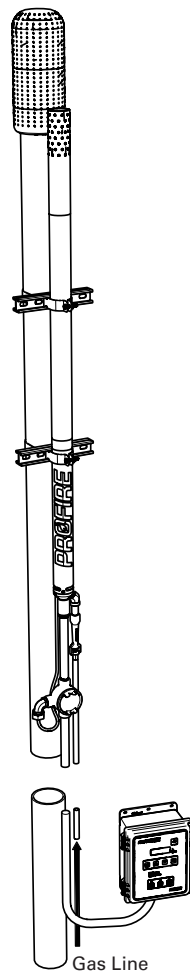Protected wiring distanced 5 feet from the flame
Easy field repair

1.2 | Specifications

Description	Specifications
Version Description	Flare Stack Igniter
Approx. Cylindrical Length	60 in (1.5 m)
Overall Length	80 in (2.0 m)
Diameter	2.5 in (6.4 cm)
Typical Operating PSI	3- 8 PSI
Burner Nozzle Construction	316 SS
Orifice Size*	#66 & #72 included
Reorder Part Number	BNC025PDH

*Other orifice sizes are available for use with the FSI. See the troubleshooting section for more details.

1.3 | System Diagram

Gas Line

2 | INSTALLATION

This document provides instructions for setting up and installing your Flare Stack Igniter. It covers these tasks:

Connect the System
Test the Hardware
Assemble the Mounting Hardware
Install the System
Troubleshoot Common Issues

These steps provide instructions to complete the installation process. Please read this entire section and follow the instructions closely.

2.1 | Important Safety Information ⚠

Warning: Fire or Explosion Hazard. Please do not attempt to light the FSI without wiring the system to earth ground.
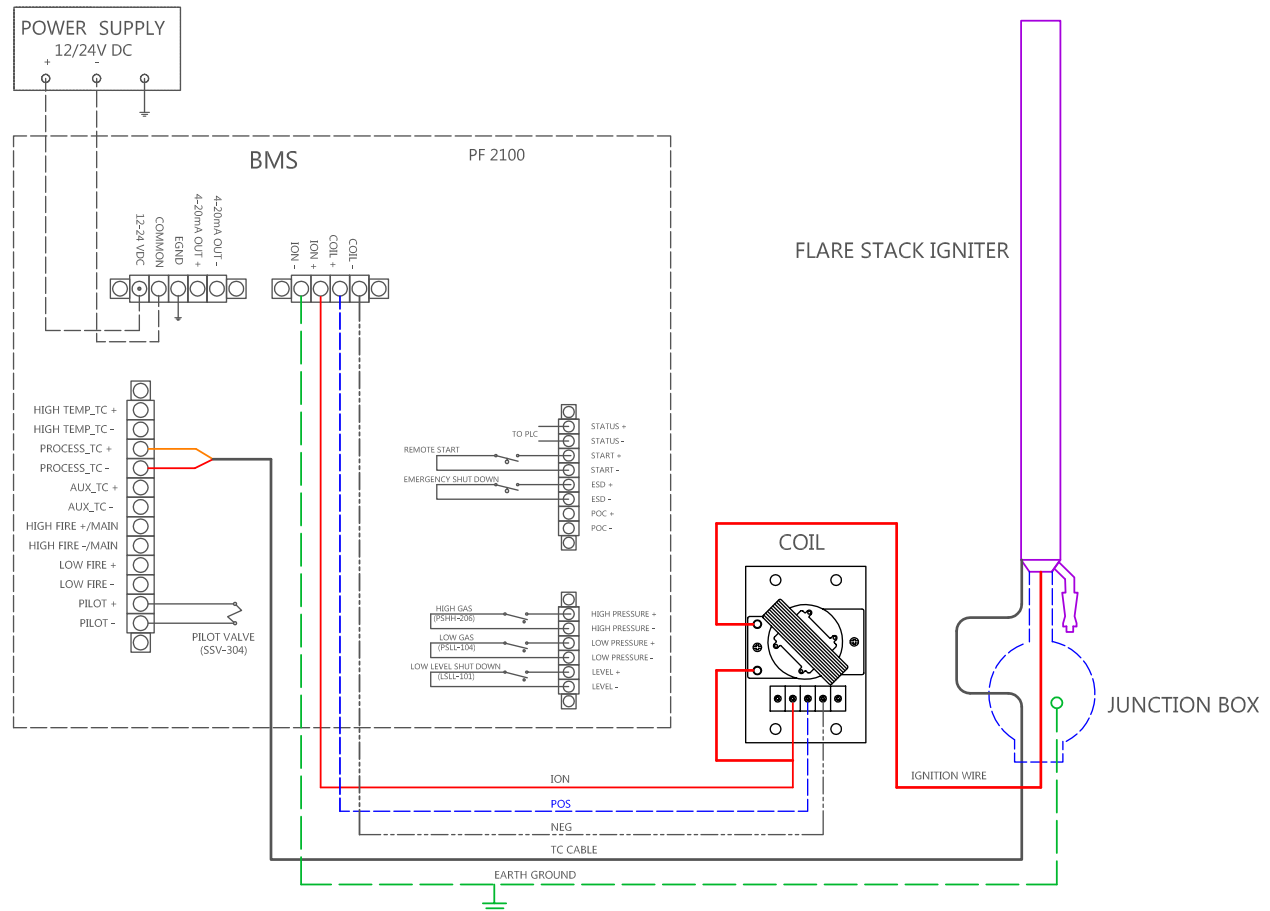
Check the maximum temperature for your installation and use suitable wiring for that application.

2.2 | Connect the System

Connect the appropriate wires to the BMS terminals as described. Connect the gas line adapter fitting and gas line to the source.

NOTE: The Flare Stack Igniter MUST be grounded to a suitable ground. Attach the earth ground wire to the ground lug (any one of the three screws) at bottom of the FSI or through the junction box.

USING THE FSI WITH THE PF2100 BURNER MANAGEMENT SYSTEM

Flare Stack Igniter Connected To The PF2100 With External Coil

OPERATION TIPS

For typical installations, use the provided #66 orifice. A #60 or #72 orifice can be used with the FSI for specific installations. See the troubleshooting section for more details.

It is recommended that an Inline Gas Filter be used with the FSI to prevent the orifice from clogging due to any gas impurities.

Typically the best operating pressure range is 5-10 psi. The optimal operating pressure can vary with orifice size and gas quality.

2.3 | Test the Hardware (optional)

It is recommended that you test electrical connections and the system before mounting the FSI.

GASLESS TEST

After grounding the FSI, use the BMS system to start the ignition sequence.
Press the Ignite button to initiate sparking.
Listen or carefully look for a spark inside the nozzle.

Warning ⚠️
Do not connect the FSI to the gas line for this test. Gas must be off. Make sure that the FSI is grounded properly.

GAS TEST

Connect the FSI to the gas line.
Press the Ignite button to initiate sparking.
The FSI will spark and ignite the gas flowing up to the nozzle.
As soon as there is flame, the sparking will stop and the BMS will switch to flame detection.

NOTE: The flame is very efficient and may be difficult to see in daylight or direct light. Check that the Flame LED on the BMS is on.

Once you have successfully completed the system tests, turn off the flame and proceed with installing the system in your application.
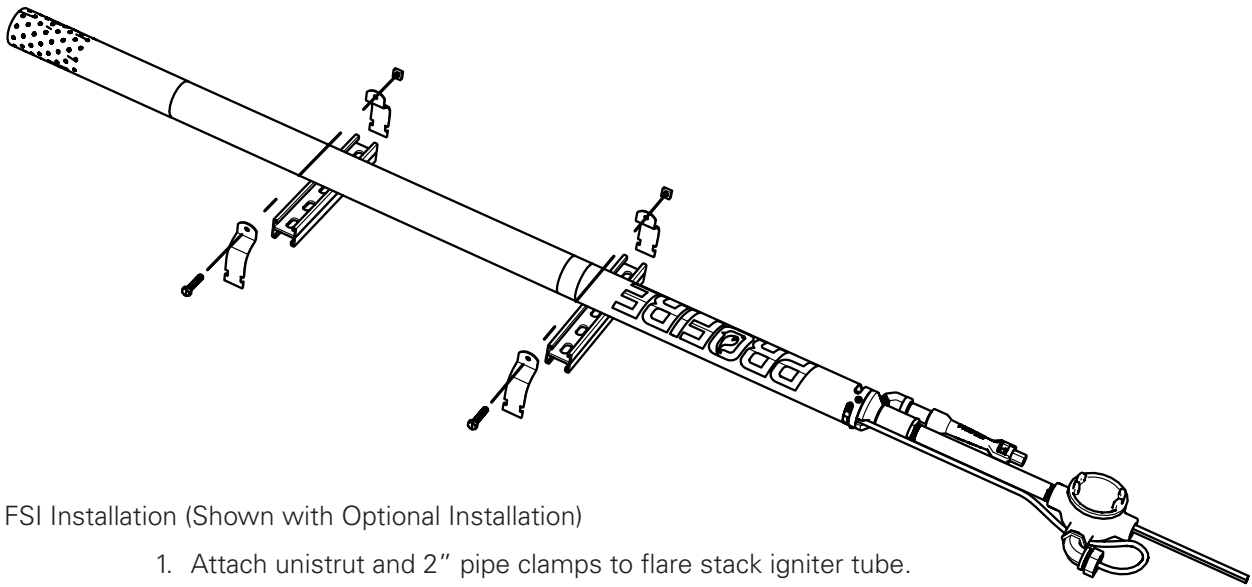
NOTE: Testing with a gas other than the process fuel may have different results.

2.4 | Assemble the Mounting Hardware

INCLUDED COMPONENTS

Flare Stack Igniter Assembly

#66 Gas Orifice

#72 Propane Orifice

FSI Installation Kit (Optional)

2x Mounting Brackets

2x Double-channel Struts

SS Zip Ties

Nuts & Bolts

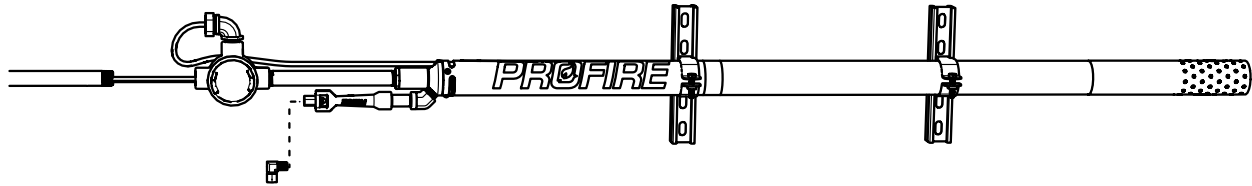FSI Installation (Shown with Optional Installation)

1. Attach unistrut and 2″ pipe clamps to flare stack igniter tube.
2. Adjust position to fit flare pipe.
3. Attach pipe clamps to opposite side of unistrut. (Not provided)

NOTE: unistrut(s) may be attached first and then attach the flare stack igniter with the provided clamps.

2.5 | Install the System

Secure the FSI to the burner using clamps that fit your specific installation and the provided struts.

Assemble the hardware as shown in the diagram above:

1. Slide the wires through a rigid conduit.
2. Thread the rigid conduit onto the junction box (if installed).
3. Connect conduit to control box or burner management system (BMS).
4. Connect the appropriate wires to the BMS terminals as described.
5. Connect the gas line adapter fitting (not supplied) and gas line to the source.

NOTE: Recommended pressure is between 5-10 PSI.

NOTE: These operations may be performed on the ground prior to attachment of the igniter to the flare stack

2.6 | Troubleshooting: Common Problems & Solutions

The Flare Stack Igniter will not light.
Turn the gas off and make sure the FSI is grounded properly. During the lighting sequence, confirm there is a spark inside the nozzle.
Check for gas pressure to the orifice.
Verify the orifice is free of obstructions.

The BMS is not detecting flame from the FSI.
Make sure the spark wire is properly insulated.
Check that the length of the spark wire is less than 30 ft (9 m) with flame detect set to ionization.
Cross-reference flame detection with thermocouple temperature. If the temperature is increasing despite the BMS reading that there is no flame, there might be issues with ionization. Check the thermocouple probe.
Profire part # TPS036TBH - Thermocouple Probe

The BMS is not detecting any flame and the FSI is lit but the flame quality is poor.
Check the size of the orifice. A smaller orifice (i.e. #72) is recommended for propane. A larger orifice (i.e. #66 to #60) is recommended for natural gas. The FSI has been optimized at these small orifice sizes; an orifice as large as 1/16″ will yield poor flame quality.

Profire part # BNR050PAB - #60 Stainless Steel Orifice
Profire part # BNR050PBD - #66 Stainless Steel Orifice
Profire part # BNR050PBC - #72 Brass Orifice

The FSI is sparking but not at the nozzle.
This is possibly an ignition rod failure. Replace the rod. To do this, unscrew the rod from the base of the FSI and replace it with a new rod.
Profire part # ELIR085703 - Flare Stack Igniter Ignition Rod

I have determined that I need to replace the FSI nozzle and/or ignition rod. The Flare Stack Igniter nozzle and ignition rod may be easily field replaced if necessary.
Unscrew the nozzle or ignition rod and re-insert replacement components.

Use a high temperature anti-seize compound sparingly on the threads. Approved anti-seize compounds include silver and copper based products rated at 1600°F or above. Avoid over application of anti-seize product.
Profire part # FS11-0004-00 - Flare Stack Igniter Nozzle

There is water in the conduit.
Verify that the conduit connections around the junction box are doped and taped including the cap on the junction box. Make sure the electrode inside the FSI is also taped and doped.

Contact your Profire Sales representative to order parts or for further assistance.

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