

# PROFLAME+ SRU FLAME SCANNER

Models ZPF-1200SRU  
ZPF-1100SRU



BURNERS | FLARES | THERMAL OXIDIZERS  
VAPOR CONTROL | RENTALS | AFTERMARKET



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ZPF-1100SRU

## We know sulfur.

Recovering elemental sulfur, typically through the Claus Process, is a process Zeeco understands. We engineer and supply specialized Sulfur Recovery Unit (SRU) combustion equipment including high intensity style burners, reaction furnaces, inline heaters/reducing gas generators, tail gas incinerators, and waste heat boilers for installations worldwide.

## Reliable acid gas flame monitoring.

The ZEECO® ProFlame+SRU™ Integrated Flame Scanner was specifically designed to provide reliable flame detection and superior background flame discrimination in SRUs. The ProFlame+SRU offers easily configurable set points and uses intuitive PC-based software to provide in depth flame analysis. Where standard monitoring technology using photoelectric sensors has failed, the ProFlame+SRU reliably monitors acid gas flames even under challenging operating conditions. In fact, ProFlame+SRU was specifically designed to correct the issues conventional UV/IR flame scanners often face in SRUs.

## The physics of flame detection in SRUs.

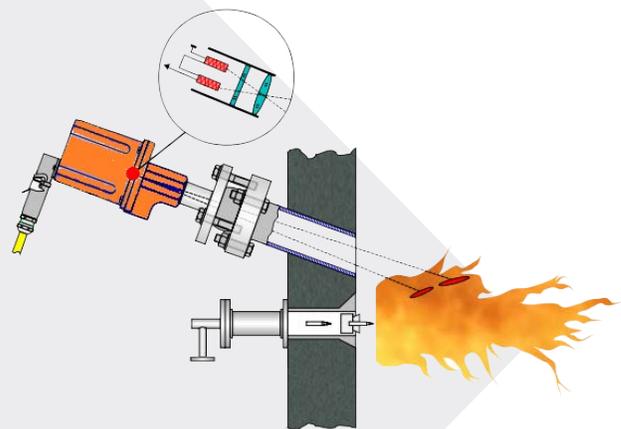
Amplitude and flicker frequency are the two primary components of the flame signal, where amplitude is the intensity at which oxygen and fuel mix under the right amount of heat, and the flicker frequency represents the fluctuations of a flame in motion. However, combustion of H<sub>2</sub>S in an SRU creates a high radiation absorption



Sulfur Recovery Unit

range, a low flame flicker frequency response, and a low intensity flame due to the nature of the reducing atmosphere needed to carry out the Claus process – limiting the effectiveness of typical photoelectric UV or IR sensors, which only use intensity and flicker frequency to detect flame.

An Ultraviolet (UV) photoelectric sensor will pick up the flame during the light off process, but will not be able to detect the flame in later combustion stages due to the oxygen reduced atmosphere. An InfraRed (IR) photoelectric sensor may see the flame, but due to the low flicker frequency of the flame, can also respond to the IR radiation from the refractory tile lining the combustion chamber, sometimes resulting in a false flame detection.



Thermal Sensors

## The ProFlame+ SRU solution.

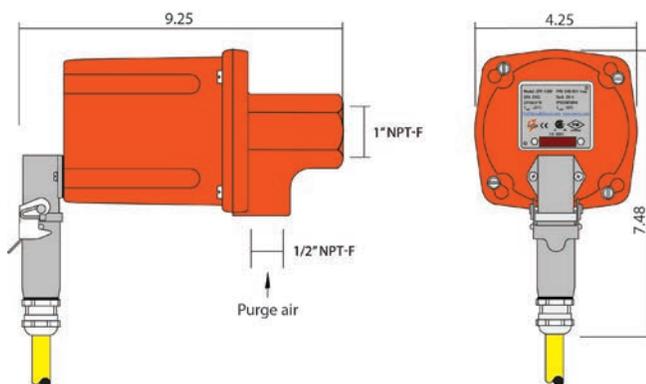
During combustion, energy is released in the form of electromagnetic radiation, which is distributed over a wide spectrum depending on the fuel type and is categorized by specific wavelengths.

ProFlame+SRU converts this electromagnetic radiation into a measurable thermoelectric quantity and a corresponding thermal signature in accordance with established laws of physics. ProFlame+SRU uses two thermopiles to measure two different temperature points in the flame. This temperature differential is used to positively detect the H<sub>2</sub>S flame because it is a more reliable measure of a flame in an SRU than strictly photoelectric detection.

The temperature differential also provides a way to successfully discriminate the flame versus the constant temperature of the hot refractory. If no flame is present, both sensors will be reading the stable heat from the refractory, and the system will register no flame. In other words, by measuring the difference in temperatures at two selected points within the flame envelope, the constant radiation source of the refractory tile can now be completely eliminated.

### ProFlame+ SRU design features.

- Specifically designed for SRU applications
- Compact, fully integrated and exceptionally reliable
- State-of-the-art digital signal processing for easy flame analysis
- Easy to adjust flame relay-on and flame relay-off threshold settings
- Easily configurable frequency and gain settings for simple set-up
- Intuitive PC-based software to assist in troubleshooting
- Microprocessor based with electronic self-check for SIL3 applications
- Durable housing for a variety of operating environments
- Independently adjustable flame-on and flame-off response times: 1-6 sec.
- Reliable 0/4 to 20mA flame intensity output



ZPF-1200 Scanner Dimensions

### Operating parameters - input.

#### Input voltage

- Supply voltage: 24V dc, +10%/-15%
- Power consumption: 4 W

#### Purge air

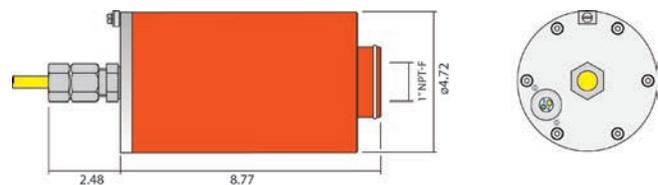
- Cool, dry, clean air: 5 scfm (142 l/min) at 5" wc (12.5mbar) above windbox or furnace pressure (sight tube exit point),  $\leq 38^{\circ}\text{C}$  (100°F) at wye fitting

### Operating parameters - output.

- Output relay: SPDT, Flame-On is the N.O. contact and Flame-Off is the N.C. contact. Fault output: 24V dc
- Contact rating: 48V dc at 1.0 A
- Flame intensity output: 0/4 to 20mA referenced to 24V dc common; 250Ω max load resistance
- Flame status indication: Yellow LED for local Flame-On indication and Green LED for intensity. Remote flame signal trending, flame and marginal relay, flicker frequency, flame amplitude and raw signal analysis via PC based software.



Reaction Furnace Waste Heat Boiler



ZPF-1100 Scanner Dimensions



## The Zeeco Difference

By concentrating on what we do best, Zeeco has grown into a worldwide leader in combustion and environmental solutions. We are a privately held company whose ownership stays highly involved in daily operations, with upper management comprised of the world's leading combustion experts.

When you call Zeeco, we answer. When you make a request, you get a quick, efficient response. We are lean and efficient, able to make decisions quickly, without bureaucracy and red tape. Our sales, engineering, and purchasing groups work hand-in-hand to deliver highly competitive quotes and heroic turnaround times. We stand ready and willing to travel anywhere in the world to discuss upcoming projects firsthand, and to ensure that every existing project runs seamlessly.



Visit [zeeco.com/contact](http://zeeco.com/contact) for additional Global Location contact information



Choose to work with our dedicated, flexible, and innovative team, and you won't be disappointed. Call or email us today to request a quote or to learn more about our proprietary combustion systems.

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