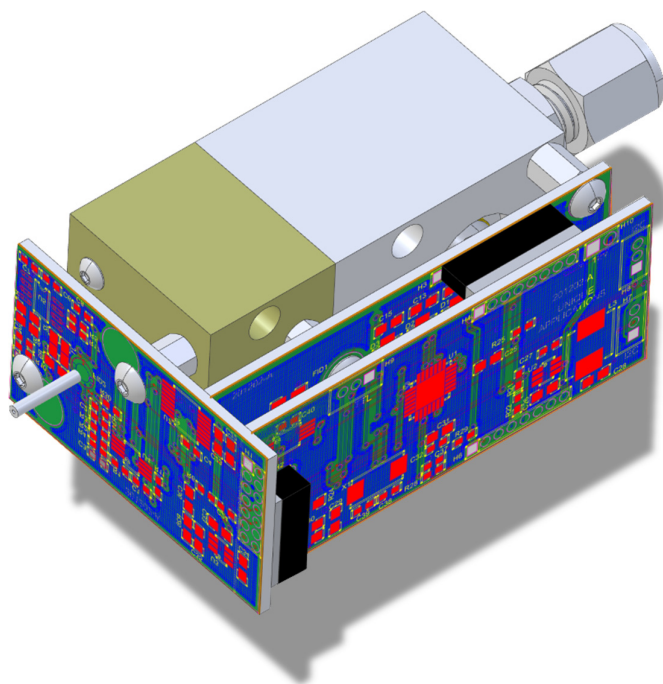


Fireworks™ II - Smart Sensor

Cyclone™ OC Sensor Based FID Smart Module



High Performance

Smart FID Sensor Module for OEM Designs

- Extremely large dynamic range (up to 10^9)
- Linear range over 7+ orders of magnitude
- Sensitivity to 1 pg/s or less with proper design
- Performs at high temps (up to 190 Deg C)
- Very low temperature drift

Features

- Automatic ignition and flame monitoring
- On-board calibration with Easy-Cal routine
- Sensitivity to ~ 1 ppb THC as C₃ (by Vol)
- Manifold mounted compact design
- Communications/Control via RS232/485
- Range adjust via flow & electronic settings

Applications

- Stand Alone Smart Sensor (SASS) – external system to provide regulated fuel, air and sample flows
- PORTABLE & STATIONARY - Gas Chromatograph/Continuous/and Hybrid Analytical Methods
- AAQM - Continuous Environmental Monitoring for VOCs in Air
- CEM - High Temperature Stack Monitoring (CEMs) for VOCs/Hydrocarbons
- Air and O₂ Purity for Air Separation Processes
- Semiconductor/Medical Clean Room Monitoring (AMC)

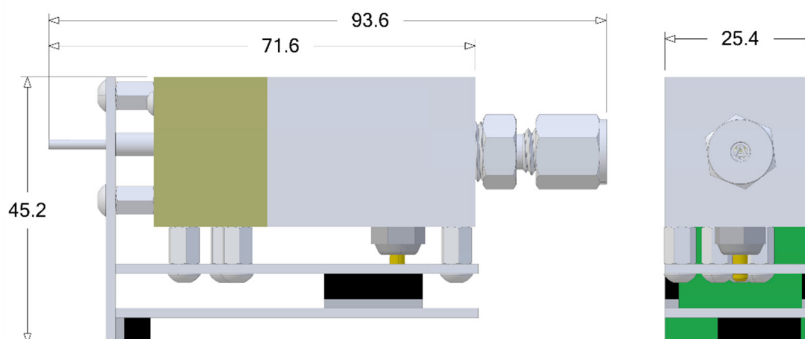
Compact Design

***Total Volume**

$$7.16 \times 4.52 \times 2.54 = 82 \text{ CC}$$

*108 cc with fitting

Note:
Contact Factory for
Applications details & Support



General Description

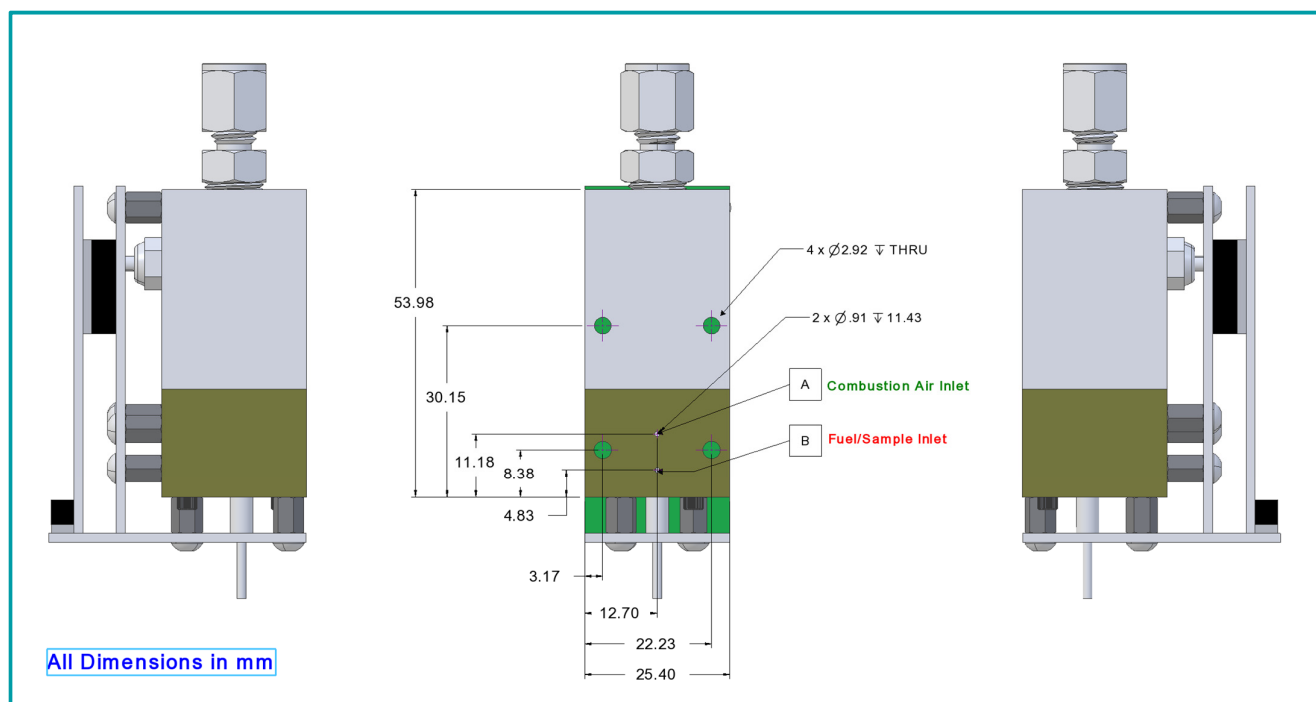
The Fireworks™ Sensor is available as either a Digital Sensor (DS) or a Smart Sensor (SS). The Smart Sensor version supports calibration of the signal and can report readings accordingly.

Fireworks™ is an analytical module that may be incorporated into sophisticated instrumentation as a dedicated component within larger systems. In such an implementation, Fireworks™ will perform defined local tasks and respond to system controllers when called upon.

The sensor module can also be configured to operate in a free-running, more independent fashion in which it continuously monitors flame status, reads the sensor signal value and streams data to external systems. This data can be operational status information, raw signal and/or calibrated signal values (depending on type of Fireworks™ module).

Physical Design

The Fireworks™ Sensor is designed to be mounted on a heated manifold. The sensor produces moisture as a result of burning fuel and as such should be kept above 100 Deg C to avoid condensation within the sensor body. Special venting and drain options can be provided for designs that must operate near or below 100 Deg C.



Two gas inlets (0.91 mm diameter) are located on the side of the sensor opposite to the stacked printed circuit boards. One inlet is for combustion air which should normally be delivered at 175 sccm. The other inlet is for fuel and sample (premixed) and should have flows of 35 sccm hydrogen and sample between 10 sccm and 45 sccm (range dependent). Gas flows may differ in particular applications.

The sensor should be sealed to the manifold by way of face seals using O-rings or by incorporation of a gasket material. As the Sensor is at ambient pressure, the seal integrity will not need to withstand significant pressure. It is important to ensure that the material of choice for making the gas-tight seal is compatible with the compounds likely to be present and suitable for the operating temperature. In most hydrocarbon applications, fluoroelastomer materials such as Viton are good choices for O-rings. PTFE is typically a good choice as a gasket material. These materials are typically chemically compatible, non-porous and can operate at temperatures up to 200 Deg C or more.