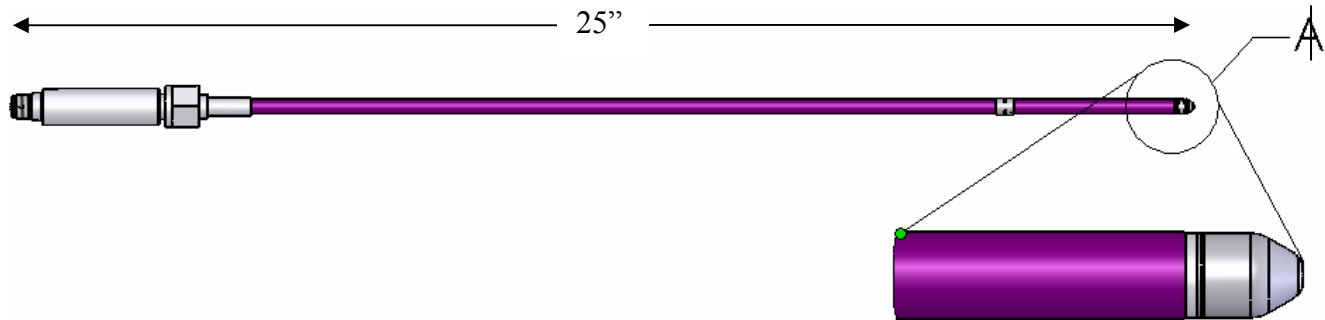


Model GT1300 501 Transducer Fiber Optic Combustion Dynamics Monitoring



DavidsonSensors™ provide the safest, most reliable and cost-effective instrumentation for harsh industrial applications.

This product data sheet describes Model GT1300 501 Transducer. This temperature-tolerant transducer has been designed for combustion dynamics monitoring use in 501D, F, and G engines and does not require any modification to the engines.

Performance Specifications

Frequency Response

DC to 10 kHz +/- 0.4 dB

Pressure Sensitivity

300 mV per psi (nominal)

Pressure Range

+/-10 psi

Static Pressure Limit

1000 psi

Acceleration Sensitivity

< 0.001 psi per g

Thermal Stability

Calibrated for 800° F;
1% per 100° F variance

Thermal Sensitivity

Insensitive to Transient Thermal Events

Transducer Temperature Limit

1000° F

Cable Temperature Limit

180° F

Transducers - Davidson fiber optic dynamic pressure transducers are designed for installation through the top hat where the existing acoustic waveguides are located. The transducer design allows the sensor to be positioned flush with the end of the existing acoustic waveguide located along side the combustion basket.



Figure 1 – GT1200-501 Transducer

The sensor is located at the tip of the transducer and has a superalloy diaphragm that functions as an optical interferometer. The diaphragm is protected by a thermal radiation shield and the sensing element is completely enclosed behind the diaphragm in the transducer housing.

The transducers have six (6) feet of fiber optic cable rated for 180° F. The fiber optic cable is sheathed in stainless steel braid/armor for mechanical protection. The cables are terminated with ruggedized ST connectors.

Installation

The transducer is installed by removing the cap from the top hat and inserting the transducer. There is a ½" diameter stop and the Swagelok fitting on the transducer that seats the transducer in the Swagelok fitting on the engine and prevents the transducer from being insert too far into the engine. When the transducer is inserted properly, the Swagelok fitting is tightened and seals the transducer to the static pressure in the combustor.



Figure 2 – Location on the Top Hat where the Transducer is Inserted

Then the connection is made between the connector on the transducer cable and the tactical cable that runs through the upper and lower conduit. To make this connection, remove the dust covers and slide the connector shroud back. Then insert the fiber optic connector into the mating component and secure it using the spring loaded bayonet mechanism. Finally, screw the mating connector shrouds together and screw the mating dust cover together to complete the installation.

Options

- Extended length transducers and 6" waveguide extension tubes are available to reposition top hat access port to a location above the insulation blanket.
- A conduit cable harness is available for plants with upper and lower conduit rings around the engine.

Calibration

Standard calibration includes the following:

Each transducer is calibrated at the factory at room temperature at dynamic pressure of 0.5 psi at 150 Hz.

The calibration factor is adjusted for 800° F service temperature.

Documentation

Calibration data sheets are provided for each transducer. A calibration sensitivity curve is provided with each transducer showing its sensitivity at temperatures from 500 to 1000° F

Safety (Transducer with Cable)

Intrinsically-safe and suitable for use in:

- Class I, Division 1, Groups B, C, and D
- Class II, Division 1, Groups E, F, and G
- Class III, Division 1

Other Applications

For information about other Davidson products, see www.davidson-instruments.com

Guide to Configuring a Fiber Optic Sensing System

For information to assist you in planning a fiber optic sensing system, see

www.davidson-instruments.com

U.S. Patents Pending

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