

PD11

Dynamic Pressure Sensor

WIKA data sheet PD11

Description

The PD11 optical sensing system measures dynamic pressure in harsh environments and is ideal for gas turbine combustion monitoring. The sensor incorporates a micro-machined sapphire sensing element packaged with a high temperature fibre-optic lead-out to form a unique passive sensor configuration.

The properties of the sensor make it suitable for directly mounting on gas turbine combustors. The high reliability passive optical element provides a unique capability for continuous condition monitoring of gas.



PD11 Dynamic Pressure Sensing System

System Specifications

Operation

Input power	24±4 VDC
Signal processing	PD11 Interrogator
Output	±10V
Dynamic sensitivity (configurable on request)	100mV/psi
Frequency response (higher bandwidths available on request)	10Hz to 10kHz
Acceleration sensitivity	<1 mbar/g

Environmental Sensor

Static pressure	1 to 70 bar (options available)
Burst pressure (static)	132 bar
Operating temperature (continuous)	≤600°C
Operating temperature (extreme) ¹	≤1000°C
Operating humidity	5% to 90% non-condensing
Minimum bend radius	76mm (at 90°)

Interrogator

Interrogator operating temperature	-20°C to 55°C
Interrogator storage temperature	-40°C to 85°C

Optical Cable

Operating temperature	-40°C to 150°C
Pull limit (armoured)	22kg
Pull limit (standard)	2kg
Minimum bend radius	50mm

¹ Limited time at sensor front face, monitoring sensor body temperature ≤ 600°C

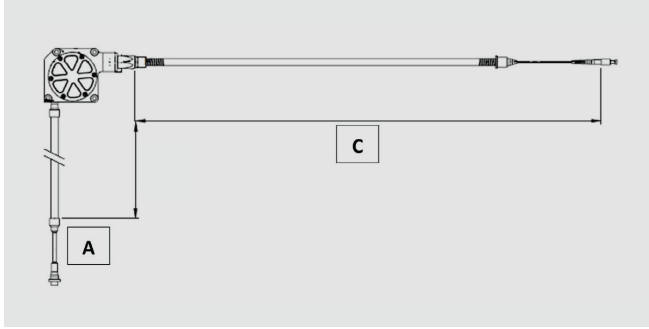
Applications

- Dynamic pressure measurement using Fabry-Perot optical interferometer
- Optical sensing enables:
 - Extreme temperature operation in harsh environments
 - EMI immunity: start-up pyroelectric noise is nil
- Eliminates the need for semi-infinite tubes for monitoring gas turbine combustion dynamics – removes risk of fluid build up
- The ability to mount in close proximity to combustion events enables:
 - Increased acoustic bandwidth capability
 - Enhanced event characterisation
- Intrinsically safe for use in explosive atmospheres
- No requirement for a charge amplifier or galvanic separator
- Small form factor digital interrogator (signal conditioner) which can be mounted on DIN rail located with control electronics



Sensor Outline

Orthogonal Optical Cable Lead Out

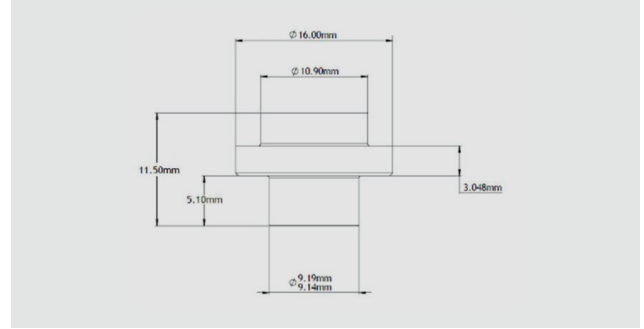


Sensor Outline



Section A	Rigid Inconel Tube (3/16")
Section B	Flexible Braided Conduit
Section C	Optical Cable (armoured shown)

Sensor Head Dimensions



System Options & Accessories

Optical Cable Type (Section C)

Standard

Armoured

Optical Cable Length (Section C)

1m

OX-20649-001

10m

OX-20649-010

14m

OX-20649-014

20m

OX-20649-020

30m

OX-20649-030

40m

OX-20649-040

50m

OX-20649-050

100m

OX-20649-100

Note: these are standard 'telecomms grade' optical cables
Other lengths available on request

Optical Cable Lead Out

Orthogonal

Cleaning Kit

Optipop FC/APC Fibre Optic
Connector Cleaner

OX-40075

WIKA Optical Sensing Ltd., formerly Oxsensis, brings advanced technology and innovation to dynamic pressure measurement. Our sensors have been meticulously designed to operate in harsh environments, providing reliable performance where it is needed most. Their simple instrumentation chain, high temperature capability, and EMI immunity make them an ideal alternative to traditional waveguide dynamic sensing systems. With WIKA Optical Sensing Ltd, you can trust in the precision and durability of our solutions to meet the most demanding industry requirements.

