PD11
Dynamic Optical Pressure Sensor

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.

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





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 to10kHz
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

Interrogator

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

Optical Cable

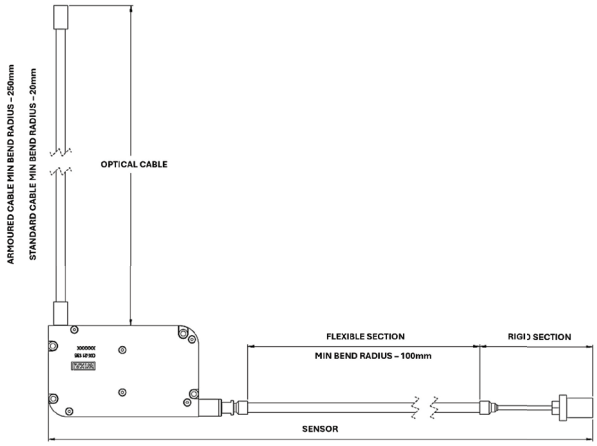
Operating temperature	-40°C to 150°C
Pull limit (armoured)	22kg
Pull limit (standard)	2kg

[1] For applications with temperatures above 600 °C contact WIKA engineering for advice

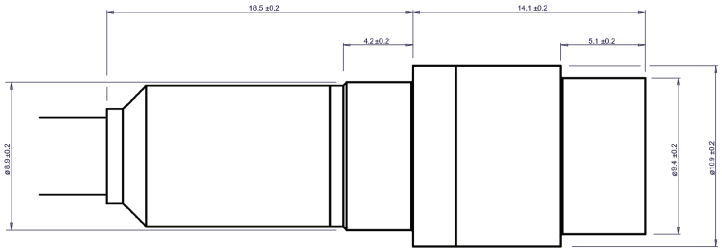
WIKA
Smart in sensing

Sensor Outline

Orthogonal Optical Cable Lead Out



Sensor Head Dimensions



System Options & Accessories

Optical Cable Types

Standard: OX-30308-AA-XX

- AA – Corresponds to connector configuration at either end of optical cable – i.e. FC/APC to FC/APC
- XX – Corresponds to total length of cable in metres e.g. -05 5m; -10 10m

Armoured: OX-11758

- Stainless steel casing, FC/APC to FC/APC, -50°C to 180°C, 20m cable

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.

7 Regents Court, South Way, Walworth
Business Park, Andover, Hampshire SP10 5NX

T: UK +44 (0)1264 316470
E: enquiries@evolutionmeasurement.com

EVOLUTION MEASUREMENT