



Optical Pressure Sensor



Description

CiDRA Industrial Sensing Solutions (ISS) introduces an optical pressure measurement system for use in process monitoring applications. This product is based on technology deployed and proven for in-well oilfield applications. As a result, ISS's pressure measurement system is well suited for harsh environment applications requiring high accuracy, stability and reliability.

The pressure sensor operates as part of a multi-sensor, multi-parameter, field bus compatible, fiber optic monitoring network. The all-optical, electronically passive sensor elements eliminate the need for barriers and explosion proof housings in hazardous environments. Optical pressure sensors are available in several pressure ranges and mounting configurations.

Features

- Highly stable transducer – particularly at elevated temperatures
- All-optical sensor design – no electronics in sensor
- Immune to electromagnetic interference
- Integral temperature sensor
- Optical instrumentation unit converts optical signal from sensor into pressure reading. Serial and Ethernet connectivity available. Compatible with a variety of fieldbus protocols.
- Serial multiplexed and single ended versions available
- 100, 500, 1000, 5000, 10000 psi measurement ranges available

Applications

- Chemical Processing
- Refinery Operations
- Harsh environment monitoring
- Hazardous atmosphere applications

Specifications

Operating Pressure Range	0 to 100, 500, 1000, 5000, 10000 psi
Overpressure Without Damage	25% over full scale
Operating Temperature Range	-20 to +150C (200C under development)
Accuracy	Pressure: +/-0.02% FS Temperature: +/-1°C
Resolution	Pressure: 0.002% FS Temperature: 0.1C
Stability at 150C	Pressure: 0.015%/year Temperature: 0.2C/year
Vibration	10Grms, random over 10Hz – 2kHz
Shock	500G, 3ms ½ sine
Thermal Shock	7C/minute

Principle of Operation:

The CiDRA ISS pressure transducer converts applied pressure into mechanical strain in an all-quartz optical element containing a Bragg grating. A Bragg grating is formed in a region of an optical waveguide as a periodic variation in the index of refraction is photo-imprinted. The Bragg grating serves as an optical strain gauge, reflecting incident light with a wavelength corresponding to the wavelength of the Bragg grating. With appropriate mechanical transduction, monitoring the shift in the wavelength of the reflected light results in a precise, highly stable, all-optical pressure gauge.

CIDRA PRESSURE GAUGE - 27 MONTHS STABILITY APPLIED PRESSURE 5,011 psia @ 150C

