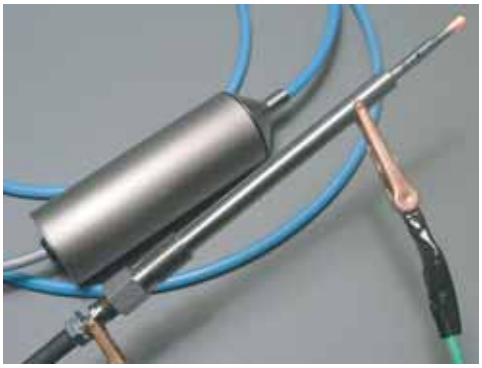
PSIglow™

Fully Functional, Pressure Measuring Glow Plug

- Miniature (ø1.7mm) Pressure Sensor Integrated with Functional Glow Plug
- ±1.5% Full Scale Output Total Pressure Reading Accuracy
- Based on 7V or 11V Ceramic Heater with 1250°C Max Temperture
- Sensor and Glow Plug Diagnostics Built In
- Most Standard Glow Plug Models Available
- Ideal for Cold Start Studies
- Suitable for Advanced Engine Controls and Virtual Mass Air Flow & NOx Sensing



The PSIglow™ integrates Optrand's miniature 1.7mm diameter, fiber optic sensor with a fully functional ceramic heater-based glow plug allowing cylinder pressure monitoring of diesel engines without head modification or loss of glow plug functionality.

The sealed gauge sensor is welded into the high current electrode of the glow plug heater and the sensing diaphragm is exposed to combustion gasses through a radial orifice in the ceramic heater and a short connecting passage filled with an Inconel wire mesh. Any combustion deposits that may accumulate on the wire mesh are burned out during glow plug activation. The sensor head construction and signal conditioner's circuitry compensate for the effect of varying temperature, due to both engine load changes as well as glow plug heating. Besides pressure, the PSIglow offers the sensor and glow plug diagnostics output.

Two types of ceramic heaters are presently available, one with the maximum diameter of 4.0mm and the other with 4.4mm maximum diameter. Heaters rated for 7V and 11V excitation can be used. The maximum glow plug tip temperature is typically 1250°C reached in less than 3 seconds. There are no adverse effects of glow plug length or diameter on pressure detection accuracy or device durability.

The PSIglow targets cold start studies and heat release analysis including calculation of Indicated Mean Effective Pressure, Mass Fraction Burned, Start of Combustion, Maximum Pressure Rise, Peak Pressure, and similar. Other applications include advanced engine controls, monitoring, and diagnostics as well as virtual sensing of Mass Air Flow and/or combustion gasses such as NOx.

Specifications

Pressure Range	0-200 bar (~3000 psi) 0-300 bar (~4350 psi)
Non-Linearity, Hysteresis & Thermal Shock	±1.5% FSO
Sensor Frequency Range	0.5 Hz to 30 kHz
Output	
Signal	0.5V to 5V Analog
Diagnostics	0.5V to 3.5V Analog
Sensor Power Supply	5V or 9-18V DC
Fiber Optic Cable Length	1.5m (5') Standard
Cable Min. Bend Radius	5 mm
Temp. Coefficient of Sensitivity	
AutoPSI-S	±0.03%/°C
AutoPSI-TC	±0.005%/°C

Operating Temp. Range	
Sensing Element	-40° to 350°C (662°F)
Cable	-40° to 250°C (482°F)
AutoPSI Signal Conditioner	-40° to 60°C (140°F)
AutoPSI-HT Signal Conditioner	-40° to 125°C (257°F)
Ceramic Glow Plug	
Max Temperature	1250°C (2282°F)
Heater Diameter	Ø4.0 or Ø4.4 mm
Voltage	7V or 11V
Guaranteed Lifetime	1 year

OPTRAND INCORPORATED

DSPM Industria sensori & trasduttori
Via Paolo Uccello 4 - 20148 Milano
Tel +39 02 48 009 757 Fax +39 02 48 002 070 info@dspmindustria.it www.dspmindustria.it