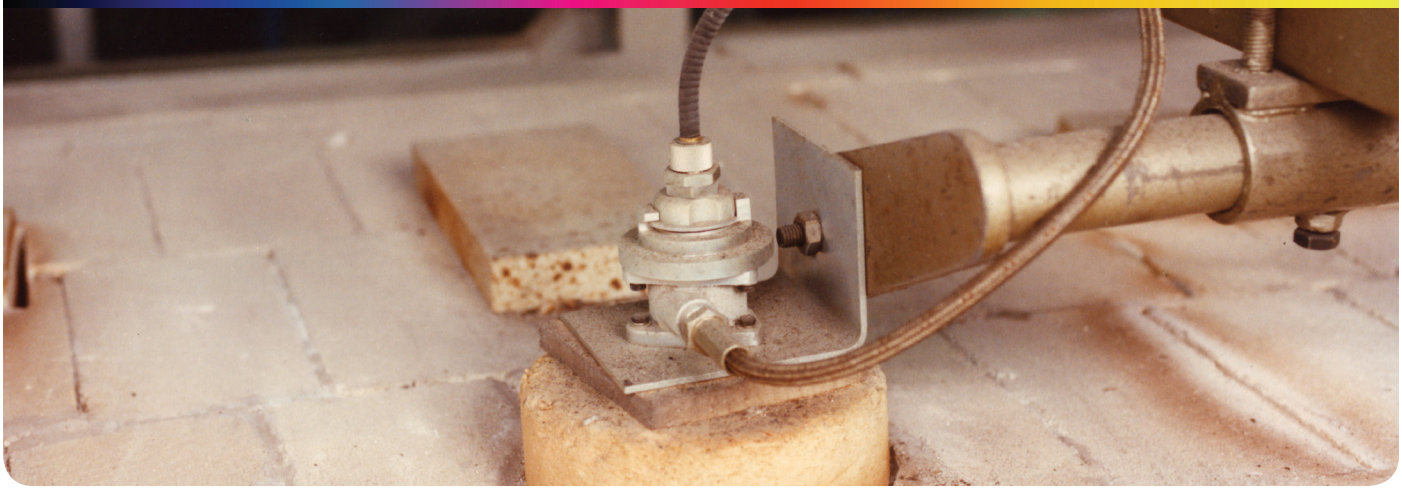
High Temperature Measurement in the Glass Industry



Fibre-optic Model FG
Two-wire Fibre-optic Thermometer

The Land Fibre-optic Model FG radiation thermometer is a fibre optics based 2-wire temperature sensor which has been specifically designed to solve measurement problems and improve control of process temperatures in the glass industry.

Model FG is primarily intended for monitoring and controlling glass or refractory temperatures in the forehearth, but also in the regenerator, tank and refiner.

It can be used to monitor and safeguard vulnerable refractory materials such as the crown, detect possible firing imbalance at the port arch, for example, and to give improved control of bulk glass temperatures.

Thermocouple Replacement

Model FG fulfils the industry's need for a simple, cost effective alternative to other types of radiation thermometers which normally require water cooling. It also readily permits upgrade from existing thermocouple installations.

Features & Benefits

- Accurate and reliable measurement up to 1650°C/3000°F – ideally suited to control of process temperatures in the glass industry
- 2-wire 4-20mA current loop system – ensures simple installation
- 200°C ambient temperature limit on optic head – minimal services and no water cooling required
- Built-in test facility - ensure optimal performance
- No on-line calibration required – Long term, drift free operation
- Calibration traceable to National Standards, backed by ISO9001 Quality Management System – measurement accuracy assured

Several models are available with measurement spans to suit the particular application. However, it can also be used for cost effective temperature measurement in a range of other applications.

LAND

Non-Contact Temperature Measurement Solutions

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Measurement Ranges	
Model	**Temperature Range**
FG 9.8/13C	980 to 1300°C
FG 18/24F	1800 to 2400°F
FG 10/14C	1000 to 1400°C
FG 12/16.5C	1200 to 1650°C
FG 22/30F	2200 to 3000°F
Accuracy	
Interchangeability	±2°C/4°F
Resolution	0.1°C
Linearisation Conformity	<0.5°
Temperature Coefficient	<0.04°C/°C - mid span <0.07°C/°C - extremities
Absolute	5°C
General Specifications	
Output	4 to 20 mA (linear)
Response Time	0.5 s (to 98%)
Spectral Response	0.7 to 1.0 µm
Emissivity	0.10 to 1.00 adjustable (factory set to 1.00)
Field of View	100:1 + 10 mm/0.4 in
Dimensions	
Processor	160 x 75 x 55 mm / 6.3 x 2.9 x 2.2 in
Optic Head	106.5 x ∅ 18.5 mm / 4.2 x ∅ 0.7 in
Ambient Temperature Limits	
Optic Head	200°C/400°F
Light Guide	175°C/350°F
Processor	10 to 60°C/50 to 140°F
Power	
Power Requirement	24V d.c. (nominal) 18 to 40V d.c.
Over Voltage Protection	250V a.c.

Easy Installation ❶

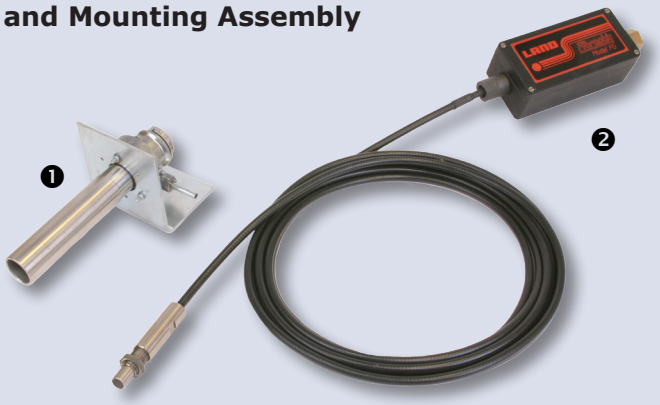
A versatile adjustable mounting assembly, complete with quick release adapter and air purge, provides ease of installation and removal for inspection purposes.

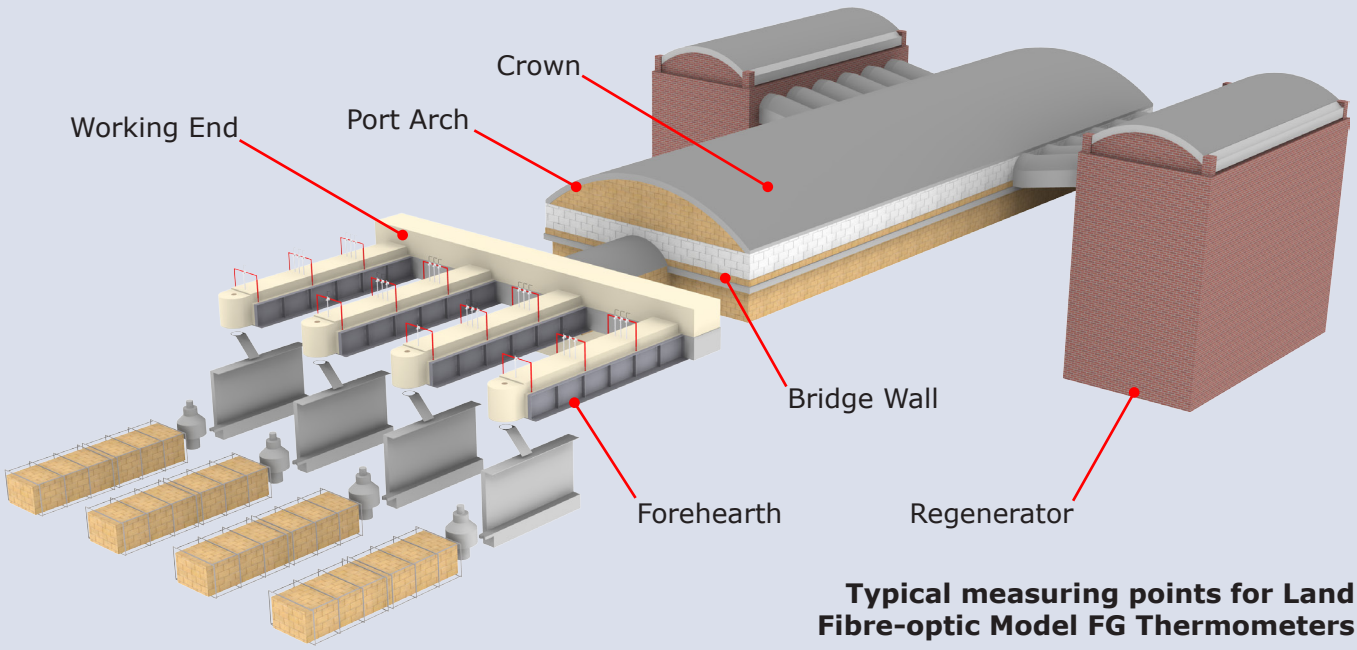
Signal Processing ❷

The signal processor unit is located remotely from the high ambient temperatures encountered at the optic head, linked by a sealed 6.1m/20ft long fibre optics light guide eliminating the need for water cooling.

The processor provides high accuracy linearisation of the detector signal, adjustable emissivity compensation, a self test function and a low drift 4-20mA output suitable for use with process computers and distributed control systems.

Model FG Thermometer and Mounting Assembly





Typical measuring points for Land Fibre-optic Model FG Thermometers

Continuous product development may make it necessary to change these details without notice.
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