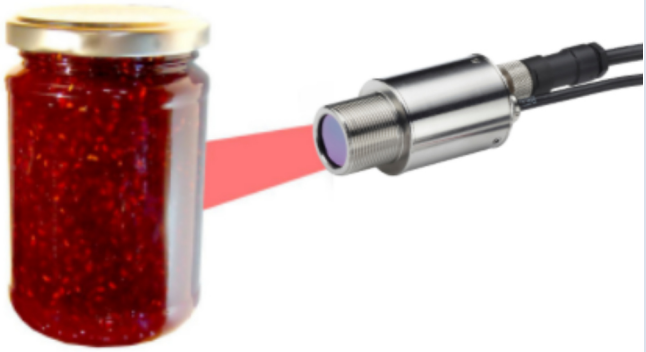
Measuring Hot Food Temperature through Glass Jars

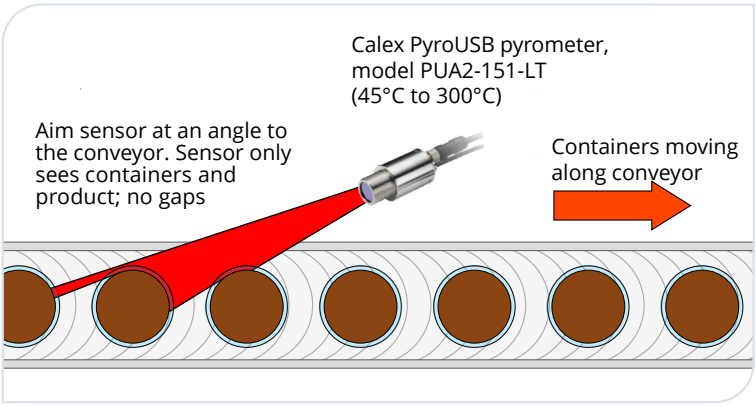
using the PyroUSB infrared temperature sensor

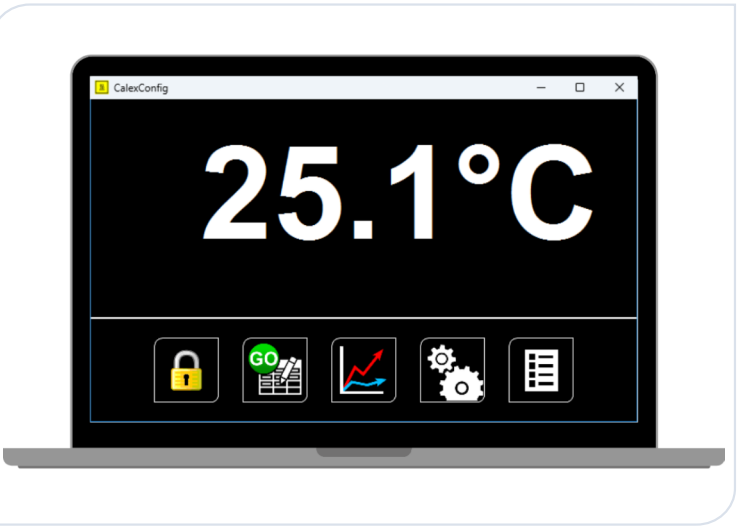
The PyroUSB model PUA2-151-LT infrared temperature sensor is capable of measuring the temperature of hot food products through glass containers.

After a food product is filled into glass jars, samples are taken from the production line and manually probed to check the product temperature. The PyroUSB PUA2 makes it possible to check product temperatures without taking samples from the production line, and without even touching the samples at all.

Glass is transmissive to infrared radiation at wavelengths around 2.2 microns, so the PUA2 sensor can effectively see though a glass container and measure the temperature of the food product inside. Model PUA2-151-LT is capable of measuring the temperature of high-emissivity targets, such as food, as low as 45°C.







APPLICATION TIPS

The emissivity setting should be adjusted to compensate for the small amount of energy absorbed by the glass. Please see the PyroUSB manual for more information. The required emissivity setting will depend on the thickness of the glass, as more infrared radiation is absorbed by thicker glass.

Position the sensor as close as possible to the target to achieve the smallest possible measured spot size.

The PyroUSB sensor should be positioned level with the containers if possible, and aimed at an angle to the conveyor so that its field of view is always filled with product containers. This way, the sensor cannot see any gaps.

Provided the sensor cannot see through gaps in the stream of containers, the speed of the conveyor should not affect the accuracy of the measured temperature.

The 4-20 mA output of the PyroUSB is ideal for connection to existing process instrumentation, or Calex can provide a compatible indicating controller. The USB connection also provides sensor configuration, on-screen alarm and data logging via the free CalexConfig software.

Calex Electronics Limited
PO Box 2, Leighton Buzzard, Bedfordshire, England LU7 4AZ
Tel: +44 (0)1525 373178 E-mail: mail@calex.co.uk Web: www.calex.co.uk
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