

# Protective Windows for Infrared Temperature Sensors

## IR Viewport Windows



- Mount the window in a flange on your process
- Protect the sensor from high pressure, high temperature or vacuum
- Choice of materials to suit a range of sensors and applications
- Wide range of standard sizes, or custom-made to suit your requirements

Calex provides IR-transmissive windows in a choice of sizes. Windows are commonly circular, however other shapes are available, and we can provide windows manufactured to suit your requirements.

The material should be chosen to suit the type of sensor and the conditions in the process, such as the pressure and temperature. Short-wavelength sensors, such as the PyroUSB 2.2, PyroMini 2.2 and FibreMini, can view through glass, quartz and calcium fluoride. Other materials, such as zinc selenide and germanium, are required for use with long-wavelength (8 to 14  $\mu\text{m}$ ) sensors.

The sensor must have an adjustable emissivity setting to compensate for the small percentage of infrared energy lost to reflection and absorption by the window. Use this formula to ensure maximum accuracy.

**Emissivity setting = actual emissivity of target x transmission of window**

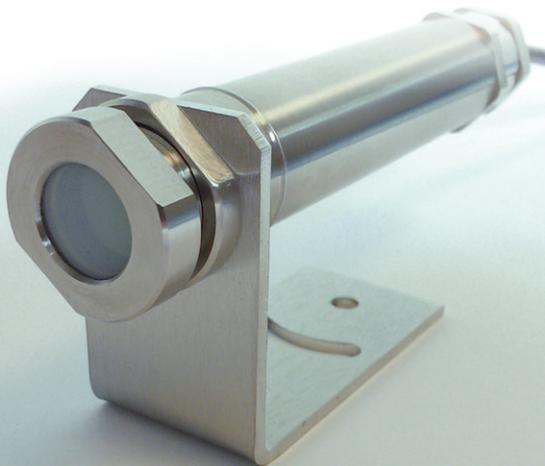
## MATERIALS

Window Material	Transmission Range	Transmission (approx.)	Maximum Temperature
Zinc selenide (ZnSe)	4 to 14 $\mu\text{m}$	72%	250°C
Germanium (Ge)	2 to 14 $\mu\text{m}$	46% uncoated (around 90% if anti-reflective coated)	70°C
Calcium fluoride (CaF <sub>2</sub> )	0.2 to 7 $\mu\text{m}$	94%	1200°C
Sapphire (Al <sub>2</sub> O <sub>3</sub> )	0.2 to 4.5 $\mu\text{m}$	85%	2000°C
Quartz Crystal (SiO <sub>2</sub> )	0.4 to 3 $\mu\text{m}$	92%	490°C

## ORDERING

These windows are inexpensive compared with the cost of replacing the lens of an infrared temperature sensor. Contact Calex for a quotation, or for assistance on choosing a suitable window.

## Protective Plastic Window - ideal for the food and pharmaceutical industries



The protective plastic window models PWS and PWL are designed to help protect the germanium lens of Calex infrared temperature sensors from mechanical damage, and to help retain fragments of the lens if it is damaged.

To use the window, simply screw the stainless steel window holder onto the front of the sensor, tighten with a spanner, adjust the emissivity setting using the formula below, and begin taking measurements.

**Emissivity setting = actual emissivity of target x 0.768**

## SPECIFICATIONS

Model	PWS	PWL
Mounting	M16 x 1 mm	M20 x 1 mm
Compatible With	PyroEpsilon, PyroBus, PyroMini*, PyroMiniBus, PyroMiniUSB	PyroUSB*
Transmission (8 to 14 $\mu\text{m}$ )	76.8%	76.8%
Ambient Temperature Range	0°C to 100°C**	0°C to 100°C**
Window material	IR-transmissive plastic	IR-transmissive plastic
Holder material	Stainless steel	Stainless steel

\* Not compatible with PyroUSB 2.2 or PyroMini 2.2 models

\*\* Do not exceed the ambient temperature limits of the sensor.