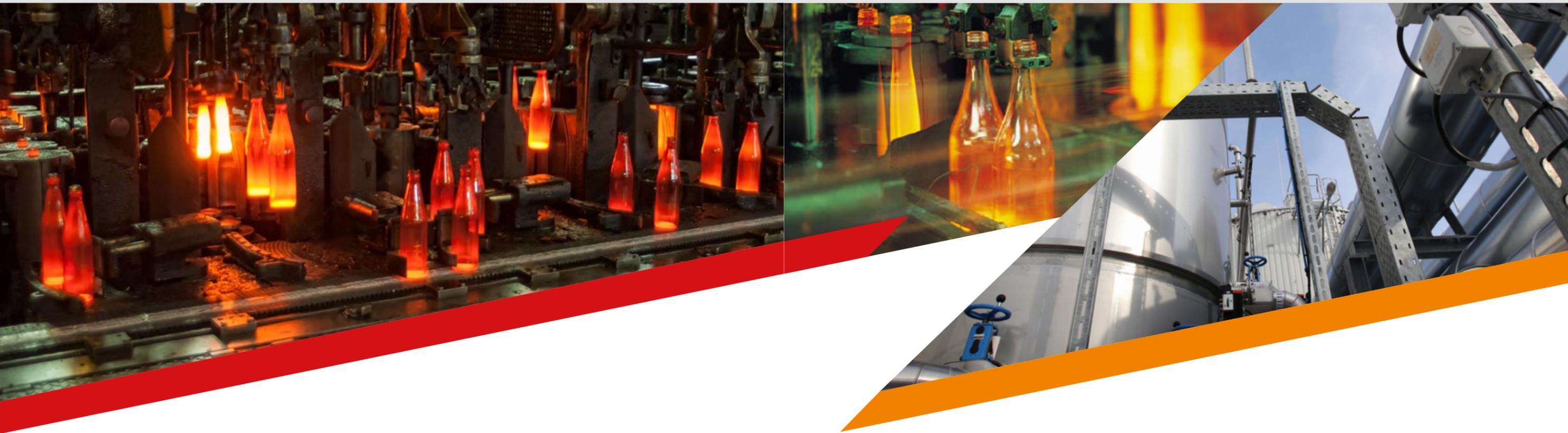




# TEMPERATURE CONTROL IN GLASS MANUFACTURING

Thermocouples and temperature sensor solutions

---



## TEMPERATURE CONTROL IN GLASS MANUFACTURING

Good temperature management is essential in the glass industry to ensure that the manufacturing process remains reliable producing final products of a high standard.

As temperature sensor specialists with 21 years experience working in the glass industry, we understand how important it is to measure the temperature of glass accurately during the manufacturing process to ensure you achieve a quality product. This quality standard can only be achieved with adequate temperature control.

At Peak Sensors we have developed a complete range of sensors to support the glass industry.

We manufacture many types of thermocouples and supply directly to glass plants, glass furnace contractors and glass furnace manufacturers. Our sensors are used throughout the glass manufacturing process, including melting, refining, working end processes for container glass and crown or tin bath thermocouples and other plant positions in float glass.

### A LITTLE MORE ABOUT US...

Peak Sensors is a **temperature sensor specialist** who design, manufacture, and supply temperature sensor probes worldwide. We are **UK manufacturers based in Chesterfield, Derbyshire** and have been manufacturing sensors since 1997, making thermocouples and resistance thermometers to support your process control.

## THERMOCOUPLES AND TEMPERATURE SENSORS

Temperature sensors used for monitoring the temperature in the glass manufacturing process are called thermocouples. These sensors are typically platinum-based and are designed to withstand extremely high temperatures, for example as high as 1500°C to 1700°C, found in the furnaces of container glass manufacturers.

### Thermocouples Designed for Glass Manufacturing

Rare metal thermocouples are made from conductors containing platinum and rhodium alloys. They are suited for measuring high temperatures up to 1700°C. The probes are rugged for tough industrial use.

A rare metal thermocouple is protected from the process using recrystallised alumina materials in both the insulator and ceramic sheath. A platinum outer sheath may also be used.

Thermocouples commonly used in Glass Manufacturing made by Peak Sensors include:

- ▶ Rare Metal Thermocouple Assembly with Ceramic Sheath (RMC)
- ▶ Rare Metal Thermocouple Assembly with Platinum Thimble (RMT)
- ▶ Rare Metal Thermocouple Assembly with Full Platinum Thimble (RMF)
- ▶ Base Metal Thermocouple Assembly with Metal Sheath (BMM)

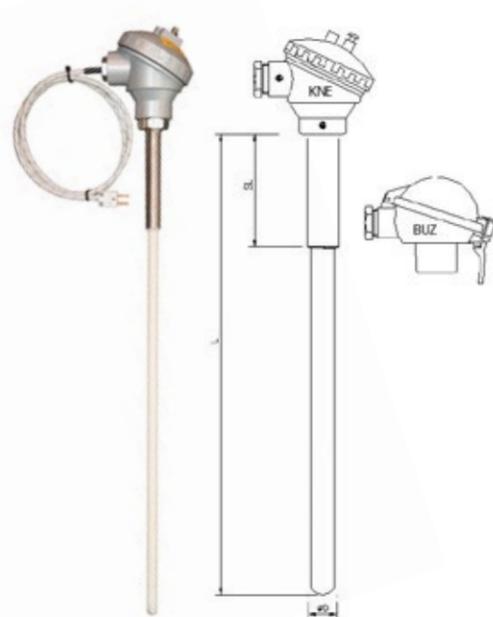
## Rare Metal Thermocouple Assembly with Ceramic Sheath

In a rare metal thermocouple assembly with ceramic sheath (RMC) the sensor is protected with a ceramic sheath. Depending on the sheath material chosen the rare metal thermocouple can withstand maximum temperatures between 1000°C and 1700°C.

**RMC** (Rare Metal Thermocouple Assembly with Ceramic Sheath)

### Specifications:

- ▶ 0°C to 1700°C temperature range
- ▶ Ceramic protection tube of  $\phi$  12mm,  $\phi$  15mm,  $\phi$  24mm
- ▶ Ceramic protection tube made of C799 (Recrystallised Alumina)
- ▶ Additional ceramic internal tube on request
- ▶ Connecting tube of  $\phi$  22mm,  $\phi$  27mm,  $\phi$  32mm, 150mm length or according to request
- ▶ Single or double element option (Simplex or Duplex)
- ▶ Type R, S and B according to BS EN 60584
- ▶ The wire diameter for thermocouple is  $\phi$  0.50mm
- ▶ Long lasting grain stabilised wire available on request
- ▶ Flange for assembly
- ▶ IP68 head options in BUZ and KNE



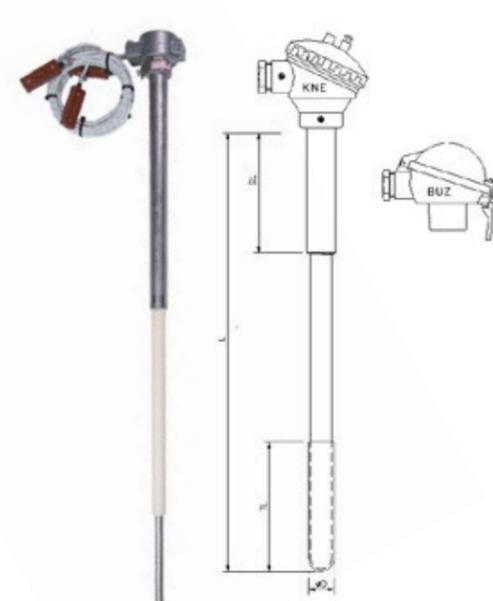
## Rare Metal Thermocouple Assembly with Platinum Thimble

In a rare metal thermocouple assembly with platinum thimble (RMT) the sensor is protected with a ceramic sheath with a platinum thimble at the hot end. This design is often used in container glass forehearth where the sensors are immersed into the glass to monitor temperatures in the flow. Depending on the sheath material chosen, the rare metal thermocouple can withstand a maximum temperature of 1700°C.

**RMT** (Rare Metal Thermocouple Assembly with Platinum Thimble)

### Specifications:

- ▶ 0°C to 1700°C temperature range
- ▶ Ceramic protection tube of  $\phi$  12mm,  $\phi$  15mm,  $\phi$  24mm
- ▶ Ceramic protection tube made of C799 (Recrystallised Alumina)
- ▶ Additional ceramic internal tube on request
- ▶ Connecting tube of heat resistant stainless steel,  $\phi$  22mm,  $\phi$  27mm,  $\phi$  32mm, length 150mm or according to request
- ▶ Single or triple element option (Simplex or Triplex)
- ▶ Type R and S class 1, Type B of class 2, according to BS EN 60584
- ▶ The wire diameter of the thermocouple is  $\phi$  0.50mm
- ▶ Platinum protection tube (Pt Rh 90/10%)  $\phi$  13 x 0.5mm, length according to request
- ▶ Long lasting grain stabilised thimbles available on request
- ▶ Long lasting grain stabilised wire available on request
- ▶ Upon request with pre-assembled connection cable and standard connector
- ▶ Flange for assembly
- ▶ IP68 head options in BUZ and KNE or alternative heads available



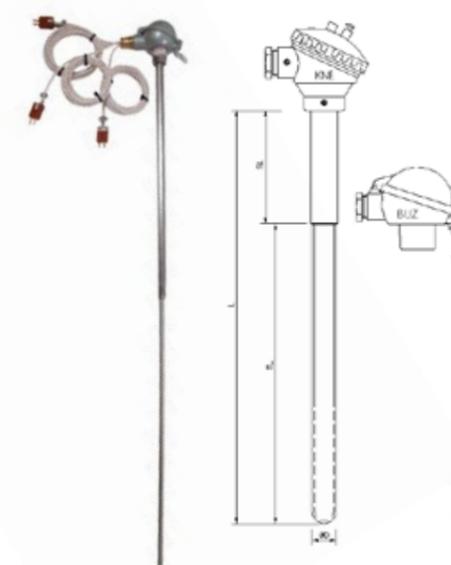
## Rare Metal Thermocouple Assembly with Full Platinum Thimble

In a rare metal thermocouple assembly with a full platinum thimble (RMF) the sensor is protected with a platinum thimble and the ceramic is not exposed. It is a more robust design of the RMT. Like the RMT, this sensor is designed for immersion use in container glass forehearth to take temperature measurements. Depending on the sheath material chosen the Rare Metal Thermocouple can withstand maximum temperatures of 1700°C.

**RMF** (Rare Metal Thermocouple Assembly with Full Platinum Thimble)

### Specifications:

- ▶ 0°C to 1700°C temperature range
- ▶ Connecting tube of heat resistant stainless steel,  $\phi$  22mm,  $\phi$  27mm,  $\phi$  32mm
- ▶ Internal ceramic protection tube made of C799 (Recrystallised Alumina)
- ▶ Single or triple element option (Simplex or Triplex)
- ▶ Type R and S class 1, Type B of class 2, according to BS EN 60584
- ▶ The wire diameter of the thermocouple is  $\phi$  0.50mm
- ▶ Platinum protection tube (Pt Rh 90/10%)  $\phi$  13 x 0.5mm, length according to request
- ▶ Long lasting grain stabilised thimbles available on request
- ▶ Long lasting grain stabilised wire available on request
- ▶ Upon request with pre-assembled connection cable and standard connector
- ▶ Flange for assembly
- ▶ IP68 head options in BUZ and KNE



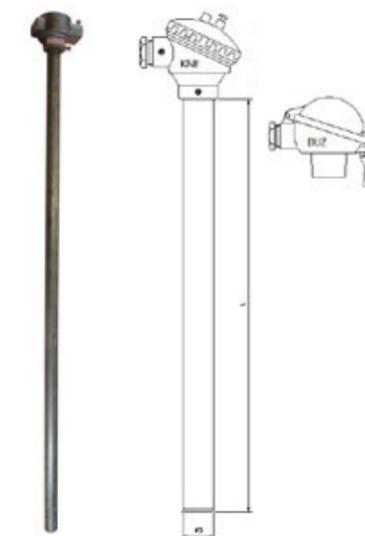
## Base Metal Thermocouple Assembly with Metal Sheath

In a base metal thermocouple assembly with metal sheath (BMM) the sensor is protected with a metal sheath. Depending on the sheath material chosen the Base Metal Thermocouple can withstand maximum temperatures between 1000°C and 1100°C.

**BMM** (Base Metal Thermocouple Assembly with Metal Sheath)

### Specifications:

- ▶ 0°C to 1100°C temperature range
- ▶ Additional ceramic internal tube on request
- ▶ Type K according to BS EN 60584
- ▶ The wire diameter of the thermocouple is  $\phi$  2.96mm
- ▶ Flange for assembly
- ▶ IP68 head options in BUZ and KNE or alternative heads available



## CUSTOM DESIGNS

Please contact us at [pslsales@peakensors.com](mailto:pslsales@peakensors.com) to discuss your requirements. Our technical team can work with you to develop and manufacture custom designs of thermocouples, bubblers or glass level electrodes.

**If you are unsure of what thermocouple is the best option for your process, please contact us to discuss your requirements and our technical team will work with you and advise the appropriate solutions.**





**PEAK SENSORS**

temperature measurement & control

**[www.peaksensors.com](http://www.peaksensors.com)**

**[pslsales@peaksensors.com](mailto:pslsales@peaksensors.com)**

**+44 (0) 1246 261 999**

