

## REFERENCE

EN 13190  
ANSI B 40.200  
IS 3624

## CERTIFICATE

ISO 9001 : 2008  
ISO 14001 : 2004  
BS OHSAS 18001 : 2007  
ATEX

### 1 WARNING

This safety and installation guide contains important safety and handling information for ITEC temperature gauges. Read all information below before using the application to avoid injury, improper functioning, or damage.

### 2 CAUTION

Read this installation guide carefully before unpacking the temperature gauge. Improper handling can cause damage to the temperature gauge or stem.

### 3 UNPACKING

Do not unpack the gauge by handling it by the stem. Make sure the environment is free of dirt and fluids that may damage the stem, thread, and window. Using spanners - When installing the temperature gauge a suitable spanner with the correct size must be used to prevent damage to the connection. Never twist the case in order to tighten the gauge.

### 4 GENERAL

#### 4a Capillary use

For distance temperature measurement capillary is necessary. When handling such a device the capillary must never be bent. Surplus capillary can be wound and bundled with a tie wrap.

#### 4b Thread sealing

BSP threads are sealed on the sealing face with a washer which must be compatible with the medium. NPT threads are sealed on the thread with a metal to metal sealing. In some cases a never seize paste or PTFE tape can be used.

#### 4c Gauge temperature

Temperature gauges are designed to operate in a specific temperature range. Before installing the specifications of the process must be compared to the design temperature of the temperature gauge.

#### 4d Gauge inspection

Temperature gauges should be checked thoroughly once a year to check accuracy and damage to the gauge. If the gauge is exposed to extreme conditions such as fire, extreme temperatures, or wrong process fluids the gauge must be replaced or sent back to ITEC for inspection.

#### 4e Mounting type

Temperature gauges can be mounted in several ways. The stem position is dependant on this mounting variable. The bimetal and gas filled gauges can have a bottom, center back or every angle execution. The gas filled gauges can also be executed with a capillary connection combined mounting type for panel or surface mounting several accessories are available.

#### 4f Thermowell use

The safest use of a temperature gauge is when a thermowell is applied. When using a thermowell the stem of the temperature gauge should be coated with a heat conducting medium. Examples of such a medium are: a mixture of glycerine and graphite, Vaseline or other heavy lubricants. The thermometer stem length and diameter should be compatible with the bore diameter and length of the thermowell.

#### Fill fluid

4g

Filling fluids reduces the vibration inside the case of the gauge which reduces the wear of the internals of the temperature gauge. When the case temperature raises the filling fluid will expand. To prevent overpressure in the case the filling plug on top of the case must be cut or pierced, depending on the execution of the plug. This makes the gauge suitable to “breathe” with the outside air so that the case compensates with the atmospheric pressure.

#### Gauge position

4h

The position of the temperature gauge is of great importance for the accuracy of the temperature gauge. The most important factor is that the stem is inserted into the process for average temperature measurement with the tip of the stem pointed towards the flow direction.

### INSTALLATION

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#### Pressurized installations

5a

Do not use the gauge in an environment where the pressure exceeds 25 bar without using a bar stock thermowell. A well makes it possible to disassemble the temperature gauge with a reduced chance of injury or damage.

#### Hazardous installations

5b

Do not use the gauge in an environment where hazardous liquid or fumes can cause corrosion or other physical damage to the temperature gauge. The use of a thermowell reduces the chance on injuries. Make sure to follow the regulations of the installations or plant to prevent injury or spill of hazardous fluids.

#### Temperature gauge design

5c

Make sure the design of the gauge is suitable for the purpose of use. Before installing the OPERATING TEMPERATURE, FLUID COMPATIBILITY and ENVIRONMENTAL CONDITIONS must be checked. More details on these topics can be found below.

#### Operating temperature

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The operating temperature may never exceed its full scale value. The minimum and maximum measuring range is marked with a triangular symbol on the scale. These temperature limits must not be exceeded. The scale value between these two limits is called the temperature span.

#### Fluid compatibility

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Before installing the temperature gauge, the material/process fluid compatibility must be checked.

#### Environmental conditions

5f

The condition of the local environment of the temperature gauge must be analyzed carefully when installing the gauge. The frequency of the vibration and the surrounding atmosphere must not exceed limits of the EN13190 without the use of capillary. The surrounding atmosphere must be free of heavily corrosive gasses to prevent corrosion of the materials used in the temperature gauge.

#### Mechanical shock & vibrations

5g

If there is a risk of mechanical shock or vibrations the temperature gauge should have a capillary connection. The limits of the vibration frequency can be found in the EN13190.

#### Case temperature

5h

Avoid excessive case temperatures. The maximum case temperature with dry cases should be <95°C and liquid filled cases <65°C.

The general safety of a facility often depends on the reliability of indications of the temperature gauges installed in the facility. Any temperature gauge that seems to be giving false readings must be removed immediately, and then tested with a testing device. If the tests prove the reading is unreliable, it must be replaced by a new temperature gauge.

## 6 MAINTENANCE

- 6a** The temperature gauge shows damages caused by mechanical influences it must be replaced with a new gauge.
- 6b** Periodic verifications
- Once a year a thorough check should be carried out in order to check the accuracy of the gauge. Any temperature gauge considered to have been subjected to abnormal conditions of use (e.g. fire, wrong fluid, excessive temperatures, etc.) must not be re-used.
- 6c** Cleaning
- The temperature instrument should be cleaned regularly with a damp cloth and a soap solution.
- 6d** Filling level
- When filled temperature gauges are used the fluid level in the case must be checked on a regular base and must not drop below 75% of the gauge diameter.
- 6e** Stem cleaning
- When a temperature gauge is used for measuring media that may harden and build up an insulating layer on the stem without a thermowell, the gauge should be removed and cleaned regularly