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**Liquid filled system thermometers**

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## Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by Japan Measuring Instruments Federation (JMIF)/Japan Pressure Gauges and Thermometers Manufacturers' Association (JPTMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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## Liquid filled system thermometers

### 1 Scope

This Japanese Industrial Standard specifies the liquid filled system thermometers (hereafter referred to as thermometers) consisting of a temperature sensitive cylinder, a conduit tube and a pressure conversion part, all of which are connected as a unit and filled with a liquid. The indicator in a round case has a single pointer and scales concentrically marked on the dial. The pressure change is caused by the volumetric change of the liquid, and in the system according to the temperature change at the temperature sensitive part is converted to a mechanical displacement of the pointer to indicate the temperature. The thermometers are used in the temperature range of  $-50\text{ }^{\circ}\text{C}$  to  $+300\text{ }^{\circ}\text{C}$ .

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 0202 *Parallel pipe threads*

JIS B 0203 *Taper pipe threads*

JIS Z 8103 *Glossary of terms used in measurement*

JIS Z 8703 *Standard atmospheric conditions for testing*

### 3 Terms and definitions

For the purposes of this Standard, the following terms and definitions, and JIS Z 8103 apply.

#### 3.1 pressure system

system for converting a measured temperature into a visible displacement, consisting of a pressure conversion part, a temperature sensitive part and a conduit tube, which is filled with a liquid

#### 3.2 indicator

part consisting of a pressure conversion part and a conversion mechanism connected with a temperature sensitive part via a conduit tube and a case for housing those parts, which indicates a temperature

#### 3.3 conduit tube

metal capillary connecting the temperature sensitive part with the pressure conversion part

#### 3.4 pressure conversion part

part which converts a pressure change to a mechanical displacement by means of an elastic element such as a Bourdon tube and a bellow

### **3.5 conversion mechanism**

mechanism which magnifies the displacement of free end of the pressure conversion part and transmits it to the pointer, consisting of a link mechanism, a pinion, a sector gear with hair spring, a moving lever, a pin and so on

### **3.6 pointer adjusting mechanism**

mechanism to adjust the pointer to the indication of the reference thermometer irrespective of the temperature of temperature sensitive part

### **3.7 connecting part**

part for fixing the temperature sensitive part to the place where a temperature is measured

### **3.8 temperature sensitive part**

part to be touched to the measuring object and supposed to become the same temperature

A temperature sensitive cylinder is provided at the tip.

### **3.9 temperature sensitive cylinder**

metal cylinder consisting of a temperature sensitive part, which is filled with a liquid that reflects the pressure change in response to the temperature

### **3.10 immersion line**

line marked on the temperature sensitive part to indicate the position up to which the temperature sensitive part is immersed in the fluid to be measured

NOTE : Where the line is not marked, the temperature sensitive part shall be immersed up to the bottom face (before threading) of the connecting part.

### **3.11 temperature correction mechanism**

mechanism to correct the ambient temperature error

### **3.12 temperature measurable range**

scale range between the maximum and the minimum temperatures measurable using a thermometer

### **3.13 temperature span**

difference between the maximum temperature and the minimum temperature

### **3.14 normal temperature**

maximum temperature in the temperature measurable range at which a thermometer may be used continuously

### **3.15 instrumental error**