

# USER MANUAL

PRODUCT NAME : REMOTE READING THERMOMETER

MODEL : T210, T212, T219, T230, T239, T263, T360



**WISE<sup>®</sup>** WISE Control Inc.  
[www.wisecontrol.com](http://www.wisecontrol.com)

## Instructions for proper and safe operation

Please read instructions carefully prior to using the instrument for proper and safe operations.

Mishandling could cause device malfunctions and result in disastrous injuries or accidents.

### ITEM: REMOTE READING THERMOMETER

1. Do not exceed the temperature range allowed.
2. Do not apply excessive load, vibration or impact.

Damaged or ruptured product may cause temperature measurement deviations.

3. Please use within the specified temperature ranges.

Exceeding the temperature range may cause disruption in nearby area  
due to failure of or damage to the temperature indicator.

4. Do not mount the temperature sensor directly on the pipes. Please use a protective tube.
5. Please always follow the mounting tips in the manual in cases of field installation.
6. Do not make any modifications to the product or to add more functions.

Please consult with us for any repair.

# Contents

1. Overview
2. Applications
3. Product characteristics
4. Specifications and standards
5. External dimensions
6. Names of parts and principles of operation
7. Installation
8. Operating instructions

## **1. Overview**

This is a thermometer measuring temperature using pressure. It can be put to use immediately after installation. It is used when it is necessary to place measuring and indicating parts separately.

Please read the user manual carefully and thoroughly before using the product for proper and safe operations.

## **2. Application**

This thermometer may indicate specified temperature to identify temperature within the processing control or pipes for more stable control.

## **3. Characteristics**

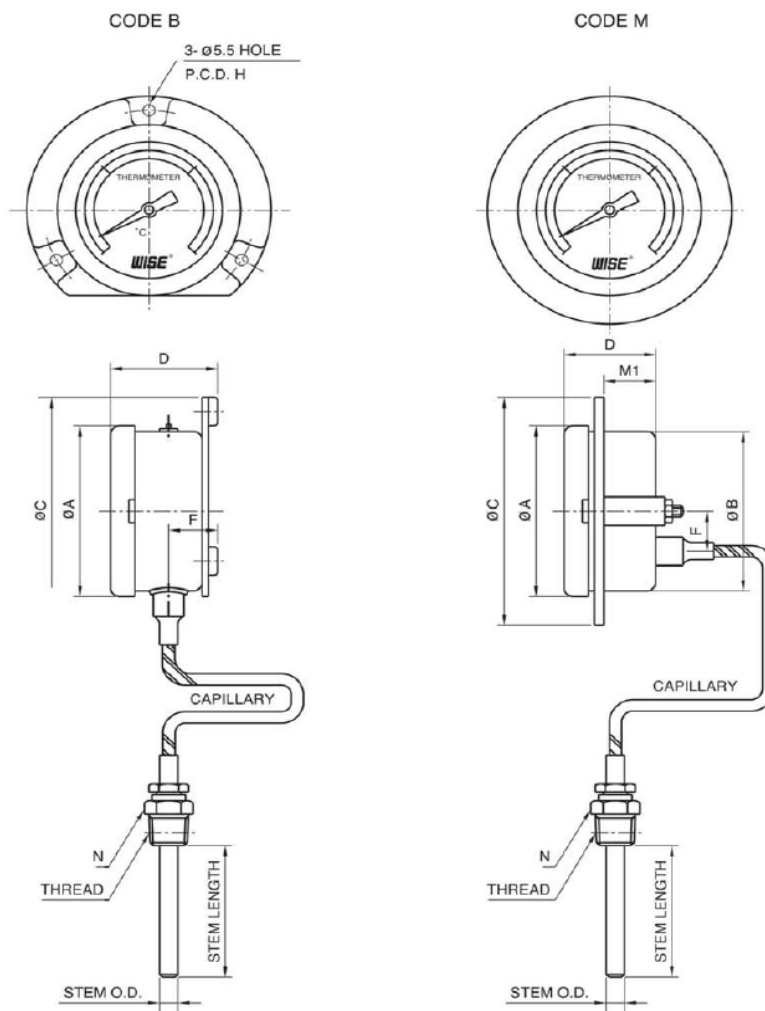
The pressurized thermometer demonstrates the following characteristics:

- 1) It is structurally durable and has low maintenance cost.
- 2) Temperature can be measured remotely as far away as 10m or more.
- 3) Recorder can be driven without secondary power source.
- 4) It has a large temperature sensing bulb.

#### 4. Specifications and standards

- 1) Indicator : 100mm
- 2) Liquid end mater: Stainless Steel
- 3) Casing material : 304SS
- 4) Sensor material : Stainless Steel
- 5) Sensor filler : Liquid Filled
- 6) Sensor length : Directly connected (1/2" NPT)
- 7) Capillary tube : Stainless Steel/Flexible - Armor
- 8) Indication range :  $\pm 2.0$  % OF FULL SCALE

#### 5. Exterior dimensions

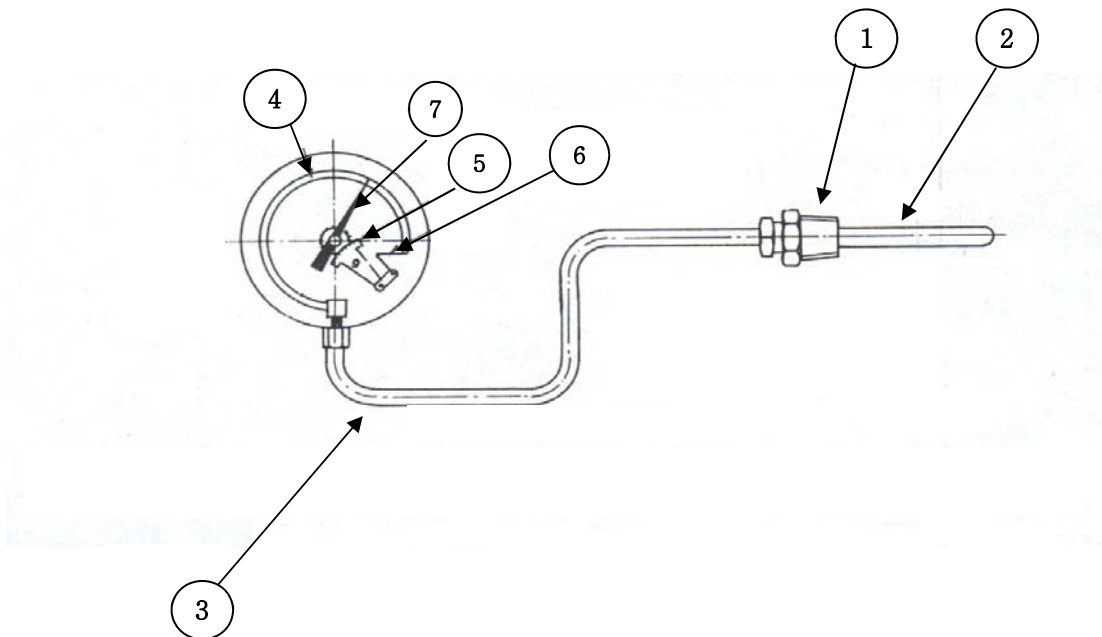


Dimensions( mm )

DIAL SIZE	AVAILABLE CODE	A	B	C	D	F	H	M1	N
100	B	111		128	52.5	23	115		27X31.2 HEX
	M	111	99.5	128	50.5	25		28.5	27X31.2 HEX
150	B	168.5		178	66	26	165		27X31.2 HEX
	M	168.5	153	195	62.5	56		38.5	27X31.2 HEX

## 6. Names of parts and principles of operation

### A. T210 pressurized thermometer



No.	PART NAME	DESCRIPTION
1	Gauge Connection	Stainless Steel
2	Stem or Bulb	Stainless Steel
3	Capillary ; Flexible Armored	Flexible Armored/SS
4	Element ; Bourdon Tube	Liquid Filled/SS
5	Movement	Stainless Steel
6	Bimetal	Compensation
7	Pointer	Black Finished Paint

### B. Bulb

#### Operation Principles

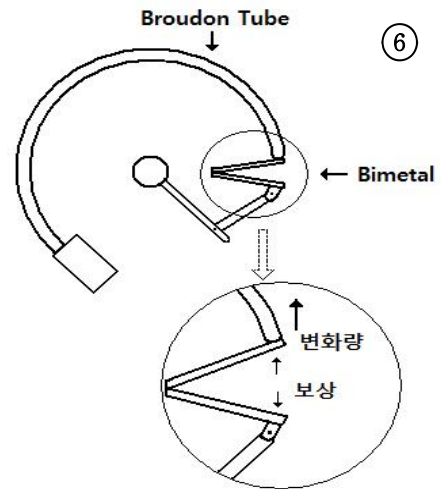
Fluid filled pressurezed thermometer shown in ② consists of sensing bulb, indicator and connecting capillary tubes (③). There is a connector to bulb between the capillary tubes. Fluid within either expands or contracts accordly to temperature change.

The pressure difference is transferred to Tourdon Tube through the capillary tube and its change amount is conveted into temperature on the indicator.

## C. Temperature compensation

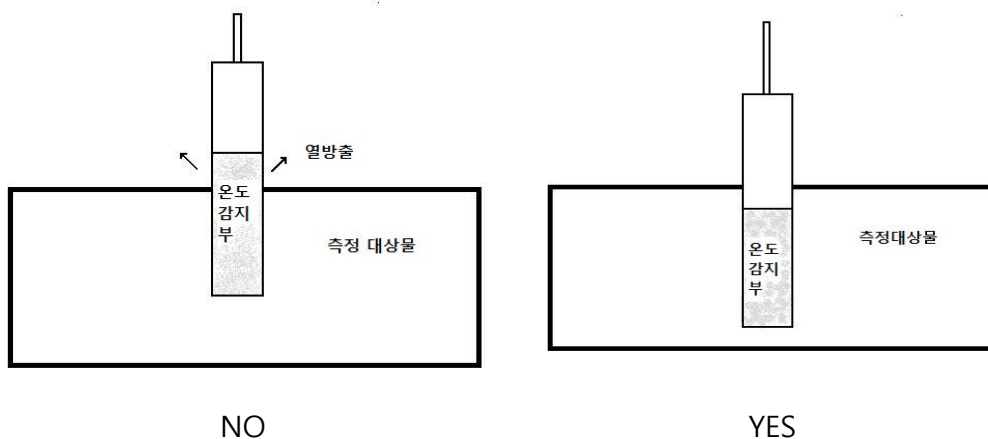
### Operation principles

Actual temperature measurement can fluctuate due to temperature rate of each state. In order to display accurate temperature, two Bimetal are there to compensate in the amount of Bourdon tube change ratio caused by its surrounding environment.



## 7. Installation

- 1) Please make sure of any damage present or condition the product is in prior to installation.
- 2) Temperature deviation may occur depending on how deep the sensor is inserted. Make sure to insert the temperature sensor completely in order to detect accurate temperature.



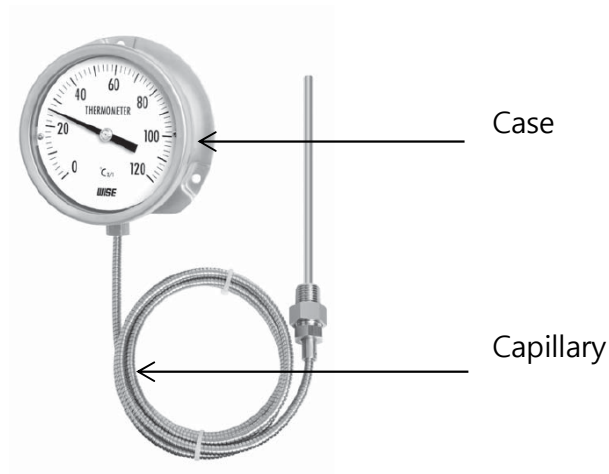
- 3) This product is sensitive to vibrations and physical impact.
- 4) Please install the thermometer away from any vibration or physical impact, if there is possibility of vibration or impact near its installation area.
- 5) It is recommended to use thermowell for maintenance.

\*Please refer to thermowell manual for its installation and use.

6) Use proper wrench to install.



7) It will cause failure if the casing gets impacts or the capillary tube is bent while being installed.



8) Please protect the sensor bulb since the temperature difference of the sensor bulb and capillary tube will cause inaccurate temperature measurement.

9) Inspect the installation area to check for moisture, vibration, dust or corrosive gas.

10) Avoid installing in the area which might exceed the specified temperature range.

11) Please protect it from lightning or steam.

12) Avoid installing in direct sun light.

## 8. Operation instructions

1) Use in 75% of maximum capacity for commercial use.

2) Never use in temperature range in excess of specification.

3) Avoid sudden temperature changes.

4) Check if there is vibration, pulsation or heat in the piping line and use products with capillary or select proper oil type if necessary.



- 5) One or two regular inspections in 6 month are recommended to check contact operation or attempt.
- 6) In case of large deviation of indicator, dismount it to inspect.
- 7) Main causes are wearing of parts, corrosion or distortion due to external vibration and/or impact. In this case, the removal of the cause, adjustment, replacement is necessary.