

## FEATURES

- Inert gas filled expansion
- Filled versions
- Bi-metal compensation

## APPLICATION

- Liquid & gaseous mediums
- Corrosive environments
- Oil & Gas applications
- Chemical & Petrochemical

### External Zero adjustment



#### STANDARD PARAMETERS

|                                 |                                             |
|---------------------------------|---------------------------------------------|
| Accuracy                        | : CL 1.0 (Class 1)                          |
| Permissible ambient temperature | : -40...+60°C with/without dampening liquid |
| Storage & Transport temperature | : -50...+70°C without liquid dampening      |
|                                 | : -20...+60°C with liquid dampening         |
| Over range limits               | : 110% full scale                           |
| Stem pressure rating            | : 25 bar (Without thermowell)               |
| Weld joints                     | : TIG argon arc welding                     |

#### MATERIAL OF CONSTRUCTION

|                                    |                                                             |
|------------------------------------|-------------------------------------------------------------|
| Sensing element                    | : Inert Gas Filled sensor bulb                              |
| Case & Ring material               | : AISI 304 SS                                               |
| Stem & Process connection material | : AISI 316 SS                                               |
| Dial                               | : Aluminum, black graduation on white background            |
| Pointer                            | : Micrometer zero adjustable, aluminum, black powder coated |
| Gaskets                            | : NBR                                                       |
| Window                             | : Sheet glass                                               |

#### STANDARD SPECIFICATIONS

|                         |                                          |
|-------------------------|------------------------------------------|
| Dial size               | : DN100 / DN125 / DN150 / DN250          |
| Range                   | : -200...0...+700°C / -330...0...+1290°F |
| Mounting pattern        | : Direct, Bottom connection              |
| Stem size               | : 6.0 mm                                 |
| Ingress protection      | : IP 65                                  |
| Zero adjustment         | : External screw                         |
| Stem length             | : 70 mm to 2,000 mm*                     |
| Process connection type | : Adjustable connection                  |
| Process connection      | : 1/2" NPT (M) / 1/2" BSP (M)            |

#### STANDARD SPECIFICATIONS : DAMPENING LIQUID FILLED, GLYCERIN

|                         |                                                      |
|-------------------------|------------------------------------------------------|
| Gaskets & Filling plugs | : NBR                                                |
| Dampening liquids       | : Glycerin 99.7% (-20°C to 65°C) [Up to range 100°C] |
| Window                  | : Shatterproof safety glass                          |

#### STANDARD SPECIFICATIONS : DAMPENING LIQUID FILLED, SILICON

|                         |                                   |
|-------------------------|-----------------------------------|
| Gaskets & Filling plugs | : NBR                             |
| Dampening liquids       | : Silicon oil [Up to range 200°C] |
| Window                  | : Shatterproof safety glass       |

\* Depending on range & stem diameter

## REFERENCE

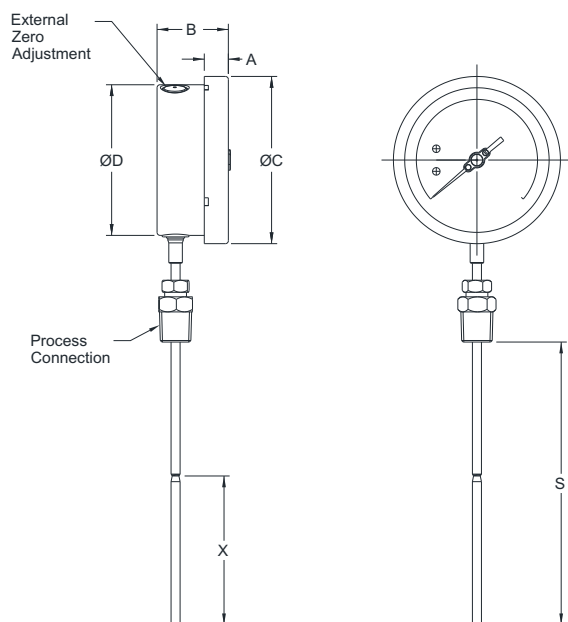


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## DIMENSIONAL DRAWING

Mounting Pattern: B0

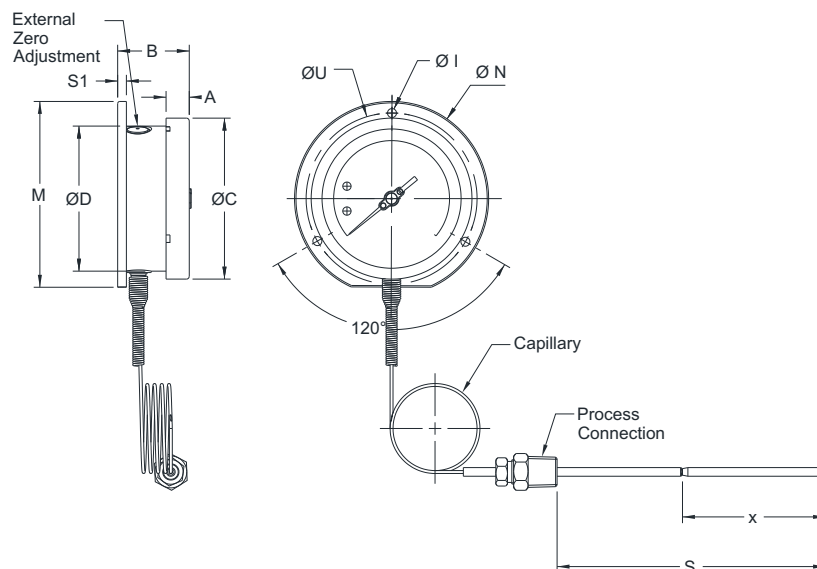


| DN  | A    | B  | ØC  | ØD    | S | X  |
|-----|------|----|-----|-------|---|----|
| 100 | 12   | 48 | 111 | 100   | * | ** |
| 125 | 15   | 48 | 129 | 118.5 | * | ** |
| 150 | 15   | 48 | 161 | 149   | * | ** |
| 250 | 18.5 | 50 | 263 | 250   | * | ** |

\* As per customer requirement.

\*\* Refer technical sheet - Temperature Gauges.

Mounting Pattern: B1

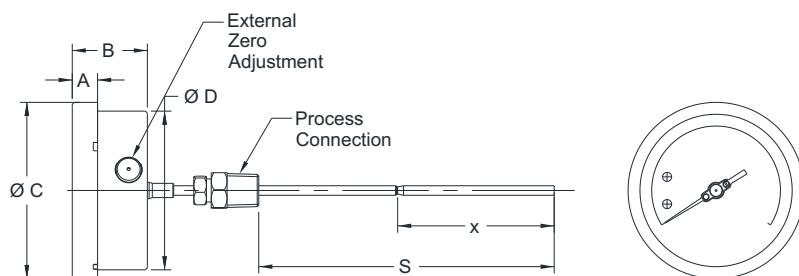


| DN  | A    | B    | ØC  | ØD    | ØI | ØN  | M     | S1  | ØU  | S | X  |
|-----|------|------|-----|-------|----|-----|-------|-----|-----|---|----|
| 100 | 12   | 52   | 111 | 100   | 6  | 134 | 128   | 6   | 118 | * | ** |
| 125 | 15   | 50   | 129 | 118.5 | 6  | 150 | 143.5 | 4   | 137 | * | ** |
| 150 | 15   | 52   | 161 | 149   | 6  | 186 | 172.4 | 6   | 168 | * | ** |
| 250 | 18.5 | 51.5 | 263 | 250   | 7  | 290 | 286.5 | 1.5 | 276 | * | ** |

\* As per customer requirement.

\*\* Refer technical sheet - Temperature Gauges.

Mounting Pattern: R0

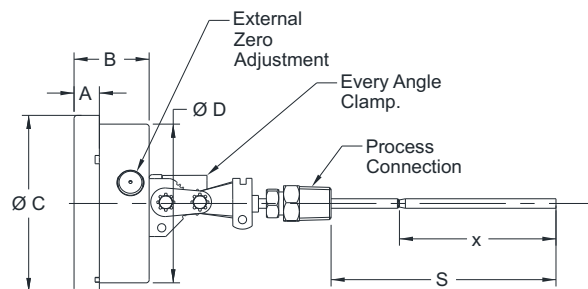


| DN  | A    | B  | ØC  | ØD    | S | X  |
|-----|------|----|-----|-------|---|----|
| 100 | 12   | 48 | 111 | 100   | * | ** |
| 125 | 15   | 48 | 129 | 118.5 | * | ** |
| 150 | 15   | 48 | 161 | 149   | * | ** |
| 250 | 18.5 | 50 | 263 | 250   | * | ** |

\* As per customer requirement.

\*\* Refer technical sheet - Temperature Gauges.

Mounting Pattern: R1



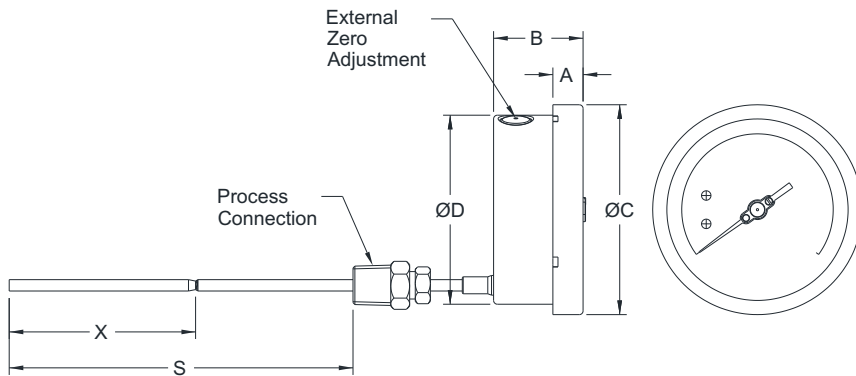
| DN  | A    | B  | ØC  | ØD    | S | X  |
|-----|------|----|-----|-------|---|----|
| 100 | 12   | 48 | 111 | 100   | * | ** |
| 125 | 15   | 48 | 129 | 118.5 | * | ** |
| 150 | 15   | 48 | 161 | 149   | * | ** |
| 250 | 18.5 | 50 | 263 | 250   | * | ** |

\* As per customer requirement.

\*\* Refer technical sheet - Temperature Gauges.

## DIMENSIONAL DRAWING

### Mounting Pattern: L0

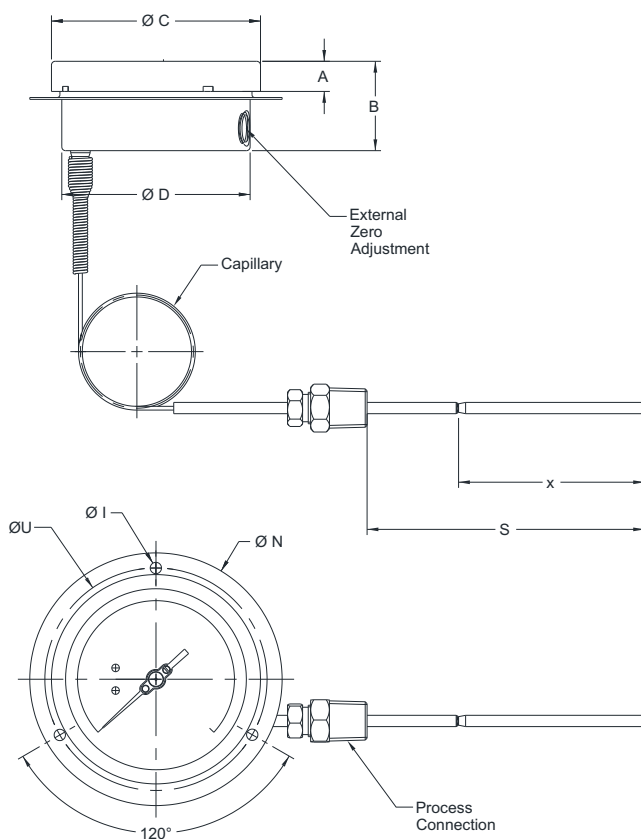


| DN  | A    | B  | ØC  | ØD    | S | X  |
|-----|------|----|-----|-------|---|----|
| 100 | 12   | 48 | 111 | 100   | * | ** |
| 125 | 15   | 48 | 129 | 118.5 | * | ** |
| 150 | 15   | 48 | 161 | 149   | * | ** |
| 250 | 18.5 | 50 | 263 | 250   | * | ** |

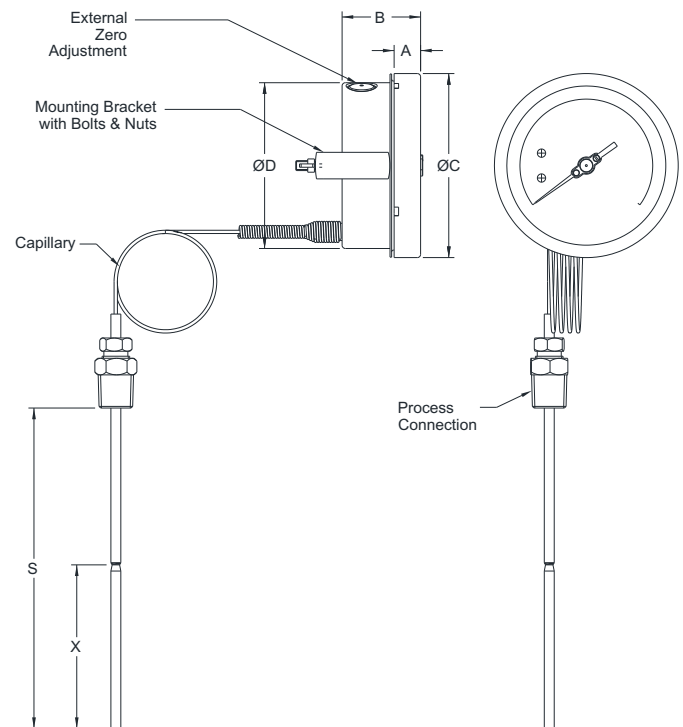
\* As per customer requirement.

\*\* Refer technical sheet - Temperature Gauges.

### Mounting Pattern: L1



### Mounting Pattern: L2



| DN  | A    | B  | ØC  | ØD    | ØI | ØN  | ØU  | S | X  |
|-----|------|----|-----|-------|----|-----|-----|---|----|
| 100 | 12   | 48 | 111 | 100   | 6  | 134 | 118 | * | ** |
| 125 | 15   | 48 | 129 | 118.5 | 6  | 150 | 137 | * | ** |
| 150 | 15   | 48 | 161 | 149   | 6  | 186 | 168 | * | ** |
| 250 | 18.5 | 50 | 263 | 250   | 7  | 290 | 276 | * | ** |

\* As per customer requirement.

\*\* Refer technical sheet - Temperature Gauges.

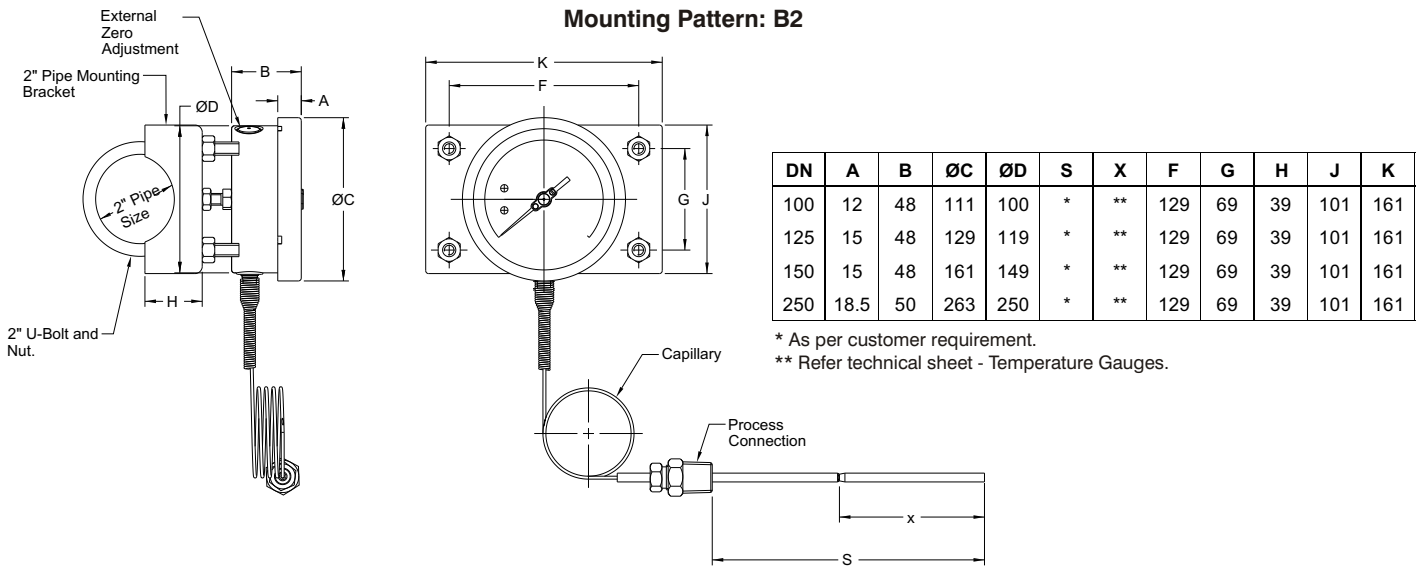
| DN  | A    | B  | ØC  | ØD    | J     | K  | V     | S | X  |
|-----|------|----|-----|-------|-------|----|-------|---|----|
| 100 | 12   | 48 | 111 | 100   | 72    | 16 | 108   | * | ** |
| 125 | 15   | 48 | 129 | 118.5 | 75    | 15 | 125   | * | ** |
| 150 | 15   | 48 | 161 | 149   | 106.5 | 16 | 158.5 | * | ** |
| 250 | 18.5 | 50 | 263 | 250   | 180   | 30 | 270   | * | ** |

\* As per customer requirement.

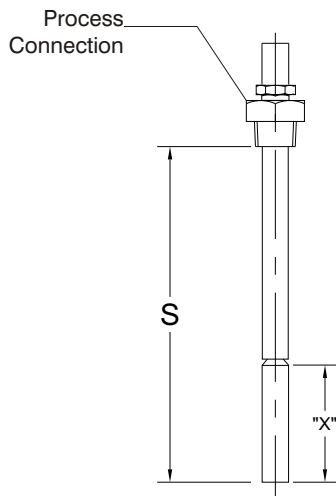
\*\* Refer technical sheet - Temperature Gauges.

All dimensions are in mm.

## DIMENSIONAL DRAWING



## STEM LENGTH CHART



| Stem / Sensor Size (mm)                                                  | (x) Sensor Length (mm) | (S) Minimum Stem Length (mm) |
|--------------------------------------------------------------------------|------------------------|------------------------------|
| <b>Rigid Stem type Inert Gas Thermometer</b>                             |                        |                              |
| <b>Capillary type Inert Gas Thermometer (≤10 Mtr.)</b>                   |                        |                              |
| 6 / 1/4"                                                                 | 200                    | 240                          |
| 8 / 9.5                                                                  | 120                    | 160                          |
| 10                                                                       | 90                     | 130                          |
| 12 / 14                                                                  | 70                     | 110                          |
| <b>Capillary type Inert Gas Thermometer (&gt; 10 Mtr. up to 25 Mtr.)</b> |                        |                              |
| 8 / 9.5                                                                  | 170                    | 210                          |
| 10                                                                       | 140                    | 180                          |
| 12 / 14                                                                  | 90                     | 130                          |

1. Capillary compensation is preferred for all capillary inert gas thermometers, if capillary length is above 6 meter.
2. For other reduced length, contact factory before ordering.

## RANGE TABLE

| RANGE      | " °C " | RANGE      | " °C " | RANGE     | " °C " |
|------------|--------|------------|--------|-----------|--------|
| -20...+40  | C01    | -50...+100 | C11    | 0...250   | C21    |
| -20...+60  | C02    | -100...+60 | C12    | 0...300   | C22    |
| -20...+80  | C03    | 0...50     | C13    | 0...400   | C23    |
| -20...+100 | C04    | 0...60     | C14    | 0...500   | C24    |
| -20...+120 | C05    | 0...80     | C15    | 0...600   | C25    |
| -20...+180 | C06    | 0...100    | C16    | 0...650   | C26    |
| -30...+50  | C07    | 0...120    | C17    | 50...650  | C27    |
| -30...+70  | C08    | 0...150    | C18    | 100...600 | C28    |
| -40...+40  | C09    | 0...160    | C19    | 100...700 | C29    |
| -40...+60  | C10    | 0...200    | C20    |           |        |

## NOTES

1. For other ranges, please contact factory.
2. Equivalent scales available in °F, °C/°F, °F/°C.

## ORDERING CODES

## 1. DIAL SIZE

|    |              |
|----|--------------|
| 04 | 100 mm / 4"  |
| 05 | 125 mm / 4½" |
| 06 | 150 mm / 6"  |
| 10 | 250 mm / 10" |

## 2. RANGE

|     |                     |
|-----|---------------------|
| XXX | Refer "Range Table" |
|-----|---------------------|

## 3. MOUNTING PATTERN

|    |                                                     |
|----|-----------------------------------------------------|
| B0 | Direct, Bottom connection                           |
| B1 | Wall/Surface/Projection mounting, Bottom connection |
| B2 | 2" Pipe/Yoke mounting, Bottom connection            |
| R0 | Centre Back connection                              |
| R1 | Every Angle mounting, Centre Back connection        |
| L0 | Lower, Back connection                              |
| L1 | Panel/Front flange mounting, Lower Back connection  |
| L2 | Panel/bracket mounting, Lower Back connection       |

## 4. STEM DIAMETER

|     |        |     |              |
|-----|--------|-----|--------------|
| M60 | 6.0 mm | I14 | ¼" (6.35 mm) |
| M80 | 8.0 mm | M95 | 9.5 mm       |
| M10 | 10 mm  | M12 | 12 mm        |

## 5. INGRESS PROTECTION

|    |       |    |       |
|----|-------|----|-------|
| ER | IP 65 | ES | IP 66 |
| ET | IP 67 |    |       |

## 6. STEM LENGTH

|      |                                                    |
|------|----------------------------------------------------|
| XXXX | Up to 2000 mm<br>(Confirm factory before ordering) |
|------|----------------------------------------------------|

## 7. PROCESS CONNECTION TYPE

|    |                               |
|----|-------------------------------|
| KX | Fixed connection              |
| KW | Adjustable connection         |
| BW | Swivel / Revolving connection |

## 8. PROCESS CONNECTION

|     |                         |     |                           |
|-----|-------------------------|-----|---------------------------|
| 14N | ½" NPT (M)              | 14B | ½" BSP (M)                |
| 12N | ¼" NPT (M) <sup>5</sup> | 12B | ¼" BSP (M) <sup>5</sup>   |
| 14M | M20 X 1.5 mm (M)        | 13B | 3/8" BSP (M) <sup>6</sup> |
| 15N | ¾" NPT (M)              | 15B | ¾" BSP (M)                |
| 04N | ½" NPT (F)              | 05N | ¾" NPT (F)                |
| 16M | M27x2.0MM(M)            |     |                           |

## 9. ASSEMBLY

|    |                         |
|----|-------------------------|
| B8 | Direct (Stem type)      |
| B9 | Remote (Capillary type) |

## 10. CAPILLARY

|    |            |    |             |
|----|------------|----|-------------|
| OU | AISI 304SS | OV | AISI 316 SS |
|----|------------|----|-------------|

## 11. ARMOUR

|    |                         |    |             |
|----|-------------------------|----|-------------|
| OX | AISI 304SS              | OY | AISI 316 SS |
| OZ | PVC (Ambient max. 60°C) |    |             |

## 12. REMOTE MOUNTING LENGTH

|       |                           |
|-------|---------------------------|
| XXXXX | 250 mm up to 10,000 mm    |
| XXXXX | 10,000 mm up to 25,000 mm |

## 13. OTHER OPTIONS

|    |                                           |
|----|-------------------------------------------|
| BA | Case & Ring in AISI 316 SS (B0)           |
| BB | Case & Ring in AISI 316 SS (B1)           |
| BC | Case & Ring in AISI 316 SS (B2)           |
| BG | Case & Ring in AISI 316 SS (R0)           |
| BH | Case & Ring in AISI 316 SS (R1)           |
| BK | Case & Ring in AISI 316 SS (L0)           |
| BL | Case & Ring in AISI 316 SS (L1)           |
| BM | Case & Ring in AISI 316 SS (L2)           |
| E9 | Helium gas filled system                  |
| GC | Shatterproof safety glass                 |
| GM | Dampened movement                         |
| GW | Maximum reading pointer                   |
| OA | Dampening liquid, silicon oil             |
| RA | Rubber parts, Viton                       |
| TA | 5 - point factory calibration certificate |
| TM | Material test certificate 2.2             |
| XF | SS tag plate, AISI 304 SS                 |
| XG | SS tag plate, AISI 316 SS                 |
| XT | Dial tag marking                          |
| XR | Custom designed dial                      |
| EG | Dampening liquid, glycerin                |

Ordering Example : T702-04-C16-B0-M60-ER-300-KW-14N-B8

## NOTES

- For other ranges, connections, please contact factory.
- Equivalent scales available in °F, °C/°F, °F/°C.
- Option "Case & Ring in AISI 316 SS" is applicable for DN100 & DN150 only.
- 1/4" connections are available up to 1/4" (6.35 mm) stem diameter only.
- 3/8" connections are available up to 10 mm stem diameter only.