



# Temperature Sensors

## Information Sheet

Itron temperature sensors are built in highest quality for various applications. A wide selection of direct and pocket installed sensors are a great complement of our thermal energy meters. All temperature sensors are delivered paired, verified by the MID initial calibration. Furthermore, all sensors meet the requirements of DIN EN 1434.

### CHARACTERISTICS

#### » Your benefits

- Highest accuracy  
Smallest measuring errors
- Great response behavior  
Exact instantaneous values
- Different versions  
Always the right solution

#### » Properties

- Temperature sensors Pt 100 and Pt 500
- Paired acc. EN1434
- Standard DIN EN 1434 and AGFW
- CE conform (MID)

#### » Field of applications

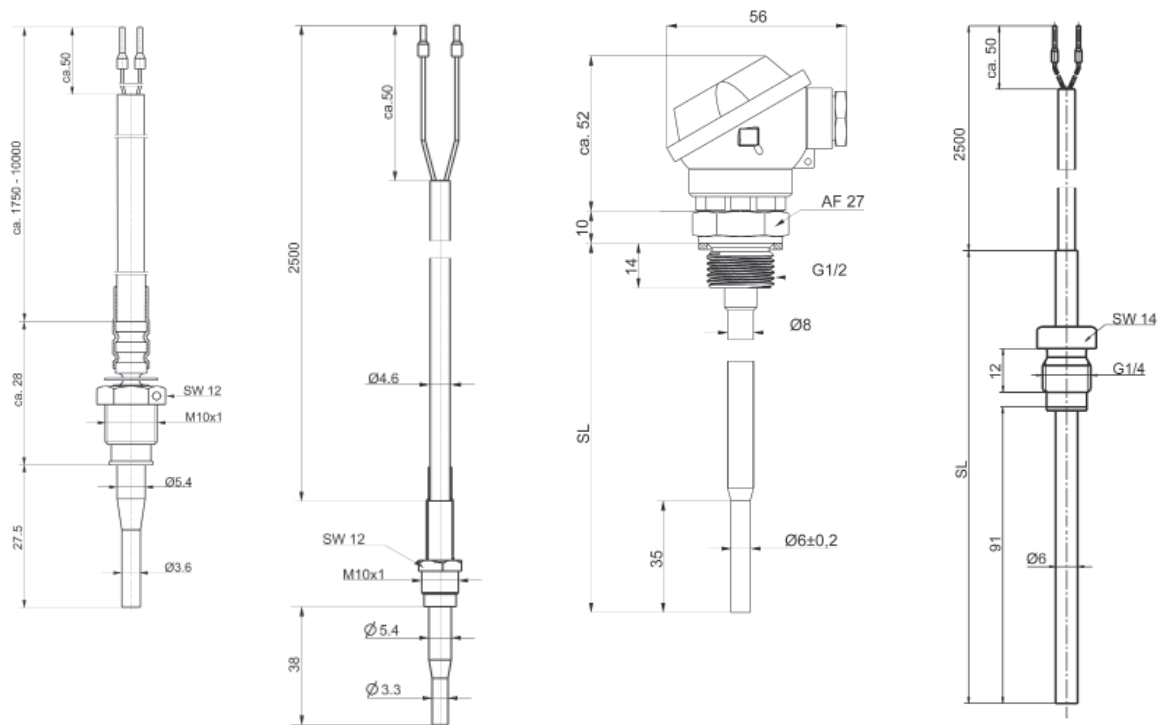
- Direct installation and pocket installation
- Temperature measurement in closed-loop pipe systems of building service areas to measure cooling- and heating energy
- Temperature measurement for energy measurements for district heating and cooling

TEMPERATURE SENSORS – OVERVIEW

Direct Installation

|                                | TDF 27                  | TDF 38             | TDF 85/120/210     | TDF 91/146         |
|--------------------------------|-------------------------|--------------------|--------------------|--------------------|
| Measuring resistance           | Pt 100 / Pt 500         | Pt 100             | Pt 100             | Pt 100             |
| Standard compliance            | EN 1434 / EN 60751      | EN 1434 / EN 60751 | EN 1434 / EN 60751 | EN 1434 / EN 60751 |
| Connection                     | 2-wire                  | 2-wire             | 2-/4-wire          | 2-wire             |
| Temperature range              | 0 to 150 °C             | 0 to 150 °C        | 0 to 180 °C        | 0 to 180 °C        |
| Temperature difference         | 3 to 150 K              | 3 to 150 K         | 3 to 180 K         | 3 to 180 K         |
| Responce time T0,5             | 2 s                     | 2 s                | ≤ 6 s              | 6 s                |
| Environmental tempe-<br>rature | 0 to 70 °C              | 0 to 70 °C         | 0 to 70 °C         | 0 to 70 °C         |
| Sleeve diameter                | 5,4 / 3,6 mm            | 5,4 / 3,3 mm       | 8 / 6 mm           | 6 mm               |
| Fitting length                 | 27,5 mm                 | 38 mm              | 85 / 120 / 210 mm  | 91 / 146 mm        |
| Connection thread              | M10x1                   | M10x1              | G 1/2              | G 1/4              |
| Connection cable               | Silicone                | Silicone           | Silicone           | Silicone           |
| Cable lengths                  | 1,75 / 2,5 / 5* / 10* m | 2,5 m              | Head Type          | 2,5 m              |
| Wire cross section             | 2x0,34 mm²              | 2x0,34 mm²         | 2x/4x0,75 mm²      | 2x0,34 mm²         |
| Protection class               | IP 65                   | IP 65              | IP 65              | IP 65              |

\* only for Pt 500



TEMPERATURE SENSOR FOR DIRECT INSTALLATION  
TDF 27

Technical Data

|                           |                            |
|---------------------------|----------------------------|
| Measuring resistance      | Pt 100 / Pt 500            |
| Standard compliance       | EN 1434 / EN 60751         |
| Connection                | 2-wire                     |
| Temperature range         | 0 to 150 °C                |
| Temperature difference    | 3 to 150 K                 |
| Response behavior T0,5    | 2 s                        |
| Environmental temperature | 0 to 70 °C                 |
| Sleeve diameter           | 5,4 stepped down to 3,6 mm |
| Fitting length            | 27,5 mm                    |
| Connection thread         | M10x1                      |
| Connection cable          | Silicone                   |
| Cable lengths             | 1,75 / 2,5 / 5* / 10* m    |
| Wire cross section        | 2x0,34 mm²                 |
| Protection class          | IP 65                      |

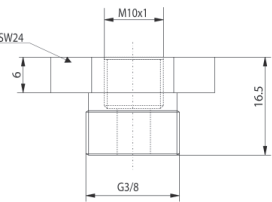
\* only for Pt 500



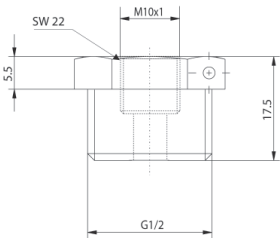
Items

| Type   | Cable length |        | Article-No. |
|--------|--------------|--------|-------------|
| TDF 27 | 1,75 m       | Pt 100 | 2961830006  |
| TDF 27 | 2,50 m       | Pt 100 | 2961831306  |
| TDF 27 | 1,75 m       | Pt 500 | 2961837006  |
| TDF 27 | 5,00 m       | Pt 500 | 2961837506  |
| TDF 27 | 10,0 m       | Pt 500 | 2961837706  |

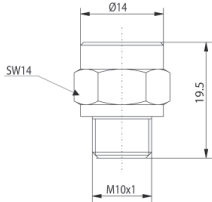
| Adapters for direct sensors acc. EN1434 |               |  | Article-No. |
|-----------------------------------------|---------------|--|-------------|
| M10x1 G3/8"                             | M10 / 3/8" IG |  | 4825        |
| M10x1 G1½"                              | M10 / ½" IG   |  | 5239        |
| M10x1 screw-in fitting                  | M10 / M10     |  | 0930        |



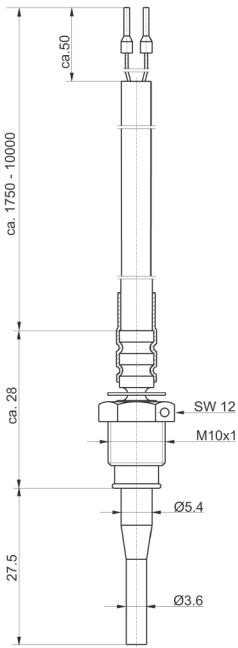
4825



5239

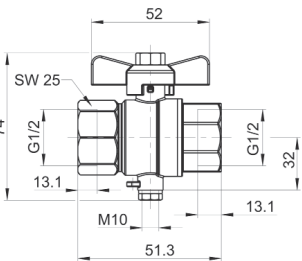


0930

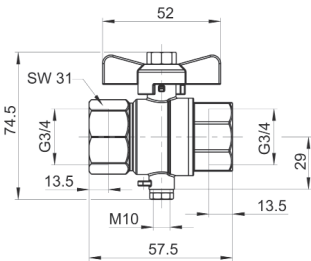


Accessories

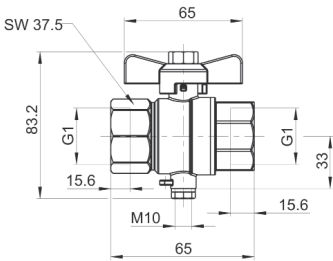
| Ball valves              |       |  | Article-No. | Technical Data ball valves |                                  |
|--------------------------|-------|--|-------------|----------------------------|----------------------------------|
| Ball valve ½"-D-complete | ½" IG |  | 10195       | Temperature range          | -20 to 150°C                     |
| Ball valve ¾"-D-complete | ¾" IG |  | 2671        | Maximum pressure           | 16 bar (150°C)<br>25 bar (110°C) |
| Ball valve 1"-D-complete | 1" IG |  | 4795        |                            |                                  |



10195



2671



4795

TEMPERATURE SENSOR FOR DIRECT INSTALLATION  
TDF 38

Technical Data

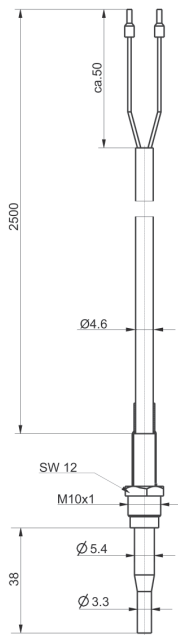


|                           |                            |
|---------------------------|----------------------------|
| Measuring resistance      | Pt 100                     |
| Standard compliance       | EN 1434 / EN 60751         |
| Connection                | 2-wire                     |
| Temperature range         | 0 to 150 °C                |
| Temperature difference    | 3 to 150 K                 |
| Response behavior T0,5    | 2 s                        |
| Environmental temperature | 0 to 70 °C                 |
| Sleeve diameter           | 5,4 stepped down to 3,6 mm |
| Fitting length            | 27,5 mm                    |
| Connection thread         | M10x1                      |
| Connection cable          | Silicone                   |
| Cable lengths             | 2,5 m                      |
| Wire cross section        | 2x0,34 mm²                 |
| Protection class          | IP 65                      |

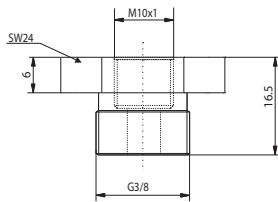
Items

| Type   | Cable length | PT*    | Article-No. |
|--------|--------------|--------|-------------|
| TDF 38 | 2,50 m       | Pt 100 | 2853831306  |

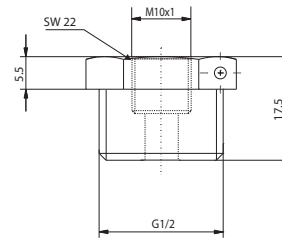
\*PT500 and other length available on request



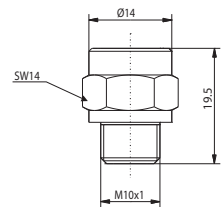
| Adapters for direct sensors acc. EN1434 |               |  | Article-No. |
|-----------------------------------------|---------------|--|-------------|
| M10x1 G3/8"                             | M10 / 3/8" IG |  | 4825        |
| M10x1 G1/2"                             | M10 / 1/2" IG |  | 5239        |
| M10x1 screw-in fitting                  | M10 / M10     |  | 0930        |



4825



5239

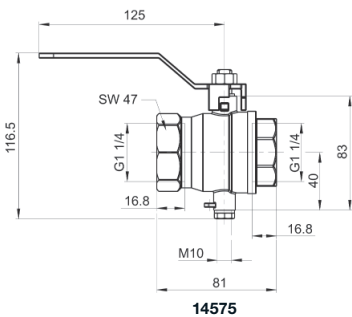


0930

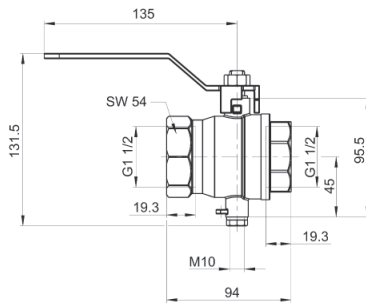
Accessories

| Ball valves                  |          | Article-No. |
|------------------------------|----------|-------------|
| Ball valve 1 1/4"-D-complete | 1 1/4"IG | 14575       |
| Ball valve 1 1/2"-D-complete | 1 1/2"IG | 14573       |

| Technical Data ball valves |                                  |
|----------------------------|----------------------------------|
| Temperature range          | -20 to 150°C                     |
| Maximum pressure           | 16 bar (150°C)<br>25 bar (110°C) |



14575

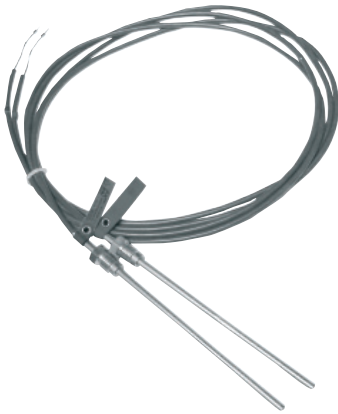


14573



**COMBINED TEMPERATURE SENSOR**  
**TDF 91 / 146**  
**- DIRECT & POCKET INSTALLATION**  
**- REPLACES VARIOUS ON MARKET**  
**USED TEMPERATURE SENSORS**

**Technical Data**



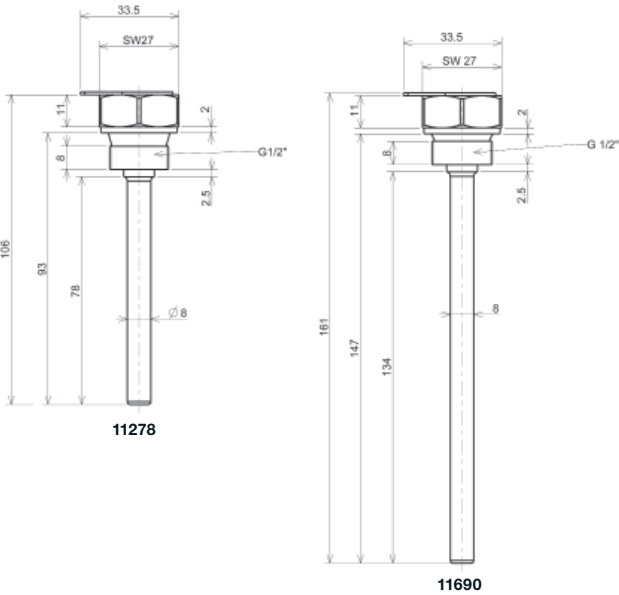
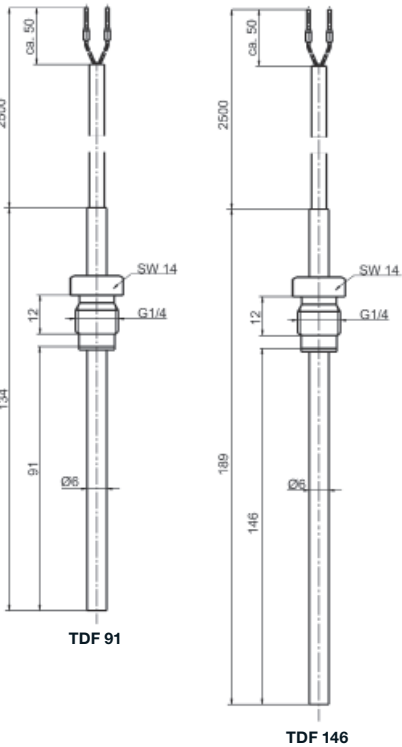
|                           |                    |
|---------------------------|--------------------|
| Measuring resistance      | Pt 100             |
| Standard compliance       | EN 1434 / EN 60751 |
| Connection                | 2-wire             |
| Temperature range         | 0 to 180 °C        |
| Temperature difference    | 3 to 180 K         |
| Response time T0,5        | ≤ 6 s              |
| Environmental temperature | 0 to 70 °C         |
| Sleeve diameter           | 6 mm               |
| Fitting length            | 91 / 146 mm        |
| Connection thread         | G 1/4              |
| Connection cable          | Silicone           |
| Cable lengths             | 2,5 m              |
| Wire cross section        | 2x0,34 mm²         |
| Protection class          | IP 65              |

**Items**

| Type    | Cable length | PT     | Article-No. |
|---------|--------------|--------|-------------|
| TDF 91  | 2,50 m       | Pt 100 | 5524531306  |
| TDF 146 | 2,50 m       | Pt 100 | 5525531306  |

**Accessories**

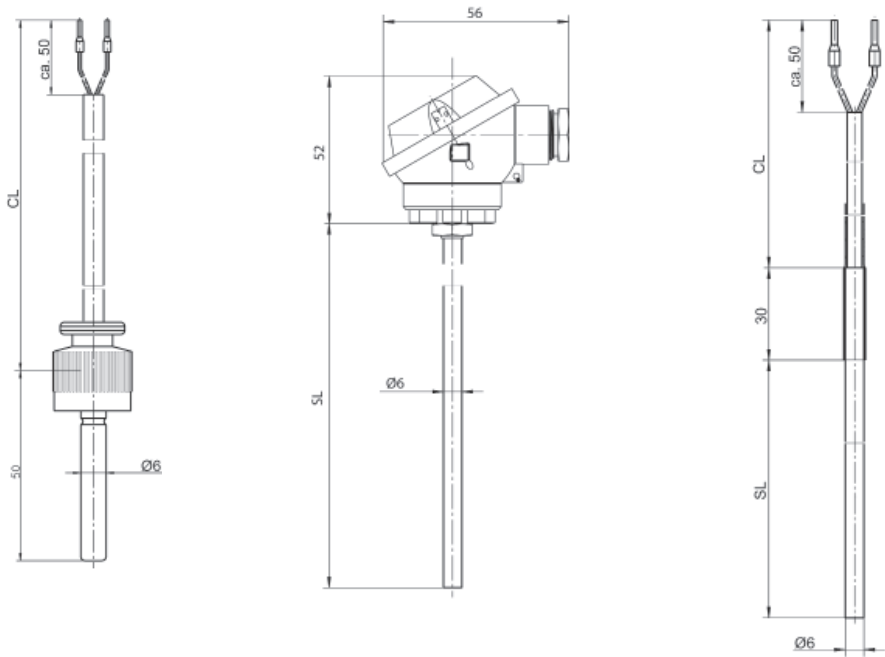
| Pockets        | PN    | Article-No. |
|----------------|-------|-------------|
| TH ½" x 91 mm  | PN 40 | 11278       |
| TH ½" x 146 mm | PN 40 | 11690       |



Pocket Installation

|                        | THF 50                  | THF 105/140/230    | THF C105/C140/C230 |
|------------------------|-------------------------|--------------------|--------------------|
| Measuring resistance   | Pt 100 / Pt 500         | Pt 100             | Pt 100 / Pt 500    |
| Fulfilled regulations  | EN 1434 / EN 60751      | EN 1434 / EN 60751 | EN 1434 / EN 60751 |
| Measuring insert       | 2-wire                  | 2-wire             | 2-/4-wire          |
| Temperature range      | 0 to 150 °C             | 0 to 150 °C        | 0 to 150 °C        |
| Temperature difference | 3 to 150 K              | 3 to 150 K         | 3 to 150 K         |
| Response time T0,5     | 2 s                     | ≤ 6 s              | ≤ 6 s              |
| Climatic conditions    | 0 to 70 °C              | 0 to 70 °C         | 0 to 70 °C         |
| Sleeve diameter        | 6 mm                    | 6 mm               | 6 mm               |
| Fitting length         | 50 mm                   | 105 / 140 / 230 mm | 105 / 140 / 230 mm |
| Connection thread      | M10x1                   | M16x1,5            | M16x1,5            |
| Connection cable       | Silicone                | Silicone           | Silicone           |
| Cable lengths          | 1,75 / 2,5 / 5* / 10* m | Head Type          | 2,5 / 5 m          |
| Wire cross section     | 2x0,34 mm²              | 2x0,34 mm²         | 2x/4x0,34 mm²      |
| Protection class       | IP 65                   | IP 65              | IP 65              |

\* only for Pt 500



TEMPERATURE SENSOR FOR POCKET INSTALLATION  
THF 50

Technical Data



|                           |                                                                  |
|---------------------------|------------------------------------------------------------------|
| Measuring resistance      | Pt 100 / Pt 500                                                  |
| Standard compliance       | EN 1434 / EN 60751                                               |
| Connection                | 2-wire                                                           |
| Temperature range         | 0 to 150 °C                                                      |
| Temperature difference    | 3 to 150 K                                                       |
| Response time T0,5        | 2 s (installed in pocket 15 s)                                   |
| Environmental temperature | 0 to 70 °C                                                       |
| Sleeve diameter           | 6 mm                                                             |
| Fitting length            | 50 mm                                                            |
| Connection thread         | M10x1                                                            |
| Connection cable          | Silicone (Spiral = PUR)                                          |
| Cable lengths             | 1,75 / 2,5 / 5 / 10 m                                            |
| Wire cross section        | 2x0,34 mm <sup>2</sup><br>(spiral cable 2x0,25 mm <sup>2</sup> ) |
| Protection class          | IP 65                                                            |
| Maximum pressure          | PN 25                                                            |

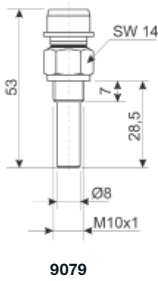
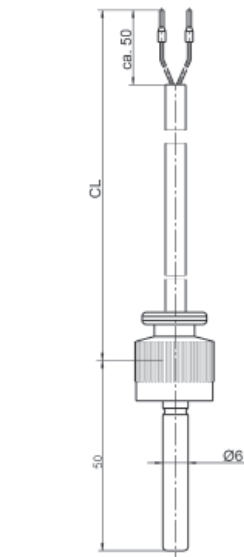
Items

| Type   | Cable length | Pt     | Article-No. |
|--------|--------------|--------|-------------|
| THF 50 | 1,10 m*      | Pt 100 | 2960230006  |
| THF 50 | 1,75 m       | Pt 100 | 2960830006  |
| THF 50 | 2,50 m       | Pt 100 | 2960831306  |
| THF 50 | 1,75 m       | Pt 500 | 2960837006  |
| THF 50 | 5,00 m       | Pt 500 | 2960837506  |
| THF 50 | 10,0 m       | Pt 500 | 2960837706  |

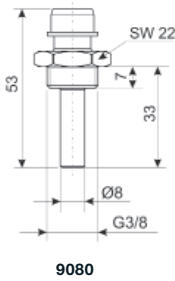
\*Spiral cable

Accessories

| Pockets              | AG      | PN    | Article-No. |
|----------------------|---------|-------|-------------|
| TH M10 x 1 x 28,5 mm | M10 AG  | PN 10 | 9079        |
| TH 3/8" x 33 mm      | 3/8" AG | PN 10 | 9080        |
| TH 3/8" x 75 mm      | 3/8" AG | PN 10 | 9089        |
| TH 1/4" x 28 mm      | 1/4" AG | PN 10 | 6811        |
| TH 1/2" x 33,5 mm    | 1/2" AG | PN 10 | 2680        |
| TH 1/2" x 75 mm      | 1/2" AG | PN 10 | 15141       |



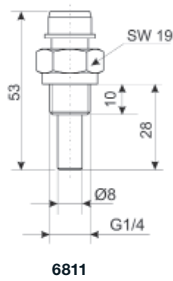
9079



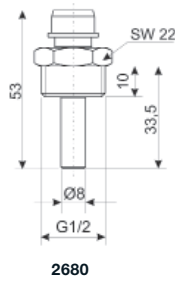
9080



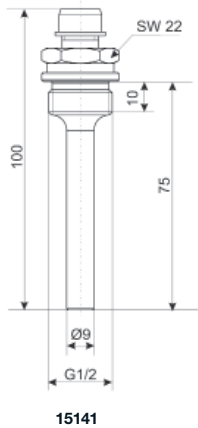
9089



6811



2680

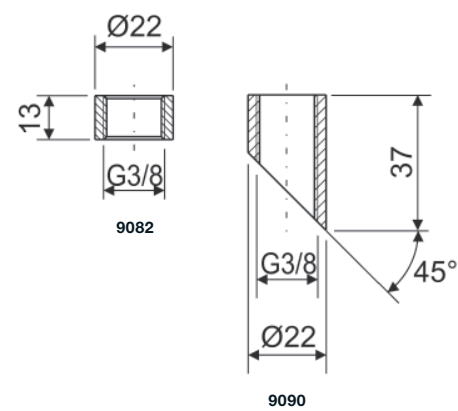


15141

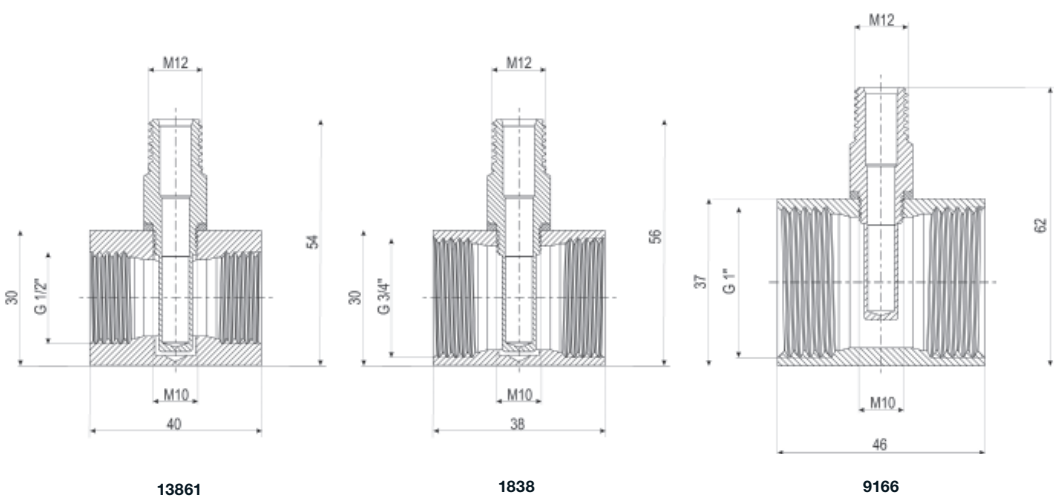
TEMPERATURE SENSOR FOR POCKET INSTALLATION

THF 50

| Welding Sleeves       |                  | Article-No. |
|-----------------------|------------------|-------------|
| AM 3/8" x 12 mm       | for TH 3/8" x 40 | 9082        |
| AM 3/8" x 37 mm / 45° | for TH 3/8" x 75 | 9090        |



| Supply pipe pockets |         | PN    | Article-No. |
|---------------------|---------|-------|-------------|
| VTTH 1/2"           | 1/2" IG | PN 10 | 13861       |
| VTTH 3/4" x 38 mm   | 3/4" IG | PN 10 | 1838        |
| VTTH 1" x 46 mm     | 1" IG   | PN 10 | 9166        |



TEMPERATURE SENSOR FOR POCKET INSTALLATION  
THF 105 / 140 / 230



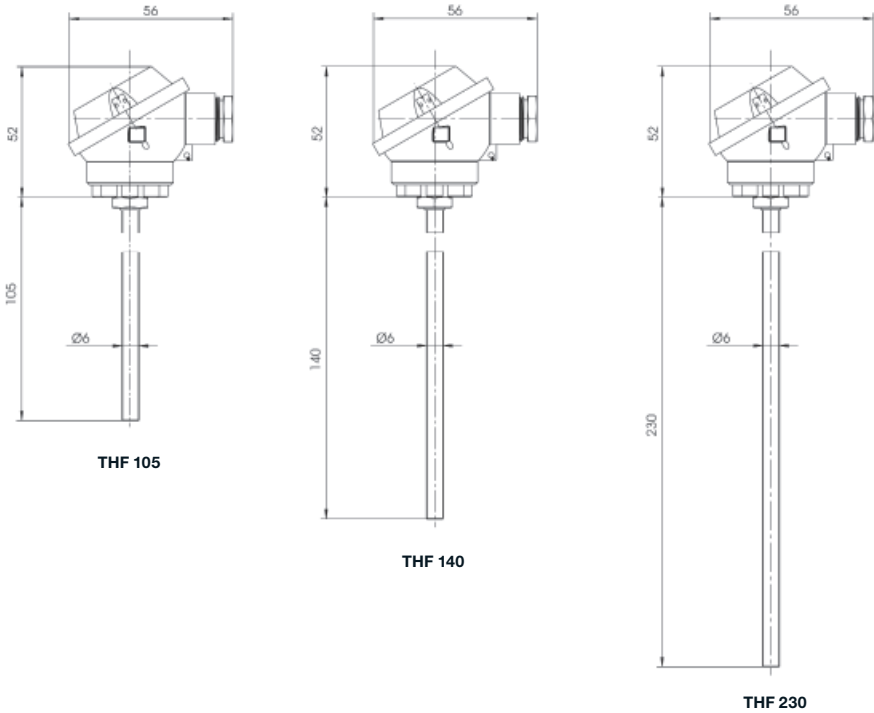
Technical Data

|                           |                                  |
|---------------------------|----------------------------------|
| Measuring resistance      | Pt 100                           |
| Standard compliance       | EN 1434 / EN 60751               |
| Connection                | 2-wire                           |
| Temperature range         | 0 to 150 °C                      |
| Temperature difference    | 3 to 150 K                       |
| Response time T0,5        | ≤ 6s (installed in pocket ≤ 12s) |
| Environmental temperature | 0 to 70 °C                       |
| Sleeve diameter           | 6 mm                             |
| Fitting length            | 105 / 140 / 230 mm               |
| Connection thread         | M16x1,5                          |
| Connection cable          | Silicone                         |
| Wire cross section        | 2x0,34 mm²                       |
| Protection class          | IP 65                            |

Items

| Type*   | Pt     | Article-No. |
|---------|--------|-------------|
| THF 105 | Pt 100 | 5520833006  |
| THF 140 | Pt 100 | 5521833006  |
| THF 230 | Pt 100 | 5522833006  |

\*without connection cable, please see accessories for possible connection cables



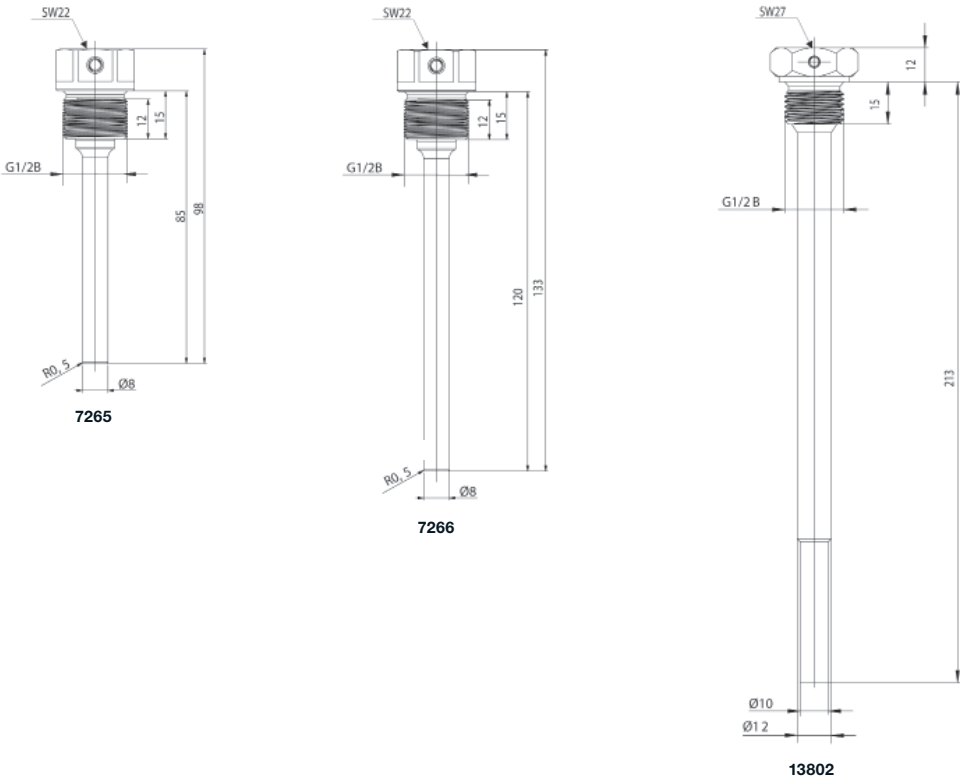
TEMPERATURE SENSOR FOR POCKET INSTALLATION  
THF 105 / 140 / 230

Accessories

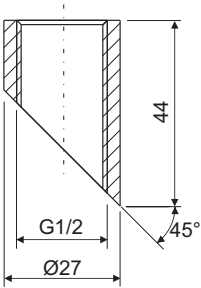
Connection Cable

| Cable length | 2/4-wire | Article-No. |
|--------------|----------|-------------|
| 3 m          | 2-wire   | 0973        |
| 5 m          | 2-wire   | 4490        |
| 10 m         | 2-wire   | 4491        |
| 10 m         | 4-wire   | 10344       |

| Pockets        | AG    | PN    | Article-No. |
|----------------|-------|-------|-------------|
| TH ½" x 85 mm  | ½" AG | PN 25 | 7265        |
| TH ½" x 120 mm | ½" AG | PN 25 | 7266        |
| TH ½" x 210 mm | ½" AG | PN 40 | 13802       |



AM ½" x 44 mm / 45° 0649

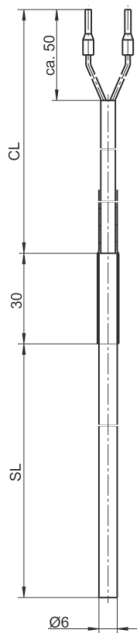


TEMPERATURE SENSOR FOR POCKET INSTALLATION  
THF C105 / C140 / C230

Technical Data



|                           |                                  |
|---------------------------|----------------------------------|
| Measuring resistance      | Pt 100 / Pt 500                  |
| Standard compliance       | EN 1434 / EN 60751               |
| Connection                | 2-wire                           |
| 4-wire                    | 0 to 150 °C                      |
| Temperature range         | 0 to 150 °C                      |
| Temperature difference    | 3 to 150 K                       |
| Response time T0,5        | ≤ 6s (installed in pocket ≤ 12s) |
| Environmental temperature | 0 to 70 °C                       |
| Sleeve diameter           | 6 mm                             |
| Fitting length            | 105 / 140 / 230 mm               |
| Connection thread         | M16x1,5                          |
| Connection cable          | Silicone                         |
| Cable lengths             | 2,5 / 5 m                        |
| Wire cross section        | 2x/4x0,34 mm²                    |
| Protection class          | IP 65                            |



Items

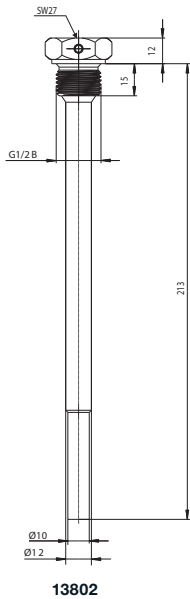
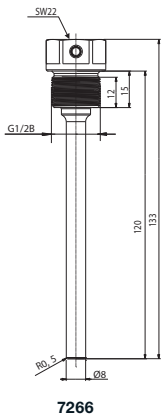
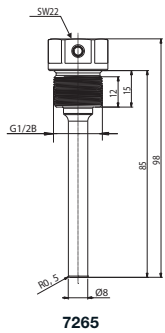
| Type     | Cable length* | Pt     | 2/4-wire | Article-No. |
|----------|---------------|--------|----------|-------------|
| THF-C105 | 2,50 m        | Pt 100 | 2-wire   | 5530831306  |
| THF-C105 | 5,00 m        | Pt 100 | 4-wire   | 5530838506  |
| THF-C105 | 2,50 m        | Pt 500 | 2-wire   | 5529837106  |
| THF-C105 | 5,00 m        | Pt 500 | 4-wire   | 5529839506  |
| THF-C105 | 10,00 m       | Pt 500 | 2-wire   | 5529837706  |
| THF-C140 | 2,50 m        | Pt 100 | 2-wire   | 5531831306  |
| THF-C140 | 5,00 m        | Pt 100 | 4-wire   | 5531838506  |
| THF-C140 | 2,50 m        | Pt 500 | 2-wire   | 5531837106  |
| THF-C140 | 5,00 m        | Pt 500 | 4-wire   | 5531839506  |
| THF-C140 | 10,00 m       | Pt 500 | 2-wire   | 5531837706  |
| THF-C230 | 2,50 m        | Pt 100 | 2-wire   | 5532831306  |
| THF-C230 | 5,00 m        | Pt 100 | 4-wire   | 5532838506  |
| THF-C230 | 2,50 m        | Pt 500 | 2-wire   | 5532837106  |
| THF-C230 | 5,00 m        | Pt 500 | 4-wire   | 5532839506  |

\*other cable length on request

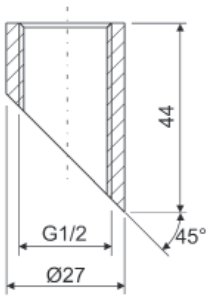
TEMPERATURE SENSOR FOR POCKET INSTALLATION  
THF C105 / C140 / C230

Accessories

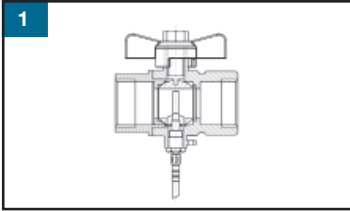
| Pockets          | AG      | PN    | Article-No. |
|------------------|---------|-------|-------------|
| TH 1/2" x 85 mm  | 1/2" AG | PN 25 | 7265        |
| TH 1/2" x 120 mm | 1/2" AG | PN 25 | 7266        |
| TH 1/2" x 210 mm | 1/2" AG | PN 40 | 13802       |



| Welding Sleeves       | Article-No. |
|-----------------------|-------------|
| AM 1/2" x 44 mm / 45° | 0649        |

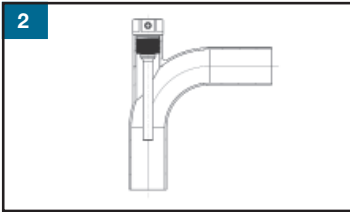


## MOUNTING OPTIONS FOR TEMPERATURE SENSORS



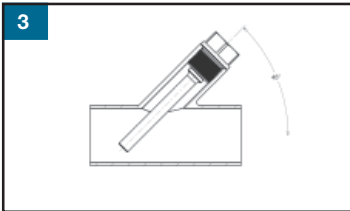
### Option 1 – Installation in threaded pipe fitting and ball valve

- » direct installation
- » probe axis perpendicular to axis of fitting and in same plane



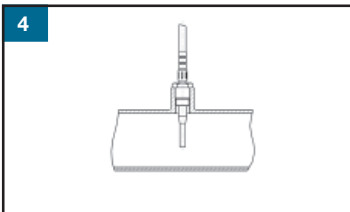
### Option 2 – Installation in Bend

- » direct installation
- » pocket installation
- » probe axis coincident with pipe axis



### Option 3 – Installation in angled probe

- » direct installation
- » pocket installation
- » temperature sensing element inserted to pipe axis or beyond



### Option 4 – Installation in perpendicular probe

- » direct installation
- » pocket installation
- » probe axis perpendicular to pipe axis and in the same plane

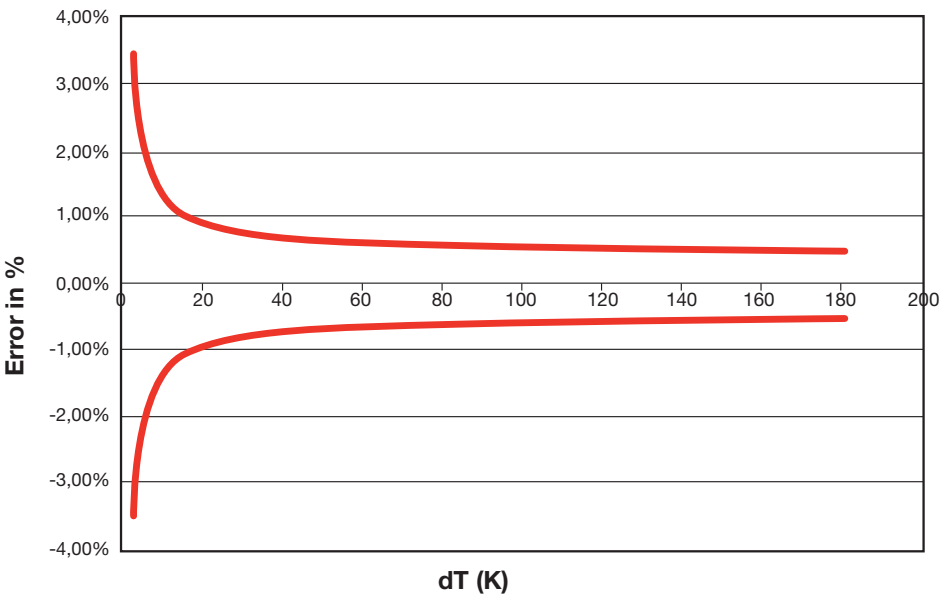
## RECOMMENDATIONS FOR INSTALLATION OF THE TEMPERATURE SENSORS

- » Temperature sensors for thermal energy applications are paired according to EN1434 accuracy requirements. In case of change the complete pair must be changed.
- » One temperature sensor should be installed near to the outlet of the flow meter. Flow meters DN15 and 20 offer a measuring point directly integrated in the flow meter (downstream position).
- » Both supply and return temperature sensors should be installed in a similar way to ensure symmetric measurement and therefore best accuracy. Don't mix direct installation with installation in pockets.
- » In 2-wire measurement the connection cable of both temperature probes must have the same cable length (same wire resistance).
- » When laying the cables a minimum distance of 50 mm to main power cables and/or sources of electromagnetic interferences should be respected.
- » In case of strong sources for electromagnetic disturbances (e.g. high power machines and pumps, frequency and power converters, power switches, neon tubes) it's recommended to increase the minimum distance to meter signal cables to 50 cm.
- » To achieve highest accuracy, the tip of the probes/pockets should reach the center of the pipe.

DN AND CORRESPONDING TEMPERATURE SENSOR

| Type                                  | DN 15 -<br>DN 25                        | DN 32 -<br>DN 40                        | DN 50 -<br>DN 80    | DN 100 -<br>DN 200  | DN 250 -<br>DN 500  |
|---------------------------------------|-----------------------------------------|-----------------------------------------|---------------------|---------------------|---------------------|
| Installation in<br>Termowells/Pockets | THF 50<br>with dedicated<br>Accessories | THF 50<br>with dedicated<br>Accessories | THF 105<br>THF C105 | THF 140<br>THF C140 | THF 230<br>THF C230 |
| Direct<br>Installation                | TDF 27                                  | TDF 38                                  | TDF 85              | TDF 120             | TDF 210             |

ACCURACY PAIR OF TEMPERATURE SENSORS



## INSTALLATION KITS

### Direct installation

| Kits                                  | Type | Article-No. |
|---------------------------------------|------|-------------|
| EBS DN15 G $\frac{3}{4}$ "x110-D-KH   | J    | 2433000106  |
| EBS DN15 G $\frac{3}{4}$ "x110-D      | I    | 2434000106  |
| EBS DN20 G1"x130-D-KH                 | J    | 2431000106  |
| EBS DN20 G1"x130-D                    | I    | 2432000106  |
| EBS DN20 G1"x190-D-KH                 | J    | 2481000106  |
| EBS DN20 FL 190-D                     | K    | 2483000106  |
| EBS DN25 G1 $\frac{1}{4}$ "x150-D-KH  | O    | 2426007006  |
| EBS DN25 G1 $\frac{1}{4}$ "x 260-D-KH | O    | 2426007006  |
| EBS DN25 G1 $\frac{1}{4}$ "-D-KH      | N    | 2436007206  |
| EBS DN25 FL 260-D-KH                  | P    | 2484007006  |
| EBS DN25 FL-D-KH                      | Q    | 2436007306  |
| EBS DN32 G1 $\frac{1}{2}$ "x -D-KH    | N    | 2437007206  |
| EBS DN40 FL 300-D-KH                  | P    | 2485007006  |
| EBS DN40 FL-D-KH                      | Q    | 2438007306  |
| EBS DN40 G2"x 200-D-KH                | O    | 2430007006  |
| EBS DN40 G2"-D-KH                     | N    | 2438007206  |
| EBS DN40 G2"x 300-D-KH                | O    | 2427007006  |

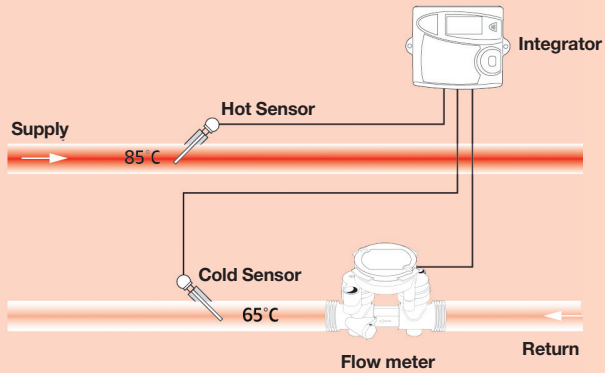
### Pocket installation

| Kits                  | Type | Article-No. |
|-----------------------|------|-------------|
| EBS DN50 FLx270       | G    | 2451000006  |
| EBS DN50-80           | H    | 2463000006  |
| EBS DN50 FLx200       | G    | 2455000006  |
| EBS DN65 FLx200       | G    | 2456000006  |
| EBS DN65 FLx300       | G    | 2452000006  |
| EBS DN80 FLx300       | G    | 2453000006  |
| EBS DN80 FLx225       | G    | 2457000006  |
| EBS DN100 FLx250      | G    | 2458000006  |
| EBS DN100 FLx360      | H    | 2454000006  |
| EBS DN100-200 Tauchh. | H    | 2464000006  |

| Kits                                                                                                                             | G | H | I | J | K | N | O | P | Q |
|----------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|
| Ball valve with DS measuring entry            |   |   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 x Ball valve                                |   |   |   | ✓ |   |   |   |   |   |
| 2 x Ball valve (one with DS measuring entry)  |   |   |   |   |   | ✓ | ✓ | ✓ | ✓ |
| 2 x Pocket and welding piece                  | ✓ | ✓ |   |   |   |   |   |   |   |
| Connector set                                 |   |   | ✓ |   |   | ✓ | ✓ |   |   |
| Distance pipe                                 | ✓ |   | ✓ | ✓ | ✓ |   | ✓ | ✓ |   |

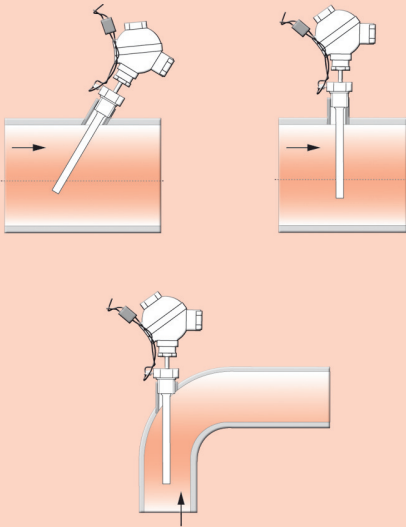


### HEATING APPLICATION

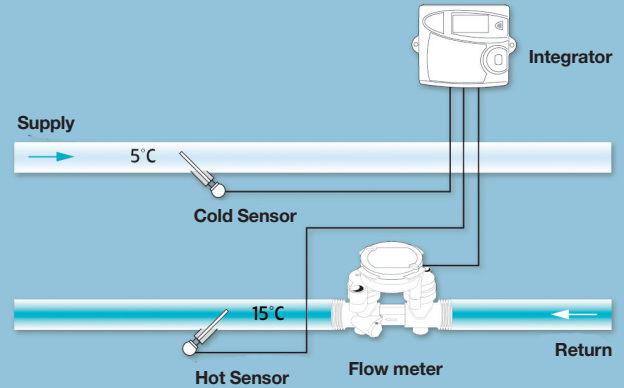


#### > Temperature sensors installation best practices for Heating application

- Sensor pockets and connected sleeves must be installed head upwards.

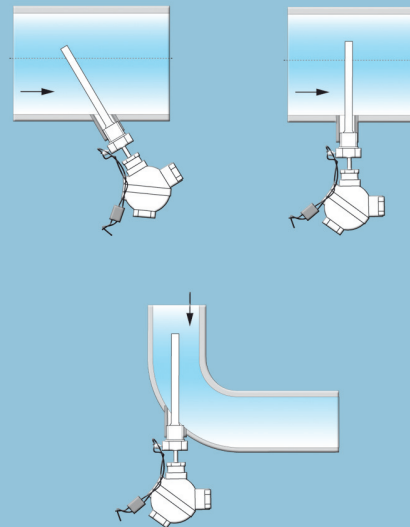


### COOLING APPLICATION



#### > Temperature sensors installation best practices for Cooling and Combined applications

- To prevent water condensation, sensor pockets and connected sleeves must be installed head downwards.
- To prevent rusted terminals, head temperature sensors should be potted with resin.
- Never use oil or grease to lubricate pockets. Use silicon instead.





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