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

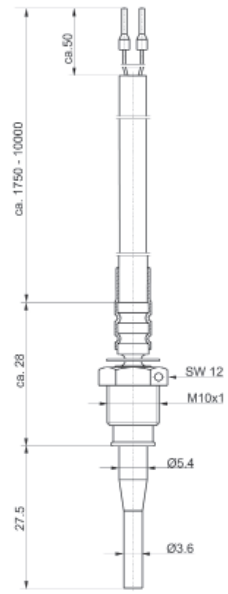
- Direct installation and pocket installation
- Temperature measurement in closed-loop pipe systems of building service areas to measure cooling- and heating energy
- Temperature measurement for energy measurements for district heating and cooling

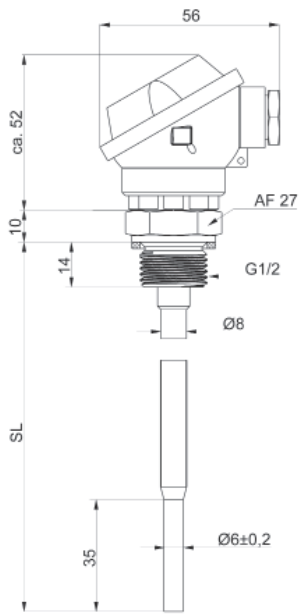
TEMPERATURE SENSORS – OVERVIEW

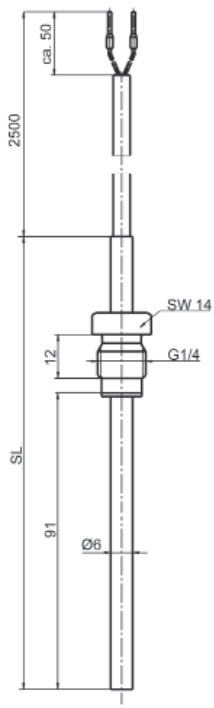
Direct Installation

	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 temperature	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

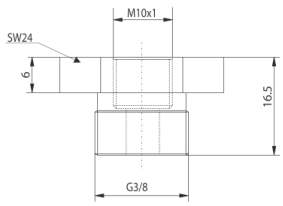
Measuring resistance	Pt 100 / Pt 500
Standard compliance	EN 1434 / EN 60751
Connection	2-wire
Temperature range	0 to 150 °C
Temperature difference	3 to 150 K
Response behavior T0,5	2 s
Environmental temperature	0 to 70 °C
Sleeve diameter	5,4 stepped down to 3,6 mm
Fitting length	27,5 mm
Connection thread	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 G½”	M10 / ½” IG	5239
M10x1 screw-in fitting	M10 / M10	0930



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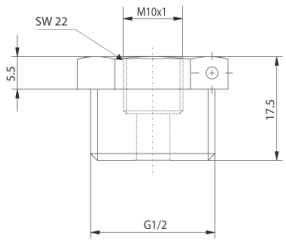

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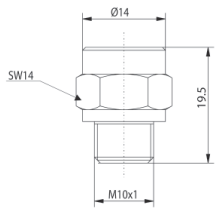

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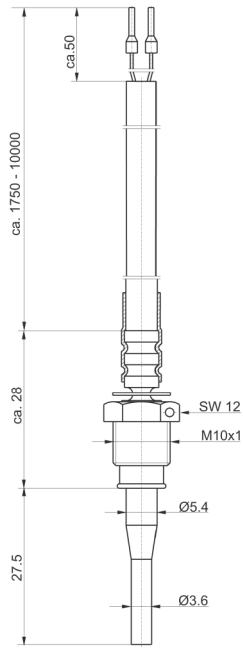
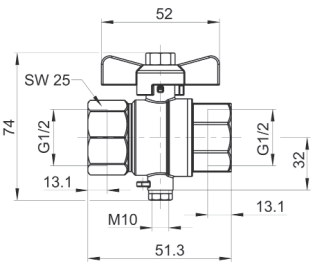


Accessories

Ball valves		Article-No.
Ball valve ½“-D-complete	½“ IG	10195
Ball valve ¾“-D-complete	¾“ IG	2671
Ball valve 1“-D-complete	1“ IG	4795

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



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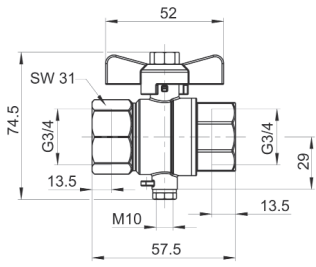

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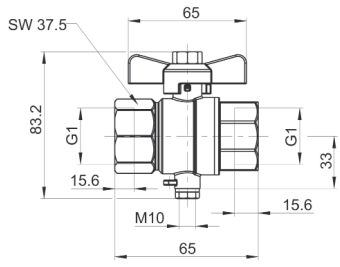
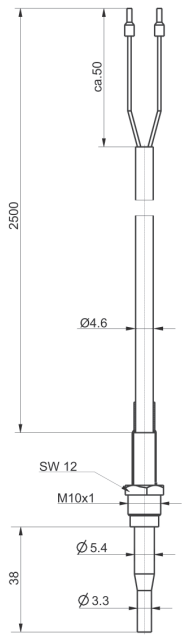


4795

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

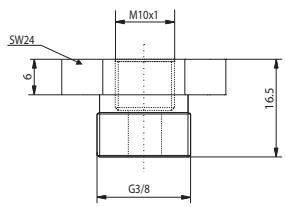


Items

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 G½”	M10 / ½” IG	5239
M10x1 screw-in fitting	M10 / M10	0930



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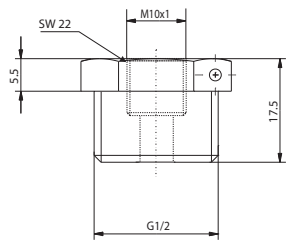

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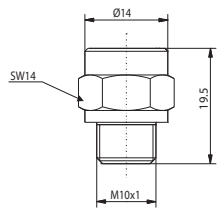
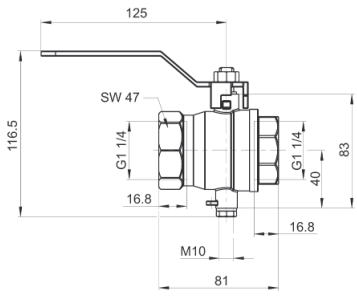


0930

Accessories

Ball valves		Article-No.
Ball valve 1 ¼“-D-complete	1 ¼“IG	14575
Ball valve 1 ½“-D-complete	1 ½“IG	14573

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



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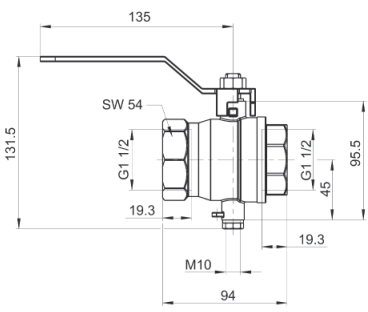


14573

TEMPERATURE SENSOR FOR DIRECT INSTALLATION
TDF 85 / 120 / 210

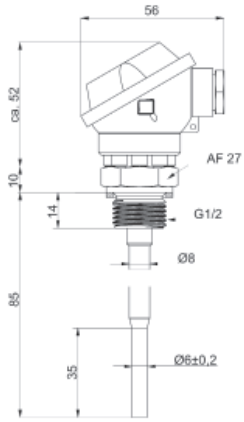
Technical Data

Measuring resistance	Pt 100
Standard compliance	EN 1434 / EN 60751
Connection	2-wire 4-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	8 stepped down to 6 mm
Fitting length	85 / 120 / 210 mm
Connection thread	G 1/2
Connection cable	Silicone
Wire cross section	2x/4x0,75 mm²
Protection class	IP 65

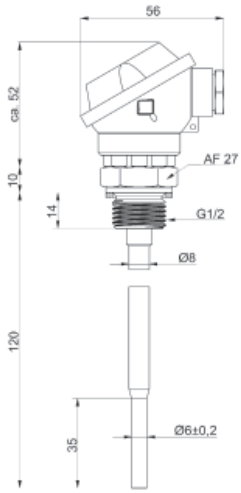
Items

Type*	PT	Article-No.
TDF 85	Pt 100	2951513006
TDF 120	Pt 100	2952513006
TDF 210	Pt 100	2953513006

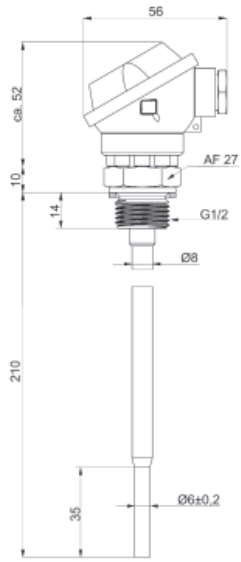
*without connection cable, please see accessoriies for possible connection cables



TDF 85



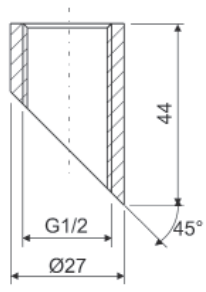
TDF 120



TDF 210

Accessories

Welding Sleeve	Article-No.
AM ½"x44 mm / 45°	0649

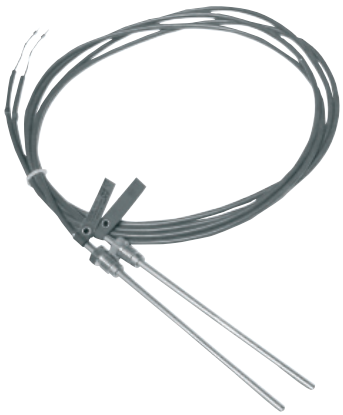


Connection Cable

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

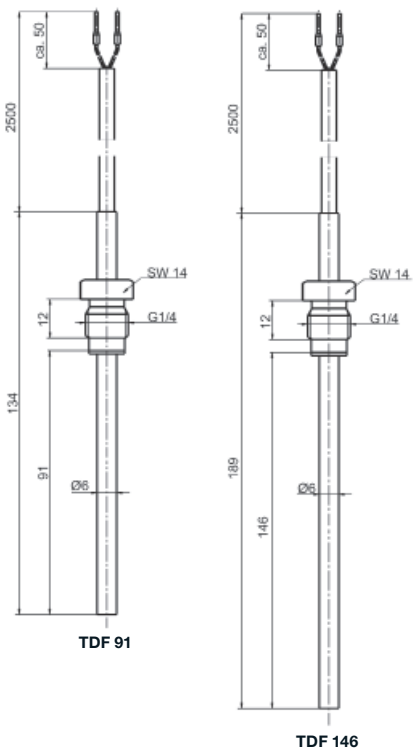
COMBINED TEMPERATURE SENSOR TDF 91 / 146

- 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



TDF 91

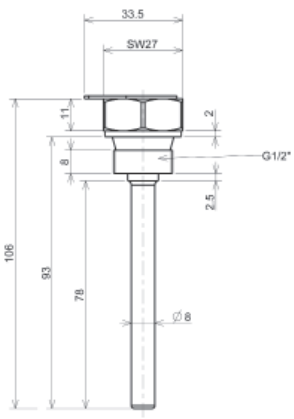
TDF 146

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



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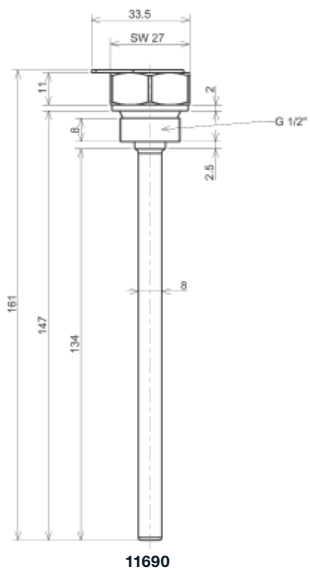
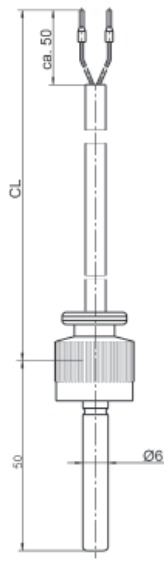


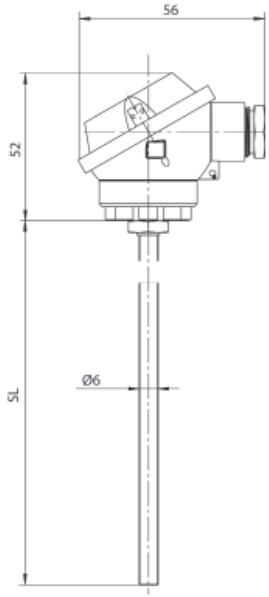
11690

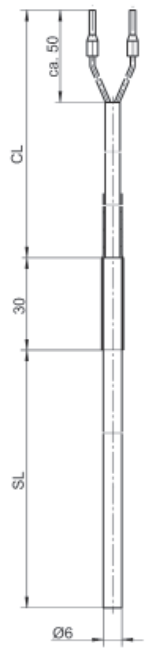
Pocket Installation

	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



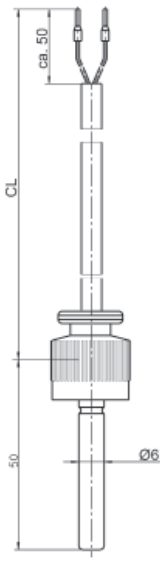




TEMPERATURE SENSOR FOR POCKET INSTALLATION
THF 50

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 mm² (spiral cable 2x0,25 mm²)
Protection class	IP 65
Maximum pressure	PN 25



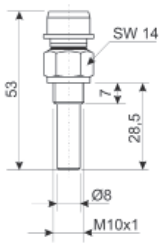
Items

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 ¼" x 28 mm	¼" AG	PN 10	6811
TH ½" x 33,5 mm	½" AG	PN 10	2680
TH ½" x 75 mm	½" AG	PN 10	15141



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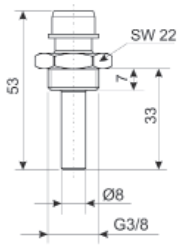

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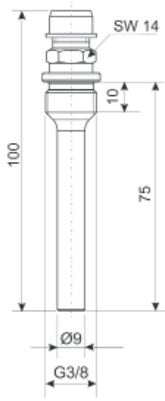

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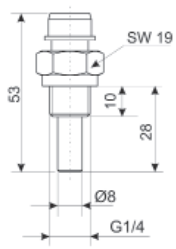

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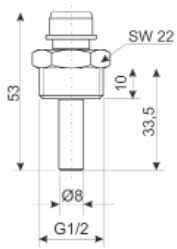

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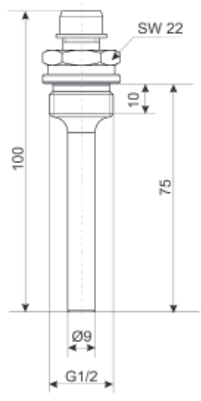
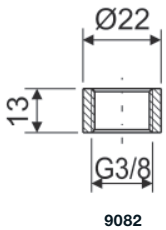


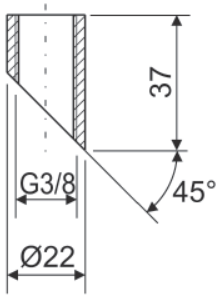
15141

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

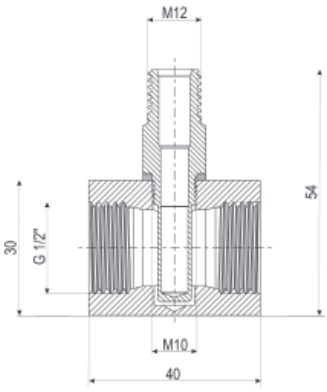


9082



9090

Supply pipe pockets		PN	Article-No.
VTTH ½"	½" IG	PN 10	13861
VTTH ¾" x 38 mm	¾" IG	PN 10	1838
VTTH 1" x 46 mm	1" IG	PN 10	9166



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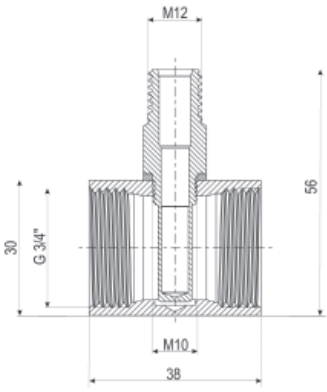

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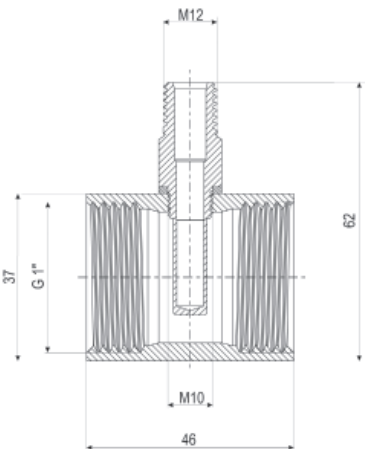


9166

TEMPERATURE SENSOR FOR POCKET INSTALLATION
THF 105 / 140 / 230

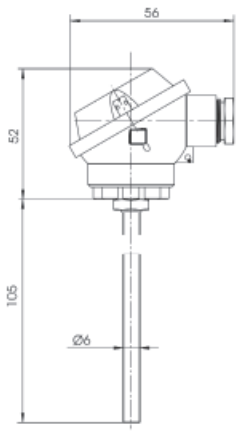
Technical Data

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

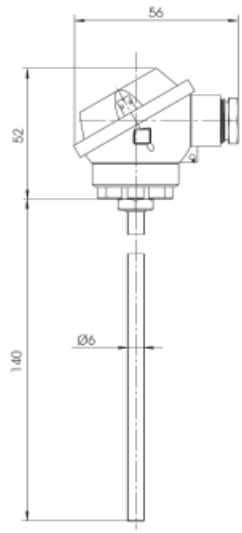
Items

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

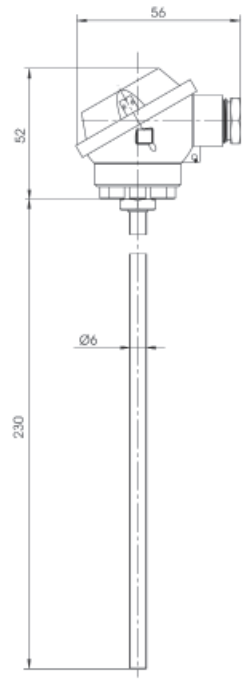
*without connection cable, please see accessories for possible connection cables



THF 105



THF 140



THF 230

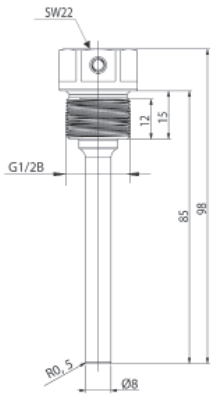
TEMPERATURE SENSOR FOR POCKET INSTALLATION
THF 105 / 140 / 230

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



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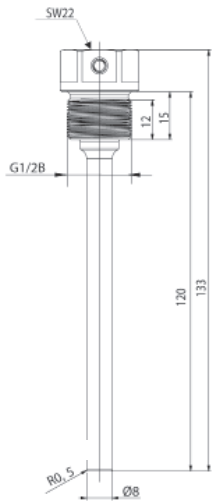
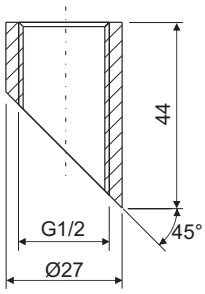


7266

13802

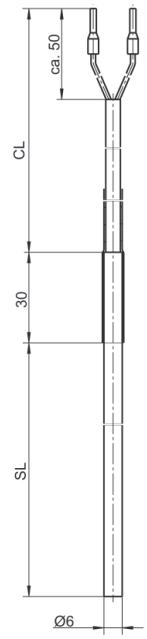
AM ½" x 44 mm / 45°	0649



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

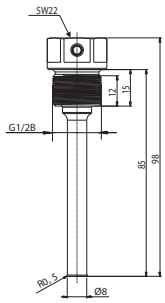
Type	Cable length*	Pt	2/4-wire	Article-No.
THF-C105	2,50 m	Pt 100	2-wire	5530831306
THF-C105	5,00 m	Pt 100	4-wire	5530838506
THF-C105	2,50 m	Pt 500	2-wire	5529837106
THF-C105	5,00 m	Pt 500	4-wire	5529839506
THF-C105	10,00 m	Pt 500	2-wire	5529837706
THF-C140	2,50 m	Pt 100	2-wire	5531831306
THF-C140	5,00 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 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



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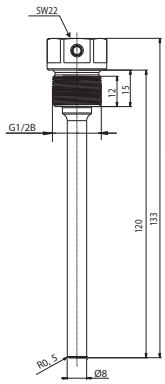

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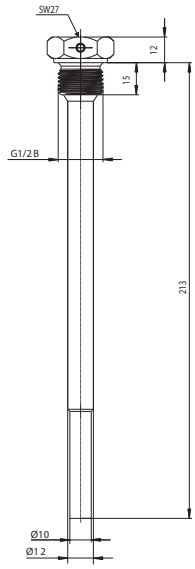
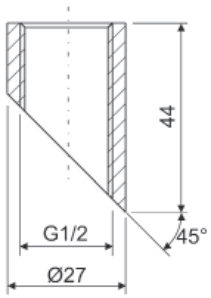


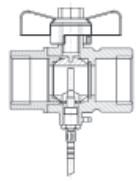
13802

Welding Sleeves	Article-No.
AM ½" x 44 mm / 45°	0649



MOUNTING OPTIONS FOR TEMPERATURE SENSORS

1

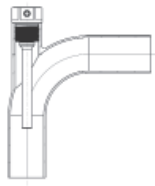


Option 1 – Installation in threaded pipe fitting and ball valve

» direct installation

» probe axis perpendicular to axis of fitting and in same plane

2



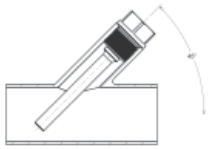
Option 2 – Installation in Bend

» direct installation

» pocket installation

» probe axis coincident with pipe axis

3



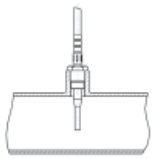
Option 3 – Installation in angled probe

» direct installation

» pocket installation

» temperature sensing element inserted to pipe axis or beyond

4



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.

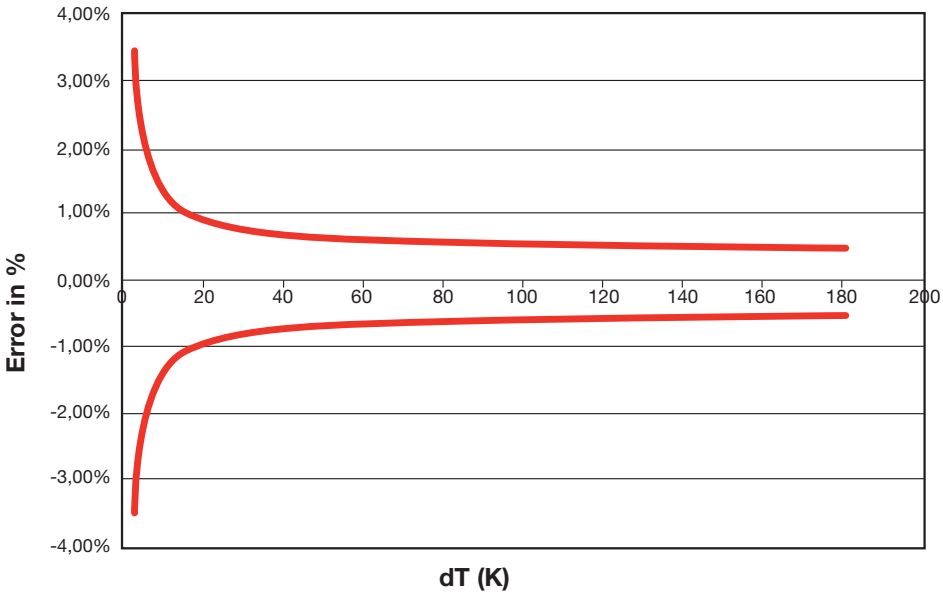
» In case of strong sources for electromagnetic disturbances (e.g. high power machines and pumps, frequency and power converters, power switches, neon tubes) it´s recommended to increase the minimum distance to meter signal cables to 50 cm.

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

ACCURACY PAIR OF TEMPERATURE SENSORS



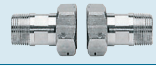
INSTALLATION KITS

Direct installation

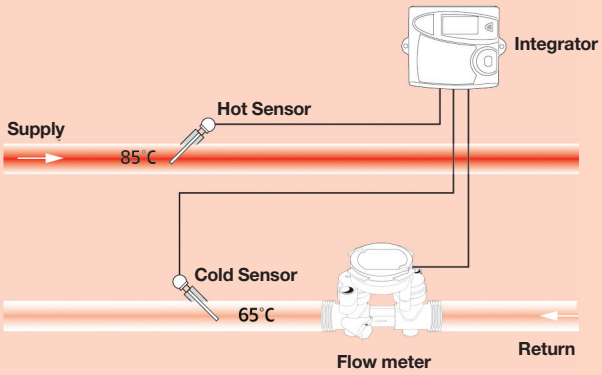
Kits	Type	Article-No.
EBS DN15 G¾”x110-D-KH	J	2433000106
EBS DN15 G¾”x110-D	I	2434000106
EBS DN20 G1”x130-D-KH	J	2431000106
EBS DN20 G1”x130-D	I	2432000106
EBS DN20 G1”x190-D-KH	J	2481000106
EBS DN20 FL 190-D	K	2483000106
EBS DN25 G1¼”x150-D-KH	O	2426007006
EBS DN25 G1¼”x 260-D-KH	O	2426007006
EBS DN25 G1¼”-D-KH	N	2436007206
EBS DN25 FL 260-D-KH	P	2484007006
EBS DN25 FL-D-KH	Q	2436007306
EBS DN32 G1½”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

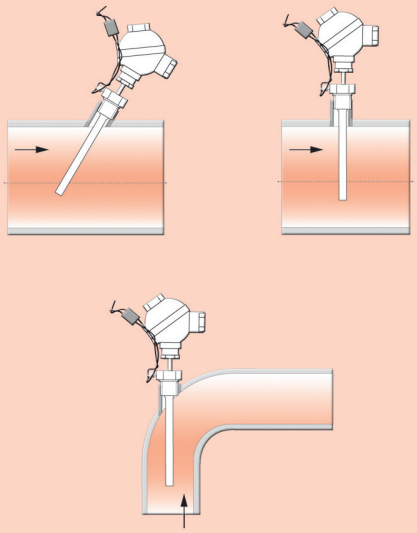
Kits	Type	Article-No.
EBS DN50 FLx270	G	2451000006
EBS DN50-80	H	2463000006
EBS DN50 FLx200	G	2455000006
EBS DN65 FLx200	G	2456000006
EBS DN65 FLx300	G	2452000006
EBS DN80 FLx300	G	2453000006
EBS DN80 FLx225	G	2457000006
EBS DN100 FLx250	G	2458000006
EBS DN100 FLx360	H	2454000006
EBS DN100-200 Tauchh.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

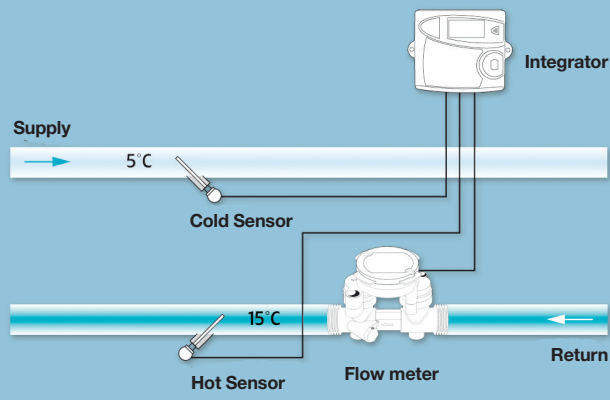
HEATING APPLICATION



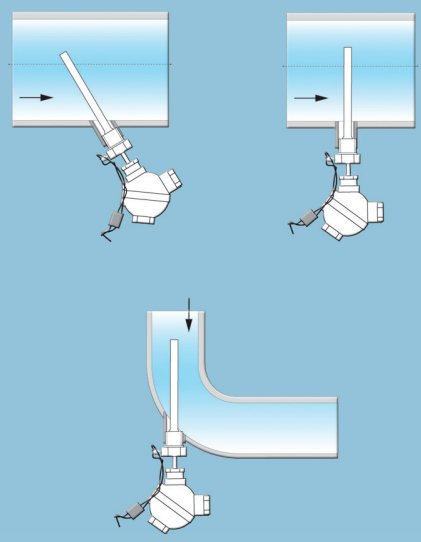
> **Temperature sensors installation best practices for Heating application**
- Sensor pockets and connected sleeves must be installed head upwards.



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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