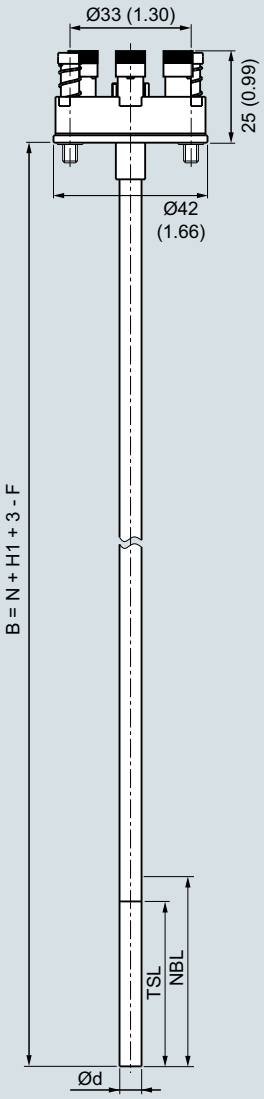
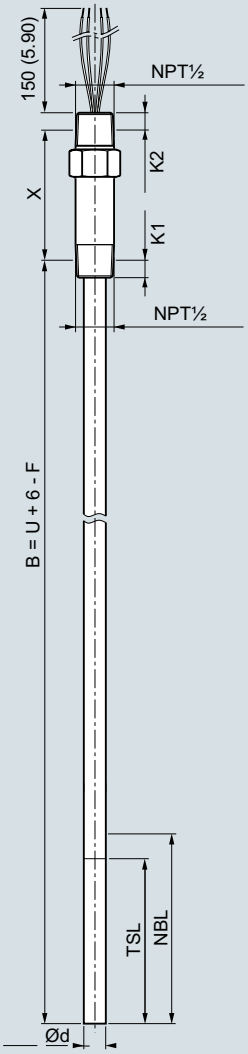
Dimensional drawings

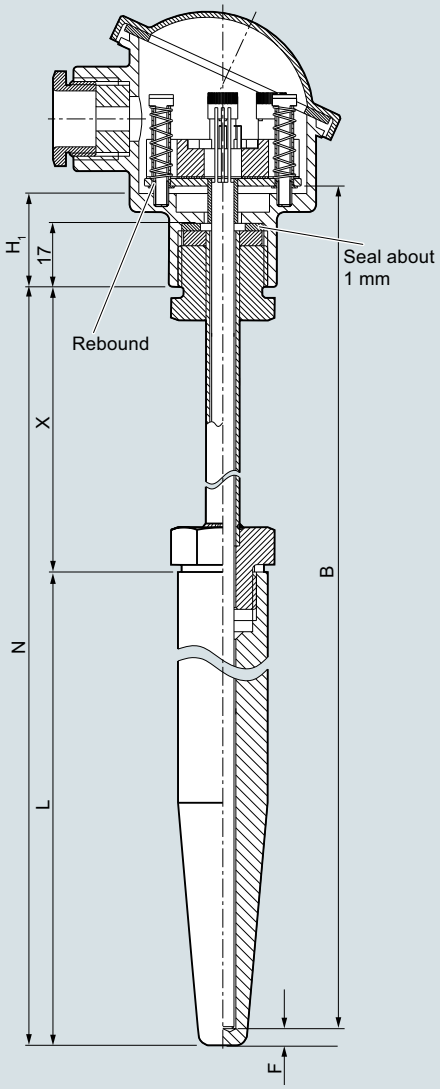
European type



American type



Determination of the measuring insert length



B	Measuring insert length	K1	Screw depth
Ød	Measuring insert outer diameter	K2	Screw depth
N	Nominal length	L/U	Thermowell length U for Form 2*/ 3*/ 4F L for Form 4
NBL	Non-bending length	H_1	Type Axx = 41 (1.61) Type Bxx = 26 (1.02)
TSL	Temperature-sensitive length		
F	Floor strength Type 2: 3 (0.12) Type 3: 6 (0.24) Type 4: 4 (0.16) ASME types: 6.4 (0.25); round down to 6 (0.24)		
X	Extension length		

Recommended rebound:
European versions with ceramic base = 3 (0.12)
European versions with transmitter = 1 (0.04)
American versions: 6.4 (0.25); round down to 6 (0.24)

Example calculations

European measuring insert (with ceramic base)
Connection head BC0, Thermowell Form 2F, U = 225 mm, X = 64
B = U + X + H1 + 3 – F
B = 225 + 64 + 26 + 3 – 3 = 315

American measuring insert
Connection head AG0, Thermowell Form 4, L = 200 mm
B = L + 6 - F
B = 200 + 6 – 4 = 202

For the NTP thread, please take tolerances into consideration and select a shorter sensor or use PTFE tape for mounting, for example: -3 (0.12).

SITRANS TSinsert measuring inserts for temperature sensors, replaceable, mineral-insulated design
European type (DIN ceramic base), spring load approx. 6 mm (0.24 inch)/3 mm (0.12 inch) with transmitter
American type, spring load approx. 21 mm (0.83 inch); determination of measuring insert length, dimensions in mm (inch);
Cold End types: see drawings on page 2/103

Measuring inserts for retrofits and upgrades European and American type

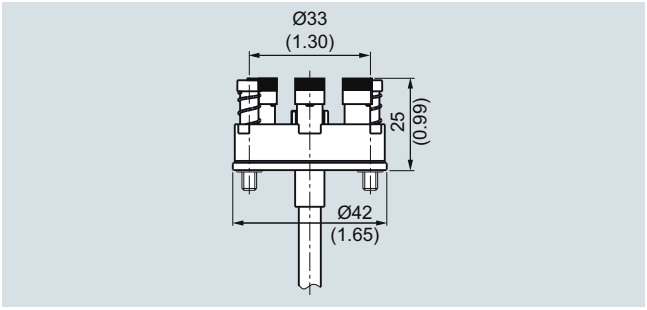
Selection and Ordering data	Article No.
SITRANS TSinsert for temperature sensors, replaceable, mineral-insulated design, European or American type	**7MC701** -
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Measurement tip diameter	
6 mm (0.24 inch)	**6**
8 mm (0.31 inch) (with sleeve)	**8**
10 mm (0.39 inch) (with sleeve)	**0**
Type	
European type - DIN ceramic base	**1**
European type - DIN flying leads, absolutely necessary with built-on transmitter	**2**
American type - ANSI (nipple spring)	**5**
Sensor[1)]	
Please note: The accuracy class range can be lower than the measuring range. For more information, see page 2/18	
Pt100, basis, -50 ... +400 °C (-58 ... +752 °F)	**A**
Pt100, vibration-resistant, -50 ... +400 °C (-58 ... +752 °F)	**B**
Pt100, expanded range, Umin = 100 mm -196 ... +600 °C (-321 ... +1 112 °F)	**C**
Thermocouple Type J, -40 ... +750 °C (-40 ... +1 382 °F)	**J**
Thermocouple Type K, -40 .. . +1 000 °C (-40 ... +1 832 °F)	**K**
Thermocouple Type N, -40 ... +1 000 °C (-40 ... +1 832 °F)	**N**
Sensor number/Accuracy	
Circuit Pt 100: 1 x 4-wire circuit or 2 x 3-wire circuit, see "Measuring technique: Connection types", page 2/20	
Single, basic accuracy (Class 2/Class B)	**A**
Single, increased accuracy (Class 1/Class A)	**B**
Single, highest accuracy (Class AA)	**C**
Double, basic accuracy (Class 2/Class B)	**D**
Double, increased accuracy (Class 1/Class A)	**E**
Double, highest accuracy (Class AA)	**F**
Measuring insert length B, standard	
145 mm (6.89 inch)	**1 3**
205 mm (8.07 inch)	**1 7**
275 mm (10.83 inch)	**2 1**
315 mm (12.40 inch)	**2 3**
345 mm (13.58 inch)	**2 4**
375 mm (14.76 inch)	**2 5**
405 mm (15.94 inch)	**2 7**
435 mm (17.13 inch)	**2 0**
555 mm (21.85 inch)	**3 5**
585 mm (23.03 inch)	**3 6**

Selection and Ordering data	Article No.
SITRANS TSinsert for temperature sensors, replaceable, mineral-insulated design, European or American type	**7MC701** -
Measuring insert length B, customer-specific	
specify length with Y44, s. page 2/93	
85 ... 100 mm (3.37 ... 3.94 inch) Initial: 100 mm (3.94 inch)	**1 1**
101 ... 150 mm (3.98 ... 5.91 inch) Initial: 145 mm (5.71 inch)	**1 3**
151 … 200 mm (5.95 ... 7.87 inch) Initial: 200 mm (7.87 inch)	**1 5**
201 … 250 mm (7.91 ... 9.84 inch) Initial: 205 mm (8.07 inch)	**1 7**
251 … 300 mm (9.88 ... 11.81 inch) Initial: 275 mm (10.83 inch)	**2 1**
301 … 350 mm (11.85 ... 13.78 inch) Initial: 315 mm (12.40 inch)	**2 3**
351 … 400 mm (13.82 ... 15.75 inch) Initial: 375 mm (14.76 inch)	**2 5**
401 … 450 mm (15.79 ... 17.72 inch) Initial: 405 mm (15.94 inch)	**2 7**
451 … 500 mm (17.76 ... 19.68 inch) Initial: 500 mm (19.68 inch)	**3 1**
501 … 550 mm (19.72 ... 21.65 inch) Initial: 525 mm (20.67 inch)	**3 3**
551 … 600 mm (21.69 ... 23.92 inch) Initial: 555 mm (21.85 inch)	**3 5**
601 … 700 mm (23.66 ... 27.56 inch) Initial: 655 mm (25.79 inch)	**3 7**
701 … 800 mm (27.60 ... 31.50 inch) Initial: 735 mm (28.94 inch)	**4 1**
801 … 900 mm (31.54 ... 35.43 inch) Initial: 825 mm (32.48 inch)	**4 3**
901 … 1 000 mm (35.47 ... 39.37 inch) Initial: 950 mm (37.40 inch)	**4 5**
1 001 … 1 500 mm (39.41 ... 59.05 inch) Initial: 1 250 mm (49.21 inch)	**4 7**
1 501 … 2 000 mm (59.09 ... 78.74 inch) Initial: 1 700 mm (66.93 inch)	**4 8**

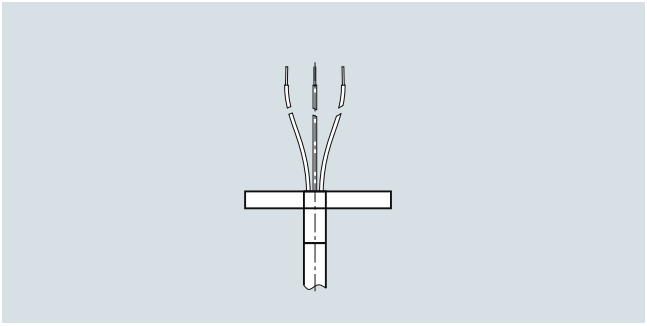
[1)] Pt1000 versions are also available. To find these, please switch to Online Configuration in the PIA Life Cycle Portal: www.siemens.com/pia-portal

Additional configurations on page after next page!

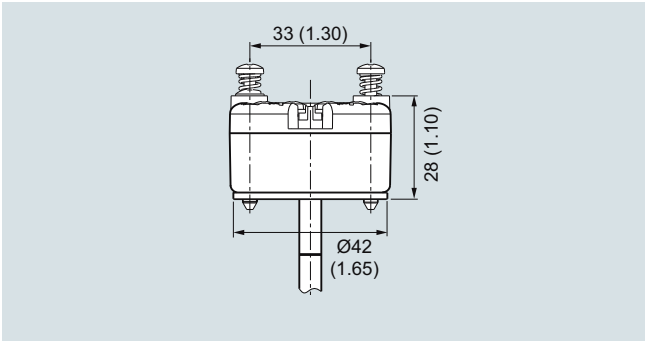
You find ordering examples on page 2/41!



Cold end type, ceramic base, dimensions in mm (inch)



Cold end type, free wire ends, dimensions in mm (inch)



European type:
cold end type, built-on transmitter, dimensions in mm (inch)

Measuring inserts for retrofits and upgrades European and American type

Selection and Ordering data	Order code
Further designs	
Add "**-Z**" to Article No. and specify Order code.	
Measuring insert length B Select range, enter desired length in plain text (No entry = standard length)	**Y44**
Options Add "**-Z**" to Article No. and add options, separate extensions with "+".	
Built-in head transmitter Measuring range to be set must be specified with plain text data "Y01".	
SITRANS TH100, 4 ... 20 mA, Pt100	**T10**
SITRANS TH100 Ex i (ATEX), 4 ... 20 mA, Pt100	**T11**
SITRANS TH200, 4 ... 20 mA, Universal	**T20**
SITRANS TH200 Ex i(ATEX), 4 ... 20 mA, Universal	**T21**
SITRANS TH300, HART, Universal	**T30**
SITRANS TH300 Ex i (ATEX), HART, Universal	**T31**
SITRANS TH400 PA, Universal	**T40**
SITRANS TH400 PA Ex i, Universal	**T41**
SITRANS TH400 FF, Universal	**T45**
SITRANS TH400 FF Ex i, Universal	**T46**
Explosion protection	
Without explosion protection requirements (Europe, Australia, New Zealand)	**E00**
Intrinsic safety "i"/"IS"[1] according to ATEX and IECEx (Europe, Australia, New Zealand)	**E01**
For SITRANS TS500 in flameproof enclosure "d"/"XP type of protection; dust protection through housing "t"/"DIP"[2] according to ATEX and IECEx (Europe, Australia, New Zealand)	**E03**
For SITRANS TS500 in non-sparking "nA"/"NI" according to ATEX and IECEx type of protection (Europe, Australia, New Zealand)	**E04**
Without explosion protection requirements (USA, Canada) Basis FM	**E10**
Flameproof enclosure "d"/"XP; dust protection through housing "t"/"DIP"[2] according to cFMus (USA); NPT connections at the enclosure are mandatory	**E13**
Flameproof enclosure "d"/"XP; dust protection through housing "t"/"DIP"[2] according to cFMus (USA, Canada); other connections (M,G,R)	**E14**
Non-sparking "nA"/"NI" according to cFMus (USA, Canada)	**E16**
Without explosion protection requirements (USA, Canada), Basis CSA	**E17**
Intrinsic safety "i"/"IS"[1] according to cCSAus (USA, Canada)	**E18**
For SITRANS TS500 in flameproof enclosure "d"/"XP type of protection; dust protection through housing "t"/"DIP"[2] according to cCSAus (USA, Canada); NPT connections **at the enclosure** are mandatory	**E20**
For SITRANS TS500 in flameproof enclosure "d"/"XP type of protection; dust protection through housing "t"/"DIP"[2] according to cCSAus (USA); other connections (M, G, R)	**E21**
For SITRANS TS500 in non-sparking "nA"/"NI" type of protection according to cCSAus (USA, Canada)	**E23**
Without explosion protection requirements (China)	**E54**
Intrinsic safety "i"/"IS"[1] according to NEPSI (China)	**E55**
For SITRANS TS500 in flameproof enclosure "d" type of protection; dust protection through housing "t"[2] according to NEPSI (China)	**E56**
For SITRANS TS500 in non-sparking "nA"/"NI" type of protection according to NEPSI (China)	**E57**
Without explosion protection requirements (EAC)	**E80**
Intrinsic safety "i"/"IS"[1] according to EACEx (EAC)	**E81**
For SITRANS TS500 in flameproof enclosure "d"/"XP type of protection; dust protection through housing "t"/"DIP"[2] according to EACEx (EAC)	**E82**
For SITRANS TS500 in non-sparking "nA"/"NI" type of protection according to EACEx (EAC)	**E83**

Selection and Ordering data	Order code
Marine approvals	
Det Norske Veritas Germanischer Lloyd (DNV GL)	**D01**
Bureau Veritas (BV)	**D02**
Lloyd's Register of Shipping (LR)	**D04**
American Bureau of Shipping (ABS)	**D05**
Designation, calibration	
Stainless steel TAG plate , enter lettering in plain text	**Y15**
Plant calibration per 1 point, enter temperature in plain text	**Y33**
Transmitter options	
Transmitter, enter complete setting in plain text (Y01:+/-NNNN ... +/-NNNN C,F)	**Y01**
Enter measuring point (max. 8 characters) in plain text	**Y17**
Transmitter, enter measuring point description (max. 16 characters) in plain text	**Y23**
Transmitter, enter measuring point text (max. 32 characters) in plain text	**Y24**
Transmitter, enter bus address in plain text	**Y25**
Transmitter, fail-safe value 3.6 mA (instead of 22.8 mA)	**U36**
Transmitter with a SIL 2 conformity	**C20**
Transmitter with a SIL 2/3 conformity	**C23**
Transmitter test protocol (5 points)	**C11**

[1] Please select Ex i version of the optional transmitter.

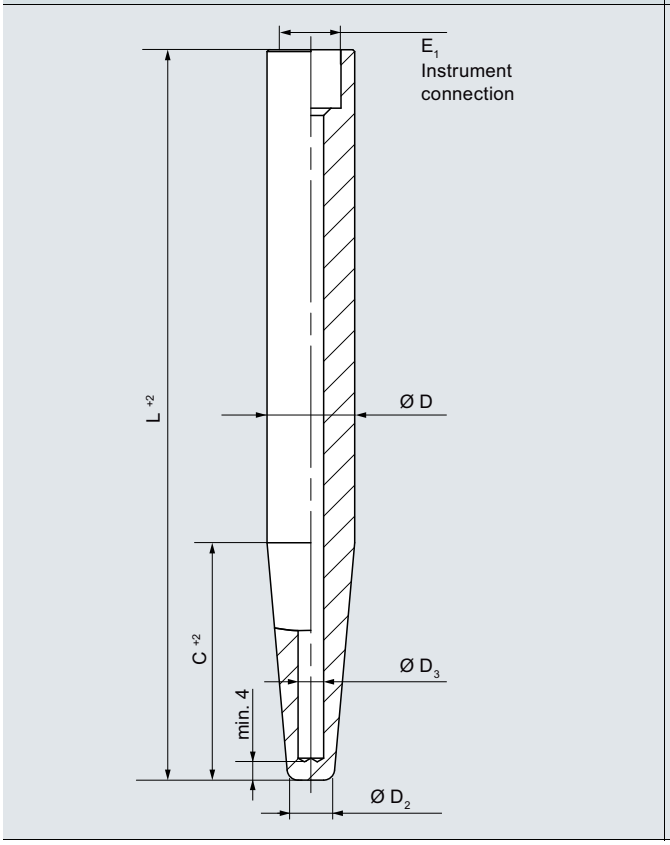
[2] Only with connection heads code AG0, AH0, AU0, AV0, without cable gland (please select non-Ex version of the optional transmitter).

You find ordering examples on page 2/41.
Accessories, see page 2/238.

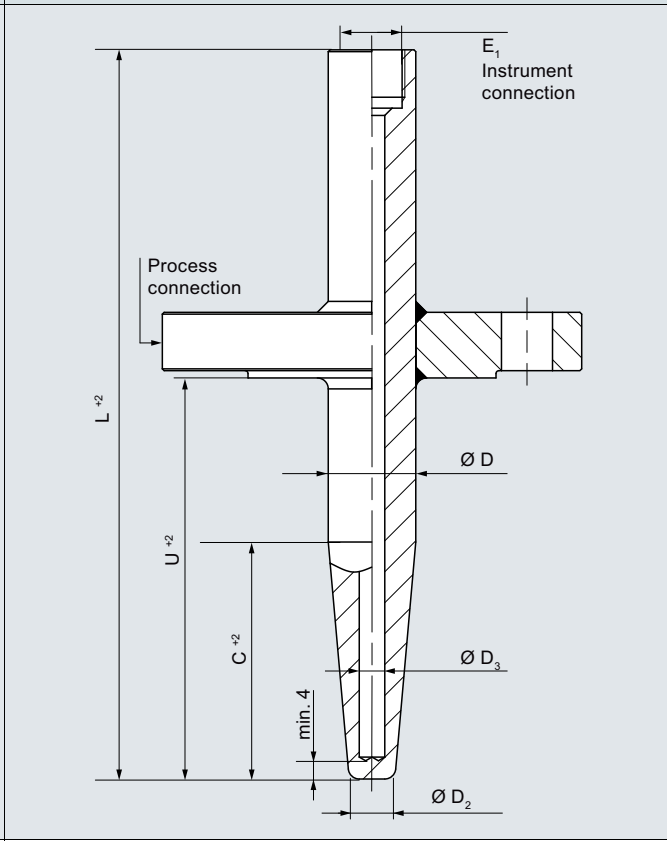
Dimensional drawings

Thermowells according to DIN 43772 - Form 4

7MT14, welded



7MT14, flange connection



Since March 2000, DIN 43772 replaces the retracted DIN 43763: 1986-03

The name of the D sleeves is from the previous standard but still used today. The table below shows the order information for the corresponding successor products from DIN 43772.

Design	L [mm]	C [mm]	Ordering data
D1	140	65	**7MT1410-2*N00-0NQ2**
D2	200	125	**7MT1410-4*N00-0NQ4**
D4	200	65	**7MT1410-4*N00-0NQ2**
D5	260	125	**7MT1410-5*N00-0NQ4**

Material:

*** = A**: 1.4571
*** = B**: 1.4404
*** = S**: 1.7335
*** = T**: 1.5415

Thermowells according to DIN 43772 - Form 4

2

Selection and Ordering data			Article No.	Order code
Thermowells made of barstock according to DIN 43772 - Form 4 ↗			7MT	- -
↗ Click on the Article No. for the online configuration and configuration check in the PIA Life Cycle Portal.				
Basic model				
Standard	**Process connection**	**Form**		
DIN	Weld-in/flange connection	Form 4/4F	14	
External diameter of root D	**External diameter of tip D2**	**Bore hole D3**		
24 mm	12.5 mm	7 mm	1	
26 mm	12.5 mm	7 mm	2	
32 mm	17 mm	11 mm	3	
Thermowell length L				
110 mm			01	
140 mm			02	
170 mm			03	
200 mm			04	
260 mm			05	
410 mm			06	
Thermowell material				
316Ti / 1.4571			A	
316L / 1.4404			B	
Hastelloy C276 / 2.4819			E	
1.7335 Heat-resistant			S	
1.5415 Heat-resistant			T	
PTFE coating (thermowell made of 316/TI/L)			U	
ECTFE (HALAR) (thermowell made of 316/TI/L)			V	
Stellite coating (thermowell made of 316/TI/L)			W	
Customer-specific thermowell			98 N	Y99 + Y46
Process connection material				
Without (Form 4 for welding)			N	
316Ti / 1.4571			A	
316L / 1.4404			B	
Hastelloy C276 / 2.4819 (flange with flanged wheel)			E	
1.7335 Heat-resistant			S	
1.5415 Heat-resistant			T	
PTFE coating (thermowell made of 316/TI/L)			U	
ECTFE (HALAR) (thermowell made of 316/TI/L)			V	
Stellite coating (thermowell made of 316/TI/L)			W	
Process connection				
Without (Form 4 for welding)			00	
Flange according DIN EN 1092-1 Sealing surface Initial: B1 for uncoated variants				
• DN 40, PN 10 - 16			32	
• DN 40, PN 25 - 40			33	
• DN 50, PN 10 - 16			34	
• DN 50, PN 25 - 40			35	
Flansch according ASME B16.5 Sealing surface Initial: RF for uncoated variants				
• 1.50 inch; Class 150			60	
• 1.50 inch; Class 300			61	
• 1.50 inch; Class 600			62	
• 2.00 inch; Class 150			66	
• 2.00 inch; Class 300			67	
• 2.00 inch; Class 600			68	
Customer-specific process connection			Z88	K1Y
Installation length U				
For welding (no process connection)			0N	
130 mm			0A	
190 mm			0B	
340 mm			0C	
Customer-specific installation length			8Y	Y44

Selection and Ordering data	Article No.	Order code
Thermowells made of barstock according to DIN 43772 - Form 4	**7 M T** ▪▪▪▪ - ▪▪▪▪▪ - ▪▪▪▪	▪▪▪
Connection to thermometer E1 (female thread)		
M18x1.5	**Q**	
M20x1.5	**R**	
M27x2.0	**T**	
½-14 NPT	**U**	
G½	**W**	
G¾	**X**	
Special version	**Z**	**Q 1 Y**
Cone length C		
Without (straight)	**0**	
65 mm	**2**	
73 mm	**3**	
125 mm	**4**	
133 mm	**5**	
275 mm	**6**	

Selection and Ordering data	Order code
Options	
Add "**-Z**" to Article No. and add options, separate extensions with "+".	
Acceptance test certificate according to EN 10204-3.1	
Material certificate for wetted parts	**C12**
PMI (positive material ident.) for wetted parts	**C15**
Pressure test	**C31**
Helium leak test	**C32**
Surface crack test	**C33**
Visual, dimensional and functional check	**C34**
Compliance with order	**C35**
X-ray test concentricity of bore hole	**C47**
X-ray test concentricity of bore hole	**C48**
MR-01-75 NACE conformity	**C50**
MR-01-03 NACE conformity	**C53**
Grease-free (cleaned for oxygen applications, for example)	**C51**
Additional options	
Thread protection stainless steel plug and chain	**A55**
Forged flange	**A76**
Sealing surface with concentric lines	**A77**
TAG-marking	**Y15**

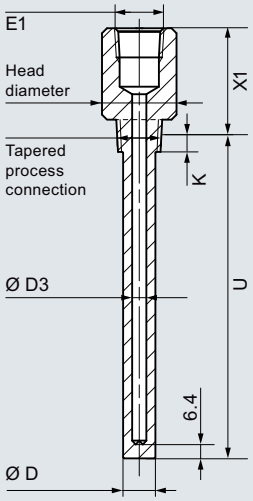
Selection and Ordering data	Order code
Surface treatment, options on request	
Wetted parts stained, neutralized and passivated	**W01**
Wetted parts electropolished	**W02**
Additional flange sealing surfaces	
FF-Flat Face according to ASME B16.5	**A70**
RTJ-Ring-Type Joint according to ASME B16.5	**A71**
Type B2 according to EN1092-1	**A72**
Type C according to EN1092-1	**A73**
Type D according to EN1092-1	**A74**
Additional information	
Add "**-Z**" to Article No. and specify Order code.	
Additional information in plain text: Process connection (material, type)	**K1Y**
Additional information in plain text: Connection to thermometer E1	**Q1Y**
Customer specific production	
Processing and quotation number of special version: specify in plain text	**Y99**

2

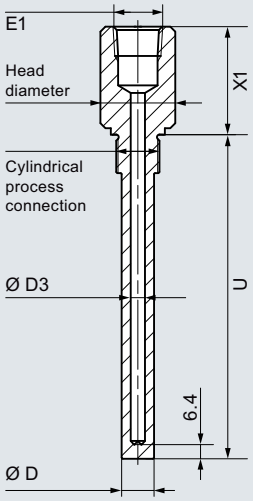
Dimensional drawings

Thermowells according to ASME B 40.9

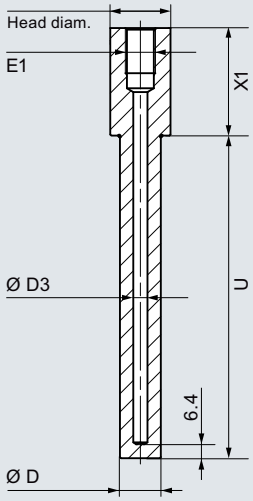
7MT21, for screwing in, straight, tapered process connection



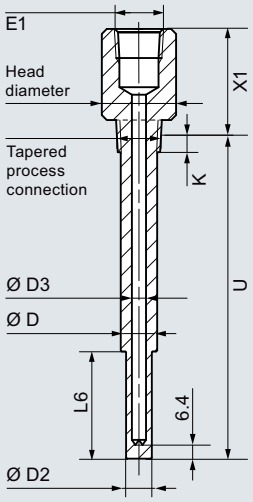
7MT21, for screwing in, straight, cylindrical process connection



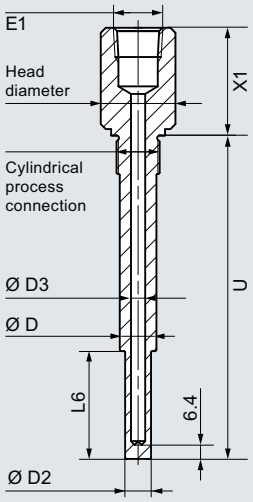
7MT31, for weld-in, straight



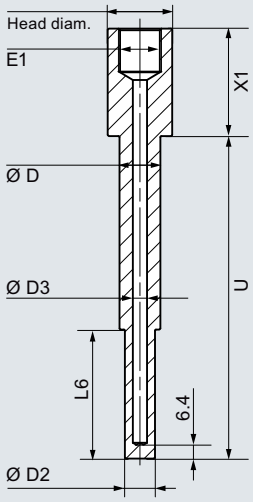
7MT22, for screwing in, reduced, tapered process connection



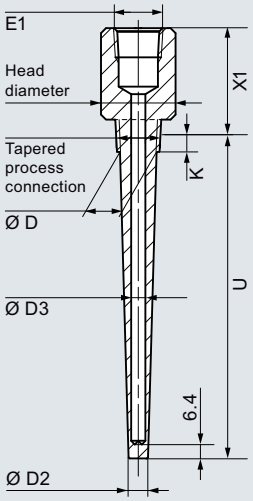
7MT22, for screwing in, reduced, cylindrical process connection



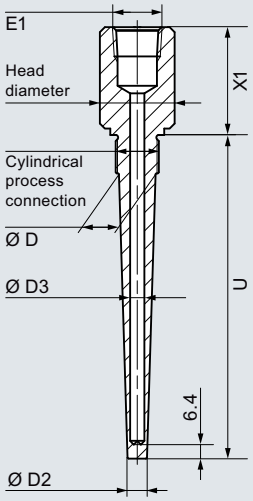
7MT32, for weld-in, reduced



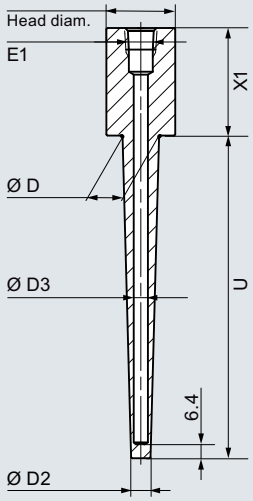
7MT23, for screwing in, tapered, tapered process connection



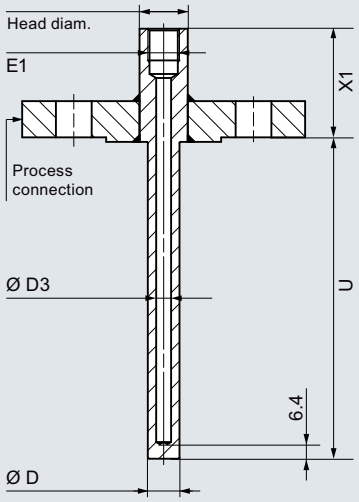
7MT23, for screwing in, tapered, cylindrical process connection



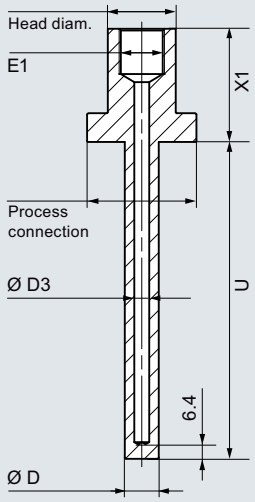
7MT33, for weld-in, tapered



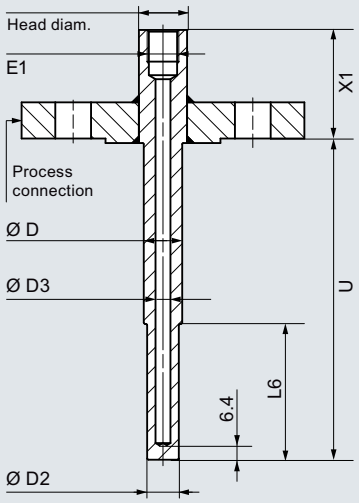
7MT41, flange connection, straight



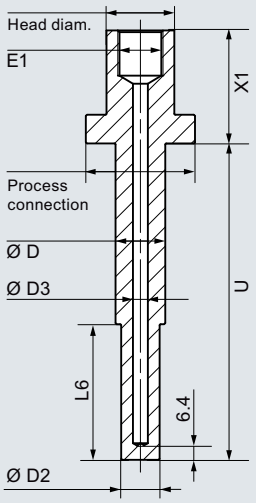
7MT51, Van Stone type, straight



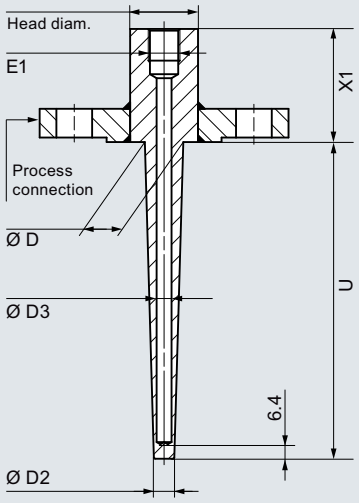
7MT42, flange connection, reduced



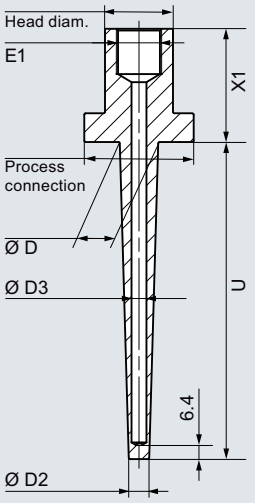
7MT52, Van Stone type, reduced



7MT43, flange connection, tapered



7MT53 Van Stone type, tapered



Thermowells according to ASME B40.9

2

Selection and Ordering data — Article No. — Order code

Thermowells made of barstock according to ASME 40.9 — 7MT ■■■■ - ■■■■ - ■■■ ■■■

↗ Click on the Article No. for the online configuration and configuration check in the PIA Life Cycle Portal.

Basic model

Standard	Process connection	Form		
ASME	For screwing in	Straight	↗	21
ASME	For welding	Straight	↗	31
ASME	Flange connection	Straight	↗	41
ASME	Van Stone type	Straight	↗	51
ASME	For screwing in	Reduced	↗	22
ASME	For welding	Reduced	↗	32
ASME	Flange connection	Reduced	↗	42
ASME	Van Stone type	Reduced	↗	52
ASME	For screwing in	Tapered	↗	23
ASME	For welding	Tapered	↗	33
ASME	Flange connection	Tapered	↗	43
ASME	Van Stone type	Tapered	↗	53

Connection to thermometer E1

M18x1.5	1
M20x1.5	2
½-14 NPT	5
G½	7
Special version	9 — Y99

Head diameter of the thermowell

For screwing in - width across flats	For welding	Flange connection	Van Stone head/process connection	
	26.7 mm			0
H27	33.4 mm	28.6 mm	33.4 mm / 51 mm	1
	48.3 mm	30 mm	48.3 mm / 73 mm	2
H32		32 mm	60.3 mm / 92 mm	3
H36		34 mm		4
H42		38 mm		5

Head length X1

	Screw-in	Weld-in	Flange	Van Stone	
25 ... 50 mm: Initial 45 mm	✔	✔	✔		0
51 ... 75 mm: Initial 64 mm	✔	✔	✔	✔	1
76 ... 101 mm: Initial 89 mm	✔	✔	✔	✔	2
102 ... 126 mm: Initial 114 mm	✔	✔	✔	✔	3
127 ... 151 mm: Initial 140 mm	✔	✔	✔	✔	4
152 ... 177 mm: Initial 165 mm	✔	✔	✔	✔	5
178 ... 202 mm: Initial 191 mm	✔	✔	✔		6

Installation length U

25 ... 126 mm: Initial 25 mm	A
127 ... 253 mm: Initial 127 mm	B
254 ... 380 mm: Initial 254 mm	C
381 ... 507 mm: Initial 381 mm	D
508 ... 634 mm: Initial 508 mm	E
635 ... 761 mm: Initial 635 mm	F
762 ... 888 mm: Initial 762 mm	G

Selection and Ordering data — Article No. 7MT□□□□-□□□□□-□□□□ — Order code □□□

Thermowells made of barstock according to ASME 40.9

Thermowell material

	Screw-in	Weld-in	Flange	Van Stone	
316L / 1.4404	✔	✔	✔	✔	B
Carbon steel	✔	✔	✔		C
Hastelloy C276 / 2.4819 (flange with flanged wheel)			✔	✔	E
Hastelloy C22 / 2.4602 (flange with flanged wheel)			✔	✔	F
304L / 1.4306	✔	✔	✔	✔	H
321 / 1.4541	✔	✔	✔	✔	K
Monel alloy 400 / 2.4360 (flange with flanged wheel)			✔	✔	L
Tantalum (sleeve, thermowell, made of 316/TI/L)			✔		Q
Duplex / 1.4462			✔	✔	P
Super Duplex / 1.4410			✔	✔	R
PTFE coating (thermowell made of 316/TI/L)			✔	✔	U
ECTFE (HALAR) (thermowell made of 316/TI/L)			✔	✔	V
Stellite coating (thermowell made of 316/TI/L)			✔	✔	W
Customer-specific thermowell (head diameter/X1/U/material)	✔		✔	✔	9 8 N N G 1 Y

External diamater of root D/tip D2

Straight thermowell	**Reduced thermowell**		**Tapered thermowell**		
D	**D**	**D2**	**D**	**D2**	
0.50 in (12.7 mm)					0 0
0.625 in (15.9 mm)	0.625 in (15.9 mm)	0.5 in (12.7 mm)	0.625 in (15.9 mm)	0.5 in (12.7 mm)	0 1
0.75 in (19.1 mm)	0.75 in (19.1mm)	0.5 in (12.7 mm)	0.75 in (19.1mm)	0.5 in (12.7 mm)	0 2
1.00 in (25.4 mm)	1.00 in (25.4 mm)	0.5 in (12.7 mm)			0 3
1.25 in (31.8 mm)	1.25 in (31.8 mm)	0.5 in (12.7 mm)	1.00 in (25.4 mm)	0.50 in (12.7 mm)	0 4
1.50 in (38.1 mm)	1.50 in (38.1 mm)	0.5 in (12.7 mm)	1.00 in (25.4 mm)	0.75 in (19.1 mm)	0 5
			1.25 in (31.8 mm)	0.50 in (12.7 mm)	0 7
			1.25 in (31.8 mm)	0.75 in (19.1 mm)	0 8
D = 12 mm (0.47 in)			1.25 in (31.8 mm)	1.00 in (25.4 mm)	1 0
D = 14 mm (0.55 in)					1 1
D = 16 mm (0.63 in)			1.50 in (38.1mm)	0.50 in (12.7 mm)	1 2
D = 19 mm (0.75 in)			1.50 in (38.1 mm)	0.75 in (19.1 mm)	1 3
D = 22 mm (0.87 in)			1.50 in (38.1 mm)	1.00 in (25.4 mm)	1 4
D = 25 mm (0.98 in)			1.50 in (38.1 mm)	1.25 in (31.8 mm)	1 5
D = 27 mm (1.06 in)					1 6
			12 mm (0.47 in)	9 mm (0.35 in)	3 1
			14 mm (0.55 in)	9 mm (0.35 in)	3 3
			16 mm (0.63 in)	9 mm (0.35 in)	3 6
			16 mm (0.63 in)	13 mm (0.51 in)	3 7
			16 mm (0.63 in)	14 mm (0.55 in)	3 8
			19 mm (0.75 in)	9 mm (0.35 in)	4 1
			19 mm (0.75 in)	13 mm (0.51 in)	4 2
			19 mm (0.75 in)	14 mm (0.55 in)	4 3
			22 mm (0.87 in)	9 mm (0.35 in)	4 6
			22 mm (0.87 in)	13 mm (0.51 in)	4 7
			22 mm (0.87 in)	14 mm (0.55 in)	4 8
			22 mm (0.87 in)	16 mm (0.63 in)	5 0
			25 mm (0.98 in)	9 mm (0.35 in)	5 3
			25 mm (0.98 in)	13 mm (0.51 in)	5 4
			25 mm (0.98 in)	14 mm (0.55 in)	5 5
			25 mm (0.98 in)	16 mm (0.63 in)	5 6
			25 mm (0.98 in)	19 mm (0.75 in)	5 7
			27 mm (1.06 in)	9 mm (0.35 in)	6 1
			27 mm (1.06 in)	13 mm (0.51 in)	6 2
			27 mm (1.06 in)	14 mm (0.55 in)	6 3
			27 mm (1.06 in)	16 mm (0.63 in)	6 4
			27 mm (1.06 in)	19 mm (0.75 in)	6 5
			27 mm (1.06 in)	22 mm (0.87 in)	6 6
			32 mm (1.26 in)	9 mm (0.35 in)	7 0
			32 mm (1.26 in)	13 mm (0.51 in)	7 1

Thermowells according to ASME B40.9

2

Selection and Ordering data					Article No.	Order code
Thermowells made of barstock according to ASME 40.9					7MT ■■■■ - ■■■■■ - ■■■■	■■■
External diamater of root D/tip D2 (continued)						
Straight thermowell	**Reduced thermowell**		**Tapered thermowell**			
D	**D**	**D2**	**D**	**D2**		
			32 mm (1.26 in)	14 mm (0.55 in)	7 2	
			32 mm (1.26 in)	16 mm (0.63 in)	7 3	
			32 mm (1.26 in)	19 mm (0.75 in)	7 4	
			32 mm (1.26 in)	22 mm (0.87 in)	7 5	
			32 mm (1.26 in)	25 mm (0.98 in)	7 6	
			34 mm (1.34 in)	9 mm (0.35 in)	8 0	
			34 mm (1.34 in)	13 mm (0.51 in)	8 1	
			34 mm (1.34 in)	14 mm (0.55 in)	8 2	
			34 mm (1.34 in)	16 mm (0.63 in)	8 3	
			34 mm (1.34 in)	19 mm (0.75 in)	8 4	
			34 mm (1.34 in)	22 mm (0.87 in)	8 5	
			34 mm (1.34 in)	25 mm (0.98 in)	8 6	
Customer-specific	Customer-specific		Customer-specific		9 0	L 1 Y
Process connection						
Thread for 7MT2... (Screw-in thermowells)						
• G½"					1 A	
• G¾"					1 B	
• G1"					1 C	
• R½"					1 D	
• R¾"					1 E	
• R1"					1 F	
• ½" NPT					1 G	
• ¾" NPT					1 H	
• 1" NPT					1 J	
• M20 x 1.5					1 L	
• M27 x 2					1 M	
• M33 x 2					1 N	
Flange according to EN 1092-1 for 7MT4... (Flange thermowells), Sealing surface Initial: B1 for uncoated variants						
• DN 25, PN 10 - 40					2 D	
• DN 40, PN 10 - 40					2 F	
• DN 50, PN 10 - 16					2 H	
• DN 50, PN 25 - 40					2 J	
Flange according to ASME B16.5 for 7MT4... (Flange thermowells), Sealing surface Initial: RF for uncoated variants						
• 1.00 inch; Class 150					3 E	
• 1.00 inch; Class 300					3 F	
• 1.00 inch; Class 600					3 G	
• 1.50 inch; Class 150					3 K	
• 1.50 inch; Class 300					3 L	
• 1.50 inch; Class 600					3 M	
• 1.50 inch; Class 900					3 N	
• 1.50 inch; Class 1500					3 P	
• 1.50 inch; Class 2500					3 Q	
• 2.00 inch; Class 150					3 R	
• 2.00 inch; Class 300					3 S	
• 2.00 inch; Class 600					3 T	
• 3.00 inch; Class 150					4 C	
• 3.00 inch; Class 300					4 D	
• 3.00 inch; Class 600					4 E	
• 4.00 inch; Class 150					4 G	
• 4.00 inch; Class 300					4 H	
• 4.00 inch; Class 600					4 J	
For 7MT3... and 7MT5... (Weld-in and Van Stone thermowells)						
• Without (optional collar flange for Van-Stone see "Options")					0 N	

Selection and Ordering data	Screw-in	Weld-in	Flange	Van Stone	Article No. / Order code
Thermowells made of barstock according to ASME 40.9					7 M T ■■■■ - ■■■■■ - ■■■■ ■■■
Process connection material (identical to thermowell)					
316L / 1.4404	✔		✔	✔	B
Carbon steel	✔		✔		C
Hastelloy C276 / 2.4819 (Flange with flanged wheel)			✔		E
Hastelloy C22 / 2.4602			✔		F
304L / 1.4306	✔		✔		H
321 / 1.4541	✔		✔		K
Monel alloy 400 / 2.4360 (Flange with flanged wheel)			✔		L
Tantal (sleeve, thermowell made of 316/TI/L)			✔		Q
Duplex / 1.4462			✔		P
Super Duplex			✔		R
PTFE coating (thermowell made of 316/TI/L)			✔		U
ECTFE (HALAR) (thermowell made of 316/TI/L)			✔		V
Stellite coating (thermowell made of 316/TI/L)			✔		W
Customer-specific	✔		✔	✔	9 N N ■ N 1 Y
Bore D3					
D3 = 6.6 mm (0.260 in)					2
Customer-specific					9 R 1 Y

Auswahl- und Bestelldaten	Kurzangabe
Options	
Add "**-Z**" to Article No. and add options, separate extensions with "+".	
Acceptance test certificate according to EN 10204-3.1	
Material certificate for wetted parts	**C12**
PMI (positive material ident.) for wetted parts	**C15**
Pressure test	**C31**
Helium leak test	**C32**
Surface crack test	**C33**
Visual, dimensional and functional check	**C34**
Compliance with order	**C35**
X-ray test for welding seams	**C41**
Ultrasound test for welding seams	**C44**
X-ray test concentricity of bore hole	**C47**
Ultrasound test concentricity of bore hole	**C48**
MR-01-75 NACE conformity	**C50**
MR-01-03 NACE conformity	**C53**
Grease-free (cleaned for oxygen applications, for example)	**C51**
Additional options	
Thread protection stainless steel plug and chain	**A55**
Forged flange	**A76**
Sealing surface with concentric lines	**A77**
TAG-marking	**Y15**
Full penetration options	
Process connection welded	**G02**
Surface treatment, options on request	
Wetted parts stained, neutralized and passivated	**W01**
Wetted parts electropolished	**W02**

Auswahl- und Bestelldaten	Kurzangabe
Additional flange sealing surfaces	
FF-Flat Face according to ASME B16.5	**A70**
RTJ-Ring-Type Joint according to ASME B16.5	**A71**
Type B2 according to EN1092-1	**A72**
Type C according to EN1092-1	**A73**
Type D according to EN1092-1	**A74**
Additional information	
Add "**-Z**" to Article No. and specify Order code.	
Additional information in plain text: Thermowell (head diameter/X1/U/material)	**G1Y**
Additional information in plain text: AD root D / [tip D2]	**L1Y**
Additional information in plain text: Process connection (material/type):	**N1Y**
Additional information in plain text: Bore hole D3:	**R1Y**
Customer specific production	
Length options U: Specify special installation length (in spec. area)	**Y44**
Length options X1: Specify special length extension (in spec. area)	**Y45**
Processing and quotation number of special version: specify in plain text	**Y99**
Optional collar flanges 316L (Van Stone only)	
1.00 inch, Class 150 sealing surface initial: RF	**B24**
1.00 inch, Class 300 sealing surface initial: RF	**B25**
1.00 inch, Class 600 sealing surface initial: RF	**B26**
1.50 inch, Class 150 sealing surface initial: RF	**B29**
1.50 inch, Class 300 sealing surface initial: RF	**B30**
1.50 inch, Class 600 sealing surface initial: RF	**B31**
2.00 inch, Class 150 sealing surface initial: RF	**B35**
2.00 inch, Class 300 sealing surface initial: RF	**B36**
2.00 inch, Class 600 sealing surface initial: RF	**B37**

Temperature transmitters for mounting in the connection head

Overview

The following temperature transmitters are available for mounting in the connection head:

SITRANS TH100

Programmable two-wire temperature transmitter (4 to 20 mA), without electrical isolation, only for Pt100 resistance thermometers.

SITRANS TH200

Programmable two-wire temperature transmitter (4 to 20 mA), electrical isolation for resistance thermometers and thermocouple elements.

SITRANS TH300

Two-wire temperature transmitter with HART communication (4 to 20 mA), electrical isolation for resistance thermometers and thermocouple elements.

SITRANS TH400

Temperature transmitter with PROFIBUS PA or FOUNDATION Fieldbus connection, electrical isolation for resistance thermometers and thermocouple elements.

Note:

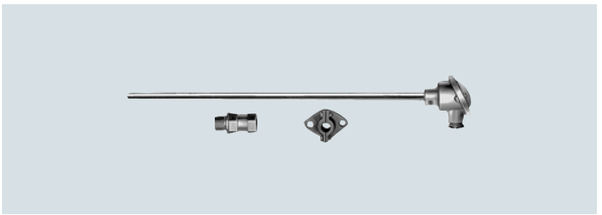
- SITRANS TH100/TH200/TH300/TH400 can be fitted instead of the terminal block or in the high hinged cover. Additional fitting only possible in high hinged cover.
- If using intrinsically-safe temperature sensors any installed temperature transmitters must also be intrinsically-safe.

Selection and Ordering Data

Detailed information on the transmitters can be found for the respective products under "Transmitters for temperature".

Transmitter to be fitted	Order code
To order the sensor with a built-in temperature transmitter, add "**-Z**" to the Article No. of the sensor, and supplement by the following Order code:	
SITRANS TH100, only for Pt100	
• Without Ex	**T10**
• EEx ia IIC and EEx n for zone 2	**T11**
• FM	**T13**
SITRANS TH200	
• Without Ex	**T20**
• EEx ia IIC and EEx n for zone 2	**T21**
• FM (IS, I, NI)	**T23**
SITRANS TH300	
• Without Ex	**T30**
• EEx ia IIC and EEx n for zone 2	**T31**
• FM (IS, I, NI)	**T33**
SITRANS TH400 PA	
• Without Ex	**T40**
• EEx ia	**T41**
SITRANS TH400 FF	
• Without Ex	**T45**
• EEx ia	**T46**
• Customer-specific setting of the built-in transmitter (specify settings in plain text)	**Y11**

Overview



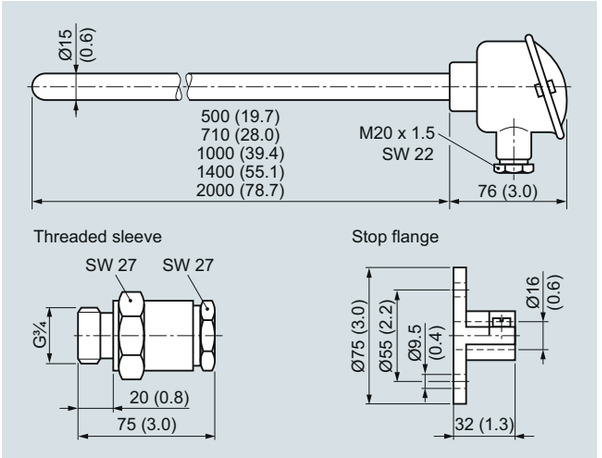
The flue gas resistance thermometer with connection head is suitable for the temperature range from -50 to +600 °C (-58 to +1112 °F) and can also be supplied with a built-in temperature transmitter.

Please order mounting flange or threaded sleeve separately.

Technical specifications

Design	According to DIN 43764: Thermometer without mount
Protective tube	
• Form	1, DIN 43772; cylindrical, 15 mm diameter (0.59 inch), wall thickness 3 mm (0.12 inch), seamless
• Material	St 35.8, mat. No. 1.0305, enamelled
• Loading capacity	1 bar (14.5 psi) above atmospheric, to DIN 43772
Measuring insert	Replaceable, with measuring insert tube (8 mm diameter (0.31 inch)) made of stainless steel; terminal block with clamping springs

Dimensional drawings



Flue gas resistance thermometer with connection head, dimensions in mm (inches)

Selection and Ordering data

		Article No.
Flue gas resistance thermometer		
Measuring resistor (winding) embedded in ceramic 1 Pt100 measuring resistor, three-wire circuit		
Mounting length/ mm (inch):	Weight/ kg (lb):	
• 500 (19.7)	0.9 (1.98)	↗ **7MC1000 - 1BA2** ■
• 710 (28.0)	1.1 (2.43)	↗ **7MC1000 - 2BA2** ■
• 1000 (39.4)	1.5 (3.31)	↗ **7MC1000 - 3BA2** ■
• 1400 (55.1)	1.9 (4.19)	↗ **7MC1000 - 4BA2** ■
• 2000 (78.7)	2.7 (5.95)	↗ **7MC1000 - 5BA2** ■
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Connection head, form B, made of cast light alloy, with 1 cable inlet and		
• Screw cover		**1**
• Standard hinged cover		**4**
• High hinged cover		**6**
Further designs Please add "-**Z**" to Article No. and specify Order code(s) and plain text.		Order code
Special version, specify in plain text		**Y98**
Process number for special version		**Y99**
TAG plate made of stainless steel specify TAG No. in plain text		**Y15**
Calibration carried out at one point, specify desired temperature in plain text (order equivalent number of times for several calibration points). If optional head transmitters are integrated, please note that all calibration points are located in the set measuring range. If the points are located outside the standard measuring range, a Y11 addition is always required.		**Y33**
Accessories		Article No.
Mounting flange Adjustable, to DIN 43734; Material: GTW 35, mat. No. 0.8035, for protective tube diameter 15 mm (0.59 inch), 0.3 kg (0.66 lb)		**7MC2998 - 5CA**
Gas-tight threaded sleeve Material: 9 SMnPb 28 Material No. 1.0718, for protective tube diameter 15 mm (0.59 inch), 0.4 kg (0.88 lb)		
• G¾ internal thread with gasket		**7MC2998 - 5DA**
• G½ internal thread with gasket		**7MC2998 - 5DC**

To order a temperature transmitter installed in the connection head and transmitters for SIL applications, see "Temperature transmitters for mounting in the connection head" (page 2/114).

Individual parts: Measuring inserts, see "Accessories".on page 2/117

Resistance thermometers for damp rooms

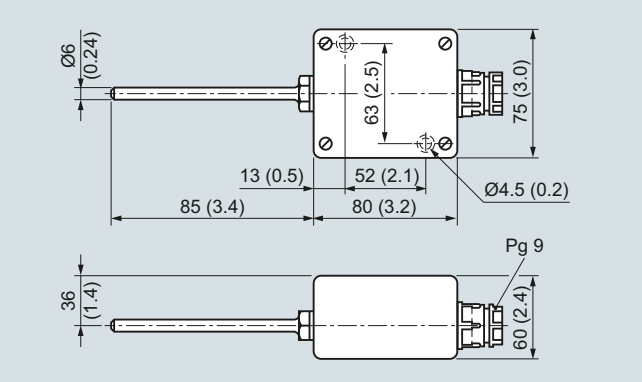
Overview

The resistance thermometer for damp rooms is suitable for a temperature range from -30 to +60 °C (-22 to +140 °F).

Technical specifications

Protective tube	Made of stainless steel
Connection head	Made of cast light alloy, with cable bushing; made of plastic on request
Measuring insert	1 or 2 Pt measuring resistors to DIN EN 60751, connection in three-wire or two-wire system, class B
Degree of protection	IP65 acc. to DIN EN 60529

Dimensional drawings



Resistance thermometer for damp rooms, dimensions in mm (inches)

Selection and Ordering data

	Article No.
Resistance thermometer for damp rooms stainless steel protective tube	
• with one Pt100 measuring resistor 0.1 kg (0.22 kg)	**7MC1027-1AA**
• with two Pt100 measuring resistors 0.1 kg (0.22 kg)	**7MC1027-1AB**
Further designs Please add "-**Z**" to Article No. and specify Order code(s) and plain text.	Order code
Special version, specify in plain text	**Y98**
Process number for special version	**Y99**
TAG plate made of stainless steel specify TAG No. in plain text	**Y15**
Calibration carried out at one point, specify desired temperature in plain text (order equivalent number of times for several calibration points). If optional head transmitters are integrated, please note that all calibration points are located in the set measuring range. If the points are located outside the standard measuring range, a Y11 addition is always required.	**Y33**

To order a temperature transmitter installed in the connection head and transmitters for SIL applications, see "Temperature transmitters for mounting in the connection head" (page 2/114).

Note:

Additional fitting of head mounted transmitter of SITRANS TH series is possible.

Welding-type protective tube

Welded-in protective tubes to DIN 43772 for SITRANS TS500

- Tapered shank with cylindrical welding stubs
- For measuring insert tube with 6 mm (0.24 inch)
- OD female thread M18 x 1.5

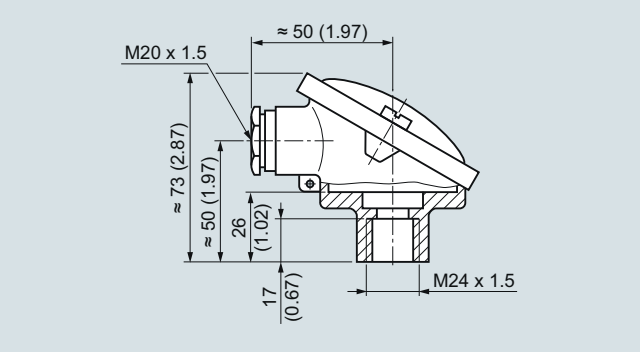
Neck tube

Extension tube for SITRANS TS500

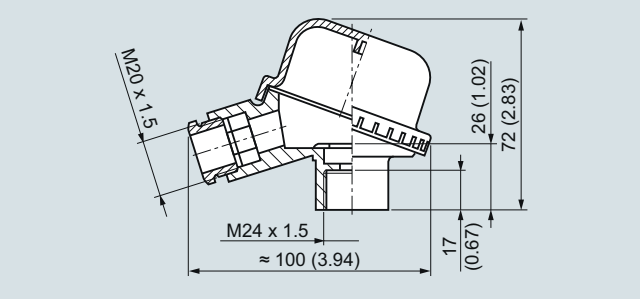
- Made of stainless steel, mat. No. 1.4571
- With threads at both ends
- For measuring insert tube with 6 mm (0.24 inch) OD

Dimensional drawings

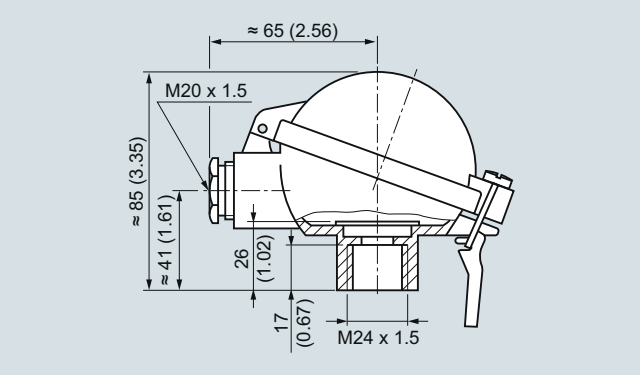
Connection head type B for SITRANS TS500



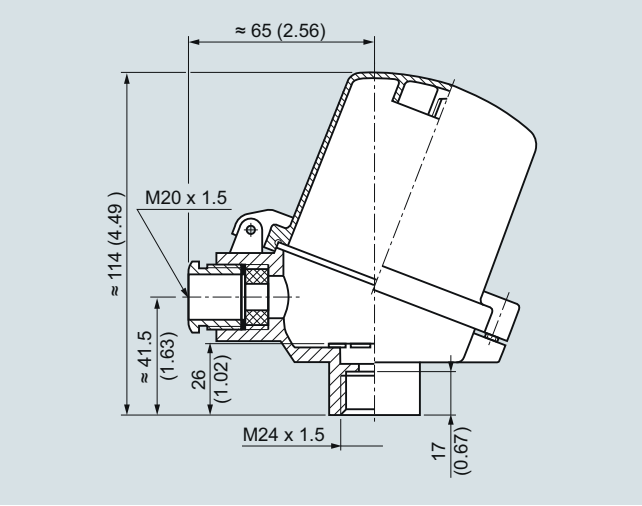
Connection head, Type B, degree of protection IP54, made of aluminium, with screw cover, dimensions in mm (inches)



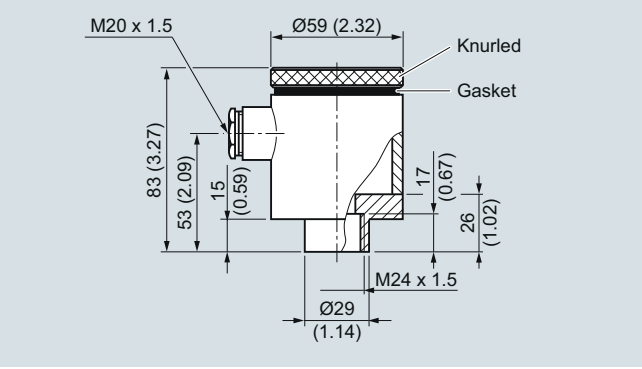
Connection head, Type B, degree of protection IP54, made of plastic, with screw cover, dimensions in mm (inches)



Connection head, Type B, degree of protection IP65, made of aluminium, with standard hinged cover, dimensions in mm (inches)



Connection head, Type B, degree of protection IP65, made of aluminium, with high hinged cover, dimensions in mm (inches)



Connection head, Type B-VA, degree of protection IP65, made of stainless steel, with screw cover, dimensions in mm (inches)

Selection and Ordering data

Article No.

Welded-in protective tubes to DIN 43772 for SITRANS TS500
Welding form 4
- Tapered shank with cylindrical welding stub
- For measuring insert tube with 6 mm (0.24 inch) OD
- OD female thread M18 x 1.5

Up to 540 °C (1004 °F)
Protective tube to DIN 43772, form 4 made of 13 CrMo 44, mat. No. 1.7335

Cone length C mm (inch)	Protective tube length L mm (inch)	Weight mm (inch)	
• 65 (2.56)	140 (5.51)	0.3 (0.66)	**7MC1905-1GA**
• 65 (2.56)	200 (7.87)	0.5 (1.1)	**7MC1905-2GA**
• 125 (4.92)	200 (7.87)	0.5 (1.1)	**7MC1905-3GA**
• 125 (4.92)	260 (10.24)	0.6 (1.32)	**7MC1905-4GA**

Up to 550 °C (1022 °F)
Protective tube to DIN 43772, form 4 made of 6 CrNiMoTi 17122, mat. No. 1.4571

Cone length C mm (inch)	Protective tube length L mm (inch)	Weight kg (lb)	
• 65 (2.56)	140 (5.51)	0.3 (0.66)	**7MC1905-1DA**
• 65 (2.56)	200 (7.87)	0.5 (1.1)	**7MC1905-2DA**
• 125 (4.92)	200 (7.87)	0.5 (1.1)	**7MC1905-3DA**
• 125 (4.92)	260 (10.24)	0.6 (1.32)	**7MC1905-4DA**

Selection and Ordering data

Article No.

Extension tube for SITRANS TS500
Neck tube for high-pressure screw-in resistance thermometer
made of stainless steel, mat. No. 1.4571, with thread at both ends, for measuring insert tube with 6 mm (0.24 inch) OD

Neck tube length mm (inch)	Total length of the resistance thermometer, without connection head mm (inch)	Protective tube length mm (inch)	Weight kg (lb)	
• 135 (5.31)	395 (15.55)	260 (10.24)	0.14 (0.31)	**7MC1906-1AA**
• 165 (6.50)	305/365 (12.01/14.37)	140/200 (5.51/7.87)	0.15 (0.33)	**7MC1906-2AA**
• 195 (7.68)	395 (15.55)	200 (7.87)	0.18 (0.40)	**7MC1906-3AA**
• 225 (8.86)	365 (14.37)	140 (5.51)	0.20 (0.44)	**7MC1906-4AA**
• 255 (10.04)	395 (15.55)	140 (5.51)	0.22 (0.49)	**7MC1906-5AA**

Selection and Ordering data

Article No

Connection head type B for SITRANS TS500

Degree of protection IP54
- Connection head type: similar to BA0; aluminium; Flange cover — **7MC1907-1BA**
- Connection head type: Similar to BM0; plastic; screw cover — **7MC1907-1BK**

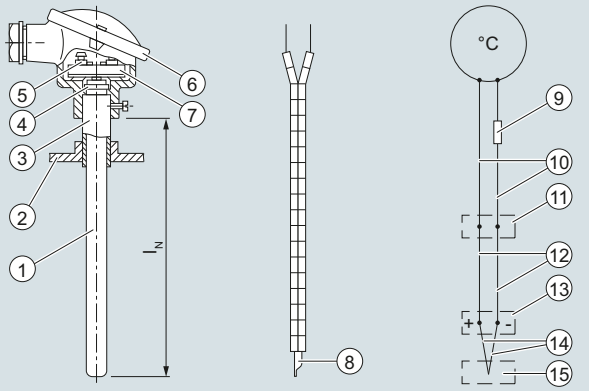
Degree of protection IP65
- Connection head type: Similar to BB0; aluminium; small hinged lid — **7MC1907-1BF**
- Connection head type: Similar to BC0; aluminium; high hinged lid — **7MC1907-1BL**
- Connection head type: B-VA, stainless steel — **7MC1907-1BV**
- Quick-release clamp for connection heads BB0, BC0, degree of protection of connection head reduced to IP20, weight: 0.02 kg (0.04 lb) — **7MC1907-1BS**

Design

A thermocouple comprises

- The thermocouple element (sensor) and
- The mounting and connection parts required in each case.

The thermocouple element is formed by two conductors of dissimilar metals or metal alloys which are soldered or welded together at one end, the measuring junction:



Cross section of thermocouple | Thermocouple element with insulating beads | Connection diagram

l_N Nominal length

1. Ceramic protective tube
2. Locating flange
3. Support tube
4. Retaining ring
5. Terminal
6. Connection head
7. Terminal block
8. Temperature sensor
9. Balancing resistor
10. Lead
11. Cold junction
12. Extension lead
13. Connection point
14. Thermocouple element with positive and negative legs
15. Measuring junction

Thermocouple element

Function

Measuring principle of the thermocouple element

If the measuring junction is exposed to a temperature different from that at the free ends of the thermocouple, a voltage (the thermoelectric voltage, Seebeck effect) is produced at these free ends. The magnitude of the thermoelectric voltage depends on the difference in temperature between the measuring junction and the free ends, and on the combination of materials in the thermocouple. Since a thermocouple always measures a temperature difference, the free ends of the thermocouple must be connected to a reference junction (cold junction) and held constant at a known temperature.

Calibration data for thermoelectric voltages and permissible deviations

The calibration data and the permissible deviations for commonly used thermocouples are defined isee Technical Data, Table "Calibration data for thermoelectric voltages and error limits").

The thermocouples Cu-CuNi and Fe-CuNi to DIN 43710 are used for replacement purposes. Thermocouples of class 2 are supplied as standard. For more accurate measurements, thermocouples are available with half the DIN tolerance or with a test certificate. The tolerances only apply to the condition upon delivery.

During operation at high temperatures, the tolerances of the thermocouples may change due to absorption of foreign matter, oxidation or evaporation of alloy components.

Mode of operation

The thermocouples are extended from the connection point to a point whose temperature is as constant as possible (the cold junction) by means of extension leads.

The extension leads have the same color code as the associated thermocouple elements; the positive pole is marked in red. Correct polarity must be ensured since otherwise large errors will occur. Up to 200 °C, the same calibration data and tolerances apply to the extension leads as to the corresponding thermo-couples.

The influence of temperature changes at the cold junction can be balanced by means of a compensating circuit, e.g. a compensating box. The reference temperature is 0 (32 °F) or 20 °C (68 °F).

It is also possible to keep the cold junctions at a constant temperature of 50, 60 or 70 °C (122, 140 or 158 °F) using a thermostat (for several measuring junctions).

The connections from the cold junction to the measuring or process instrument are made using copper leads. With energy-consuming instruments such as indicators or multipoint recorders, the complete measuring circuit (thermocouple, extension lead and copper lead) must be balanced in the operating condition using a resistor. SITRANS T transmitters and process recorders for connection to thermocouple elements have a built-in compensating circuit for balancing the effect of the ambient temperature on the cold junction. Lead balancing is not necessary in this case because of the high input impedance.

Protection fitting/protective tubes

The thermocouple can be protected against mechanical stress and chemical attack by a ceramic or metal protective tube which may be mounted using flanges, screwed glands or by welding into the pipeline or tank. The thermocouple element terminates in the connection head.

Installation examples with specification of the recommended thermocouples and protective tube materials are listed on pages "Technical Data"and "Installation Examples".

Owing to the different operating conditions, no guarantee can be given for protective fittings. The manufacturer is responsible for damages and measuring errors caused by wrong installation in compliance with the General Terms of Delivery if the instruments have been installed by the manufacturer and if the specifications for the operating conditions furnished by the customer were correct and sufficiently detailed.

Thermocouple elements are very compatible since it is almost always possible to adapt them in shape and size to the particular problem. The temperature-responsive part is almost point-shaped. Thermocouple elements are therefore particularly suitable for measuring rapidly changing temperatures.

Straight thermocouples to DIN 43733, with connection head

2

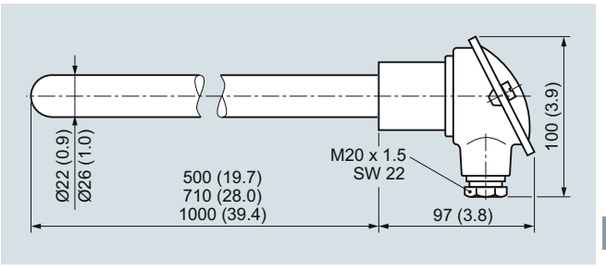
Overview

The straight thermocouple together with a metal protective tube is suitable for temperatures from 0 to 1250 °C (32 to 2282 °F) and can be supplied with a built-in temperature transmitter.

Technical specifications

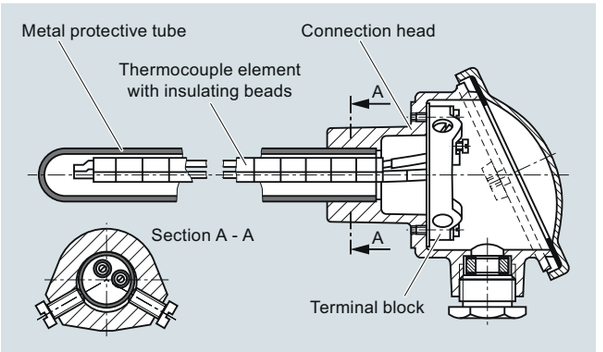
Thermocouples	Ni Cr/Ni type K
• Number	1 or 2
• Leg diameter	2 ... 3 mm (0.08 ... 0.12 inch)
• Insulation of legs	Insulating beads
Protective tube	Metal
Connection head	Form A, DIN 43729; made of cast light alloy, with one cable bushing

Dimensional drawings



Straight thermocouple, dimensions in mm (inches)

Design



Straight thermocouple with base-metal element Ni Cr/Ni with metal protective tube

Selection and Ordering data

	Article No.
Straight thermocouple with Ni Cr/Ni thermocouple (type K) with metallic protective tube ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	**7MC2000 - ■■■ 0 ■**
Nominal length Enter customer specific length with Y44, see Order codes below	
300 ... 500 mm (11.81 ... 19.68 inch) Initial: 500 mm (19.68 inch)	**1**
501 ... 710 mm (19.72 ... 27.95 inch) Initial: 710 mm (27.95 inch)	**2**
711 ... 1 000 mm (27.11 ... 39.37 inch) Initial: 1 000 mm (39.37 inch)	**3**
Protective tube	
to 1 000 °C (1 832 °F) X 10 CrAl 24, material No. 1.4762 Ø 22 mm x 2 mm (0.87 inch x 0.079 inch) Leg diameter 2 mm (0.08 inch)	**D**
to 1 100 °C (2 012 °F) X 18 CrN28, material No. 1.4749 Ø 26 mm x 4 mm (1.02 inch x 0.16 inch) Leg diameter 3 mm (0.12 inch)	**E**
to 1 200 °C (2 192 °F) X 15 CrNi Si 24 19, material No. 1.4841 Ø 22 mm x 2 mm (0.87 inch x 0.079 inch) Leg diameter 2 mm (0.08 inch)	**F**
to 1 250 °C (2 282 °F) CrAl 205 (Kantal AF), material No. 1.4767 Ø 22 mm x 2 mm (0.87 inch x 0.079 inch) Leg diameter 3 mm (0.12 inch)	**H**
Number of thermocouples	
1 thermocouple	**C**
2 thermocouples	**D**
Connection head, form A,	
made of cast light alloy, with 1 cable inlet and - screw cover	**1**
- high hinged cover	**6**

Selection and Ordering data

	Order code
Straight thermocouple with Ni Cr/Ni thermocouple (type K) for temperatures to 1250 °C (2282 °F); with metallic protective tube	
Further designs Please add "**-Z**" to Article No. and specify Order code(s) and plain text.	
Special version, specify in plain text	**Y98**
Process number for special version	**Y99**
TAG plate made of stainless steel specify TAG No. in plain text	**Y15**
Calibration carried out at one point, specify desired temperature in plain text (order equivalent number of times for several calibration points).	**Y33**
Insertion length customer-specific Select range, enter desired length in plain text (No entry = standard length)	**Y44**

To order a temperature transmitter installed in the connection head, see "Temperature transmitters for installation in the connection head" (page 2/114).

Installation of a transmitter is only possible here in the versions with a high hinged cover (7MC2000-....6).

Selection and Ordering data		Article No.
Metallic protective tubes for straight thermocouple elements according to DIN 43733		
X 10 CrAl 24, material No. 1.4762		
∅ 22 mm x 2 mm (∅ 0.87 inch x 0.08 inch), 0.55 ... 1.10 kg (1.21 ... 2.42 lb), dished		
Nominal length in mm (inch):	Protective tube length in mm (inch):	
• 500 (19.7)	520 (20.5)	**7MC2900-1DA**
• 710 (28.0)	730 (28.7)	**7MC2900-2DA**
• 1000 (39.4)	1020 (40.2)	**7MC2900-3DA**
X 10 CrAl 24, material No. 1.4749		
∅ 26 mm x 4 mm (∅ 1.02 inch x 0.16 inch), 1.25 ... 2.20 kg (2.76 ... 4.85 lb), dished		
Nominal length in mm (inch):	Protective tube length in mm (inch):	
• 500 (19.7)	520 (20.5)	**7MC2900-1EC**
• 710 (28.0)	730 (28.7)	**7MC2900-2EC**
• 1000 (39.4)	1020 (40.2)	**7MC2900-3EC**
X 15 CrNiSi 25 20, material No. 1.4841		
∅ 22 mm x 2 mm (∅ 0.87 inch x 0.08 inch), 1.05 kg (2.31 lb), dished		
Nominal length in mm (inch):	Protective tube length in mm (inch):	
• 1000 (39.4)	1020 (40.2)	**7MC2900-3FA**
CrAl 205 (Megapyr), material No. 1.4767		
∅ 22 mm x 2 mm (∅ 0.87 inch x 0.05 inch), 0.55 ... 1.10 kg (1.21 ... 2.42 lb)		
Nominal length in mm (inch):	Protective tube length in mm (inch):	
• 500 (19.7)	520 (20.5)	**7MC2900-1HA**
• 710 (28.0)	730 (28.7)	**7MC2900-2HA**
• 1000 (39.4)	1020 (40.2)	**7MC2900-3HA**

Selection and Ordering data		Article No.
Thermocouples elements for straight thermocouple according to DIN 43733		
Base-metal thermocouple with insulating beads		
Wire diameter 3 mm (0.12 inch) Ni Cr/Ni, to 1000 °C (maximal 1300 °C), (to 1832 °F (max. 2372 °F)) 0.55 ... 2.10 kg (1.21 ... 4.63 lb)		
Nominal length *L1* in mm (inch):	Thermocouple length *L2* in mm (inch):	
• 500 (19.7)	540 (21.3)	**7MC2903-1CA**
• 710 (28.0)	750 (29.5)	**7MC2903-2CA**
• 1000 (39.4)	1040 (40.9)	**7MC2903-3CA**

2

Connection heads

Connection head, Type A (without terminal block and terminals) for protective tube diameter (bore = protective tube diameter +0.5 mm (0.02 inch))

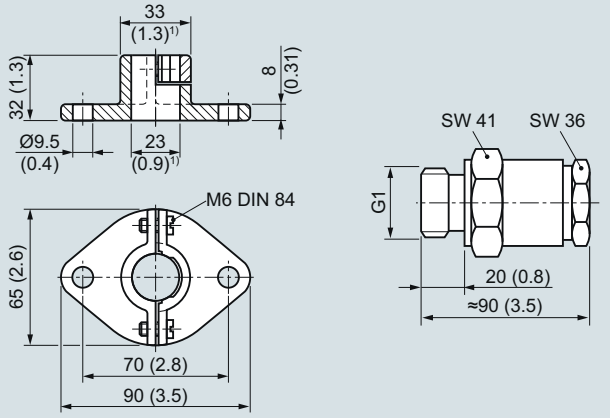
Selection and Ordering data	Article No.
Connection head, Type A, (without terminal block and terminals) 1 Cable inlet, degree of protection IP53, 0.35 kg (0.77 lb)	
Cast light alloy fastener, unscrewable for protective tube diameter in mm (inch) (bore = protective tube diam. +0.5 mm) (0.02 inch): • 22 (0.87) • 26 (1.02)	 **7MC2905-1AA** **7MC2905-1BA**
Cast light alloy high hinged cover for protective tube diameter in mm (inch) (bore = protective tube diam. +0.5 mm) (0.02 inch): • 22 (0.87) • 26 (1.02)	 **7MC2905-4AA** **7MC2905-4BA**

Installation accessories for connection heads

- Terminal block
- Terminal
- Set of gaskets
- Set of washers
- Mounting flange
- Threaded sleeve

Selection and Ordering data	Article No.
Mounting accessories	
Terminal block without terminals for base-metal thermocouples; 0.06 kg (0.13 lb)	**7MC2998-1AA**
Terminal for base-metal thermocouples; 0.01 kg (0.02 lb)	**7MC2998-1BA**
Set of gaskets (100 off) for the connection head cover; 0.01 kg (0.02 lb)	**7MC2998-1CA**
Set of washers (100 off) for the terminal block; 0.01 kg (0.02 lb)	**7MC2998-1CB**
Mounting flange, adjustable; made of GTW • for protective tube outer diameters 22 mm (0.87 inch); 0.35 kg (0.77 lb) • for protective tube outer diameters 26 mm (1.02 inch); 0.32 kg (0.71 lb)	 **7MC2998-2CB** **7MC2998-2CC**
Threaded sleeve Gas-tight up to 1 bar (14.5 psi), adjustable, materiall No. 1.0718, with gasket; 0.40 kg (0.88 lb) • for protective tube outer diameters 22 mm (0.87 inch), **G1** • for protective tube outer diameters 26 mm (1.02 inch), **G1**	 **7MC2998-2DB** **7MC2998-2DC**

Dimensional drawings



1) For protective tube diameter 22 mm (0.9 inch)

Mounting flange to DIN 43734 (left) and threaded sleeve (right) for installing straight thermocouples, dimensions in mm (inches)