

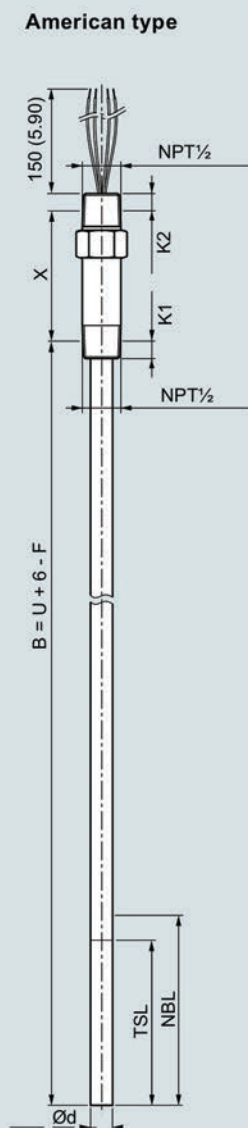
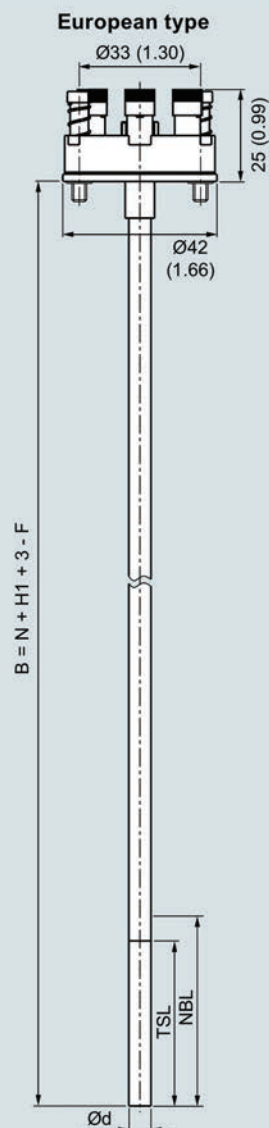
Temperature Measurement

Temperature sensors
SITRANS TSinsert

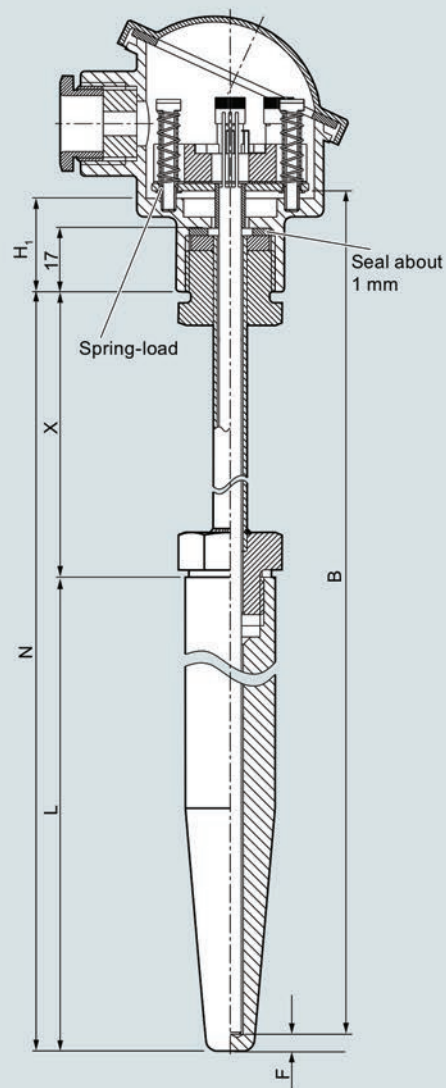
Measuring inserts for retrofitting and upgrading - European and American type

Dimensional drawings

2



Determination of the measuring insert length



B	Measuring insert length
Ød	Measuring insert outer diameter
N	Nominal length
NBL	Non-bending length
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

K1	Screw depth
K2	Screw depth
L/U	Thermowell length
	U for Form 2'/ 3*/ 4F
	L for Form 4
H ₁	Type Axx = 41 (1.61)
	Type Bxx = 26 (1.02)

Recommended spring-load:

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

$$B = U + X + H_1 + 3 - F$$

$$B = 225 + 64 + 26 + 3 - 3 = 315$$

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 2/102

Measuring inserts for retrofitting and upgrading - European and American type

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS TSinsert for temperature sensors, replaceable, mineral-insulated design, European or American type Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MC701	SITRANS TSinsert for temperature sensors, replaceable, mineral-insulated design, European or American type	7MC701
Measurement tip diameter 6 mm (0.24 inch) 8 mm (0.31 inch) (with sleeve) 10 mm (0.39 inch) (with sleeve)	6 8 0	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) 101 ... 150 mm (3.98 ... 5.91 inch) Initial: 145 mm (5.71 inch) 151 ... 200 mm (5.95 ... 7.87 inch) Initial: 200 mm (7.87 inch) 201 ... 250 mm (7.91 ... 9.84 inch) Initial: 205 mm (8.07 inch) 251 ... 300 mm (9.88 ... 11.81 inch) Initial: 275 mm (10.83 inch) 301 ... 350 mm (11.85 ... 13.78 inch) Initial: 315 mm (12.40 inch) 351 ... 400 mm (13.82 ... 15.75 inch) Initial: 375 mm (14.76 inch) 401 ... 450 mm (15.79 ... 17.72 inch) Initial: 405 mm (15.94 inch) 451 ... 500 mm (17.76 ... 19.68 inch) Initial: 500 mm (19.68 inch) 501 ... 550 mm (19.72 ... 21.65 inch) Initial: 525 mm (20.67 inch) 551 ... 600 mm (21.69 ... 23.92 inch) Initial: 555 mm (21.85 inch) 601 ... 700 mm (23.66 ... 27.56 inch) Initial: 655 mm (25.79 inch) 701 ... 800 mm (27.60 ... 31.50 inch) Initial: 735 mm (28.94 inch) 801 ... 900 mm (31.54 ... 35.43 inch) Initial: 825 mm (32.48 inch) 901 ... 1 000 mm (35.47 ... 39.37 inch) Initial: 950 mm (37.40 inch) 1 001 ... 1 500 mm (39.41 ... 59.05 inch) Initial: 1 250 mm (49.21 inch) 1 501 ... 2 000 mm (59.09 ... 78.74 inch) Initial: 1 700 mm (66.93 inch)	1 1 1 3 1 5 1 7 2 1 2 3 2 5 2 7 3 1 3 3 3 5 3 7 4 1 4 3 4 5 4 7 4 8
Type European type - DIN ceramic base European type - DIN flying leads, absolutely necessary with built-on transmitter American type - ANSI (nipple spring)	1 2 5		
Sensor¹⁾ Please note: The accuracy class range can be lower than the measuring range. For more information, see page 2/21 Pt100, basis, -50 ... +400 °C (-58 ... +752 °F) Pt100, vibration-resistant, -50 ... +400 °C (-58 ... +752 °F) Pt100, expanded range, Umin = 100 mm -196 ... +600 °C (-321 ... +1 112 °F) Thermocouple Type J, -40 ... +750 °C (-40 ... +1 382 °F) Thermocouple Type K, -40 ... +1 000 °C (-40 ... +1 832 °F) Thermocouple Type N, -40 ... +1 000 °C (-40 ... +1 832 °F)	A B C J K N		
Sensor number/Accuracy Pt 100 connection: 1 x 4-wire connection or 2 x 3-wire connection, see "Measuring technology: connection types" page 2/23 Single, basic accuracy (Class 2/Class B) Single, increased accuracy (Class 1/Class A) Single, highest accuracy (Class AA) Double, basic accuracy (Class 2/Class B) Double, increased accuracy (Class 1/Class A) Double, highest accuracy (Class AA)	A B C D E F		
Measuring insert length B, standard 145 mm (6.89 inch) 205 mm (8.07 inch) 275 mm (10.83 inch) 315 mm (12.40 inch) 345 mm (13.58 inch) 375 mm (14.76 inch) 405 mm (15.94 inch) 435 mm (17.13 inch) 555 mm (21.85 inch) 585 mm (23.03 inch)	1 3 1 7 2 1 2 3 2 4 2 5 2 7 2 0 3 5 3 6		

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!

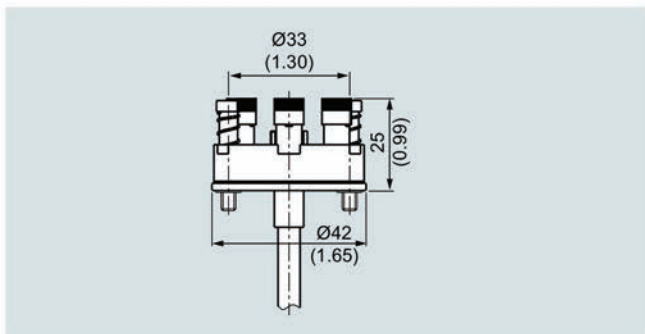
You find ordering examples on page 2/40!

Temperature Measurement

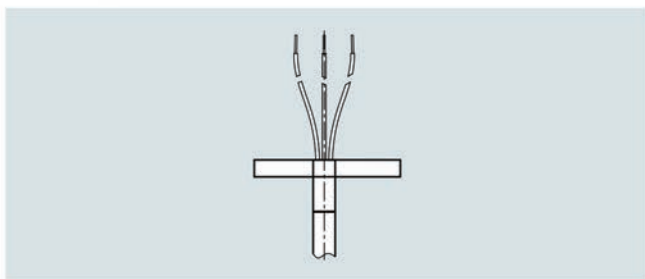
Temperature sensors
SITRANS TSinsert

Measuring inserts for retrofitting and upgrading - European and American type

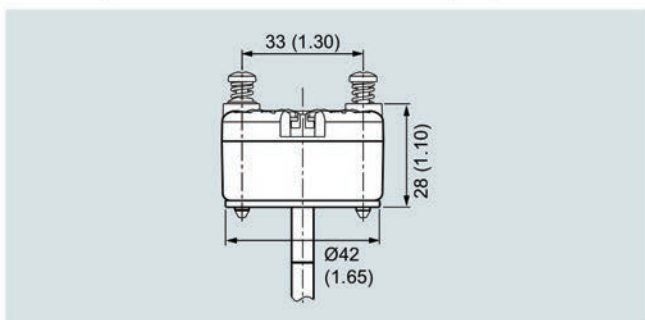
2



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 retrofitting and upgrading - European and American type

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Marine approvals	
Add "-Z" to Article No. and specify Order code.		Det Norske Veritas Germanischer Lloyd (DNV GL)	D01
Measuring insert length B	Y44	Designation, calibration	
Select range, enter desired length in plain text (No entry = standard length)		Stainless steel TAG plate, enter lettering in plain text	Y15
		Plant calibration per 1 point, enter temperature in plain text	Y33
Options		Transmitter options	
Add "-Z" to Article No. and add options, separate extensions with "+".		Transmitter, enter complete setting in plain text (Y01:+/-NNNN ... +/-NNNN C,F)	Y01
Built-in head transmitter		Enter measuring point (max. 8 characters) in plain text	Y17
Measuring range to be set must be specified with plain text data "Y01".		Transmitter, enter measuring point description (max. 16 characters) in plain text	Y23
SITRANS TH100, input 1 x Pt100, 4 ... 20 mA	T12	Transmitter, enter measuring point text (max. 32 characters) in plain text	Y24
SITRANS TH320, input 1 x universal, 4 ... 20 mA	T24	Transmitter, enter bus address in plain text	Y25
SITRANS TH320, input 1 x universal, HART	T34	Transmitter, fail-safe value 3.6 mA (instead of 22.8 mA)	U36
SITRANS TH420, input 2 x universal, HART	T35	SITRANS TH320/420 transmitter with SIL2/3 certificate	C20
SITRANS TH400, input 1 x universal, PA	T40	Transmitter test protocol (5 points)	C11
SITRANS TH400, input 1 x universal, PA, Ex	T41		
SITRANS TH400, input 1 x universal, FF	T45		
SITRANS TH400, input 1 x universal, FF, Ex	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 "ec" 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		

- 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 2/40. Accessories, see page 2/251.