SLOVENSKI STANDARD

SIST EN 50446:2007

01-januar-2007

Nadomeġļa:

SIST EN 50112:2001

SIST EN 50113:2001

Ravni termoļlen s kovinsko ali keramiļno zaġļitno cevjo in priborom

Straight thermocouple assembly with metal or ceramic protection tube and accessories

Gerade Thermoelemente mit Metall- oder Keramik-Schutzrohr und Zubehör

Thermomètres à thermocouple droits avec tube de protection métallique ou en céramique, et accessoires

Ta slovenski standard je istoveten z: **EN 50446:2006**

ICS:

17.200.20

SIST EN 50446:2007 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50446

October 2006

ICS 17.200.20

Supersedes EN 50112:1994 and EN 50113:1994

English version

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 50446:2006 E

Foreword

This European Standard was prepared by the CENELEC BTWG 109-2, Straight thermocouple thermometers.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50446 on 2006-09-01.

This European Standard supersedes EN 50112:1994 and EN 50113:1994.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2007-09-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-09-01

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1 Scope

This standard applies to straight thermocouples for the nominal pressure level PN 1, which are made of standardized components (connection head, protection tube and thermocouple(s)).

Details regarding the operational areas of the thermocouples and the use of protection tubes are part of this standard.

Connection heads as well as stop flanges and threaded bushings for the mounting of the thermocouples are also part of this standard. Special designs are to be agreed upon between manufacturer and user.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50113 *Measurement, control, regulation - Electrical temperature sensors – Isolating tubes for thermocouples*

EN 60529 *Degrees of protection provided by enclosures (IP code)* (IEC 60529)

EN 60584-1 *Thermocouples - Part 1: Reference tables* (IEC 60584-1)

EN 60672-1 *Ceramic and glass insulating materials - Part 1: Definitions and classification* (IEC 60672-1)

EN 22768-1 *General tolerances - Part 1: Tolerances for linear and angular dimensions without individual tolerance indications* (ISO 2768-1)

ISO 2944 *Fluid power systems and components - Nominal pressures*

3 Thermocouples, dimensions and description

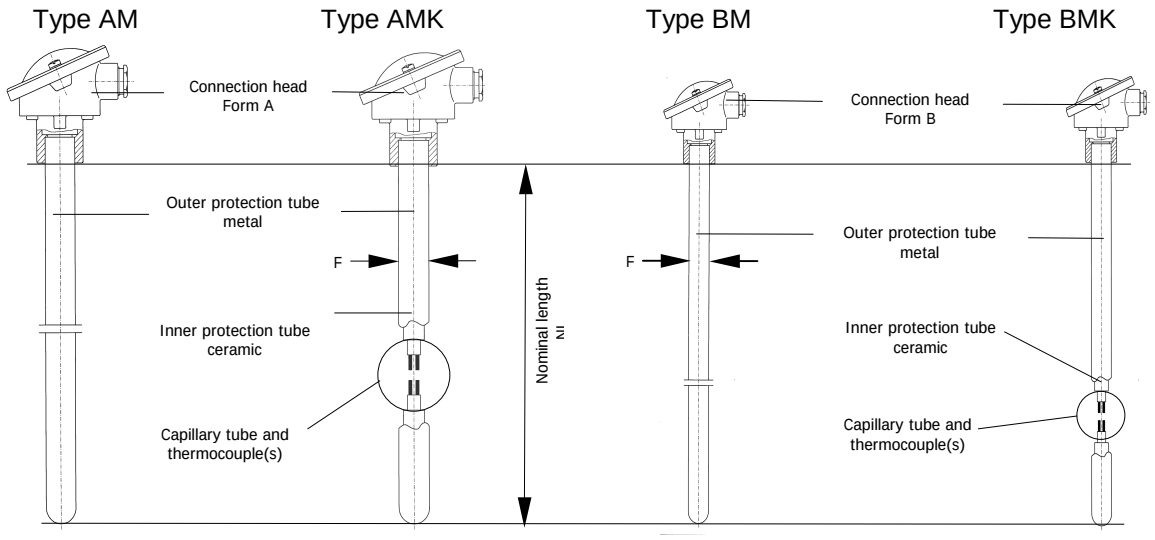
All dimensions in this standard are given in mm. If not stated differently the general tolerances according to EN 22768-1 apply. The thermocouples do not have to conform to the illustration, only the indicated dimensions must be adhered to.

Thermocouple EN 50446 - AKK 24 t y - 1 S 1 - 050-1000

- Description
- EN main number
- Type
- Diameter F of the outer protection tube
- Ident letter for the outer protection tube material
- Ident letter for the inner protection tube material
- No. of thermocouples
- Ident letter for the thermocouple material
- Permitted deviation of the thermo-EMF (class)
- Diameter of the thermocouple
- Nominal length NL of the thermocouple

4 Straight thermocouples with metal protection tube

Table 1 – Types and dimensions, metal protection tube



Code for straight thermocouples			AM	AMK	BM	BMK
Connection head		Form	A		B	
Protection tube F x s [a]	Metal outer protection tubes		22 x 2		15 x 2	
			24 x 3		–	
			26 x 4		–	
	Ceramic inner protection tubes	C 610	–	15(16) x 2	–	10 x 1,5
		C 799	–	15 x 2,5	–	10 x 2

	Ident letter	Diam.								
1 TC=1 thermocouple 2 TC=2 thermocouples Thermocouple acc. to EN 60584-1 Capillary tubes acc. to EN 50113	E, J, K, N *)	3,0	1 TC	2 TC	1 TC	2 TC	–	–	–	–
	E, J, K, N *)	2,5	1 TC	2 TC	1 TC	2 TC	–	–	–	–
	E, J, K, N *)	1,38	1 TC	2 TC	1 TC	2 TC	1 TC	2 TC	1 TC	2 TC
	E, J, K, N *)	1,0	1 TC	2 TC	1 TC	2 TC	1 TC	2 TC	1 TC	2 TC
	*) Thermocouple(s) preferably form A or B acc. to EN 50113.									
	R, S, B **)	0,5; 0,35	–	–	1 TC	2 TC	–	–	1 TC	2 TC
	**) Thermocouple(s) preferably form C or D acc. to EN 50113.									

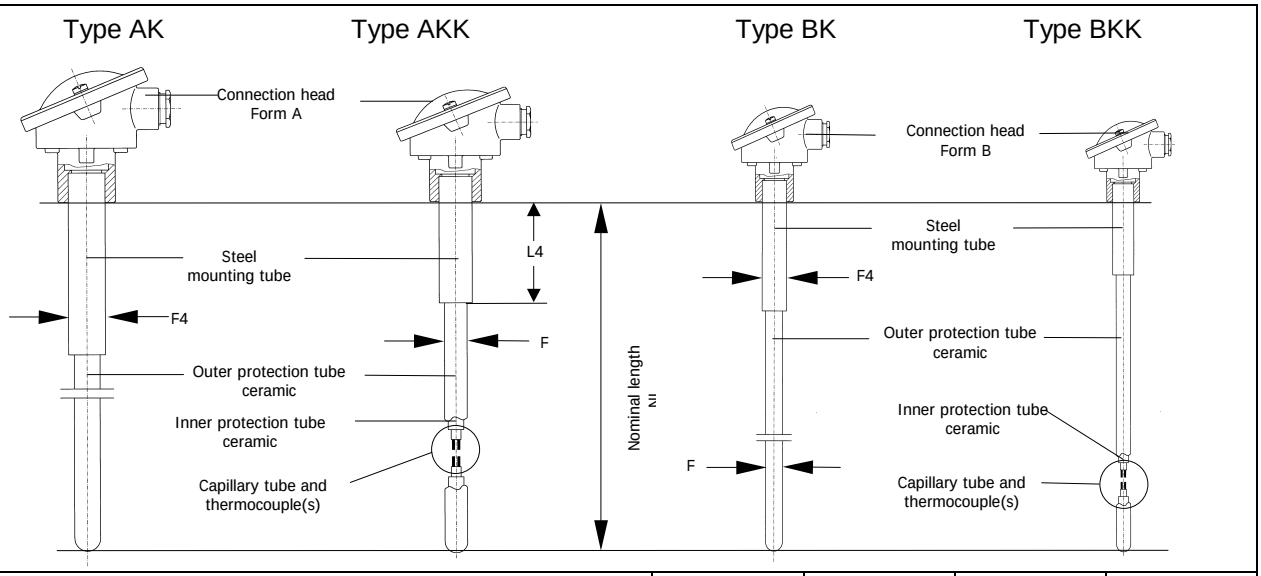
Nominal length NL			
	–	355	
	500	500	
	710	710	
	1 000	1 000	
	1 400	1 400	–
	2 000 [b]	–	–

NOTE Depending on diameter, nominal length and design an additional support must be provided by the user in the case of horizontal mounting.

[a] s = wall thickness of the protection tube.
[b] This nominal length with built-in precious-metal thermocouple is not suitable for vertical mounting.

5 Straight thermocouples with ceramic protection tube

Table 2 – Types and dimensions, ceramic protection tube



Code for straight thermocouples			AK	AKK	BK	BKK
Connection head		Form	A		B	
Mounting tube, type of steel at the discretion of the manufacturer		F_4 x s / L_4	32 x 2 / 200	22 x 2 / 150	15 x 2 / 80	
Protection tube F x s [a]	Ceramic outer protection tubes	C 530	26 x 4	–	–	
		C 610	24 x 2,5	15(16) x 2	10 x 1,5	
		C 799	24 x 3	15 x 2,5 [f]	10 x 2 [f]	
	Ceramic inner protection tubes Types AKK and BKK only	C 610	15(16) x 2	10 x 1,5	–	–
		C 799	15 x 2,5	10 x 2	–	6 x 1

	Ident letter	Diam.								
1 TC=1 thermocouple 2 TC=2 thermocouples Thermocouple acc. to EN 60584-1 Capillary tubes acc. to EN 50113	K, N *)	3,0	1 TC	2TC [d]	1TC [d]	2TC [d]	–	–	–	–
	K, N *)	2,5	1 TC	2 TC	1 TC	2TC [e]	–	–	–	–
	K, N *)	1,38	1 TC	2 TC	1 TC	2 TC	1 TC	2 TC	–	–
	K, N *)	1,0	1 TC	2 TC	1 TC	2 TC	1 TC	2 TC	–	–
	*) Thermocouple(s) preferably form A or B acc. to EN 50113.									
	R, S, B **)	0,5; 0,35	– [g]	– [g]	1 TC	2 TC	– [g]	– [g]	1 TC	2TC [c]
	**) Thermocouple(s) preferably form C or D acc. to EN 50113.									

Nominal length NL NOTE Depending on diameter, nominal length and design an additional support is to be provided by the user in the case of horizontal mounting.					
	–		355		
	500		500		
	710		710	–	
	1 000		1 000	–	
	1 400		–	–	
	2 000 [b]	–	–	–	

[a] s = wall thickness of the support resp. the protection tube.
[b] This nominal length with built-in precious-metal thermocouple is not suitable for vertical mounting.
[c] Only thermocouples with 0,35 mm diam. can be installed.
[d] Thermocouple(s) cannot be installed in ceramic protection tubes 15(16) x 2 and 15 x 2,5.
[e] Thermocouples cannot be installed in ceramic inner protection tubes 10 x 2.
[f] Ceramic inner protection tube is not possible.
[g] Design without inner protection tube is not recommended.

Table 3 – Ident letters for metal protection tubes [1)]

Ident. letter	Brief description	Material No.
H	St 35.8	1.0305
D	X 10 CrAl 24	1.4762
Q	X 15 CrNiSi 2520	1.4841
F	X 18 Cr Ni 28	1.4749
U	X 10 NiCrAlTi 3220 [a]	1.4876

[a] Detailed material specifications as well as the available diameters and lengths are to be agreed upon between manufacturer and user.

Table 4 – Ident letters for ceramic protection tubes

Ident. letter	Material
T	C 530
U	C 610
Y	C 799
X	SiC re-crystallized, porous [a, b]
Z	SiC reaction-bonded, gas-tight [a, b]

[a] Detailed material specifications as well as the available diameters and lengths are to be agreed upon between manufacturer and user.

[b] For deviating dimensions see Table 6 and footnotes.

Table 5 – Ident letters for thermocouples

Ident. letter	Thermocouple EN 60584-1
E	NiCr – CuNi
J	Fe – CuNi
K	NiCr – Ni
N	NiCrSi – NiSi
S	Pt 10 % Rh – Pt
R	Pt 13 % Rh – Pt
B	Pt 30 % Rh – Pt 6 % Rh

[1)] Coatings on metal protection tubes are to be agreed upon between manufacturer and user.