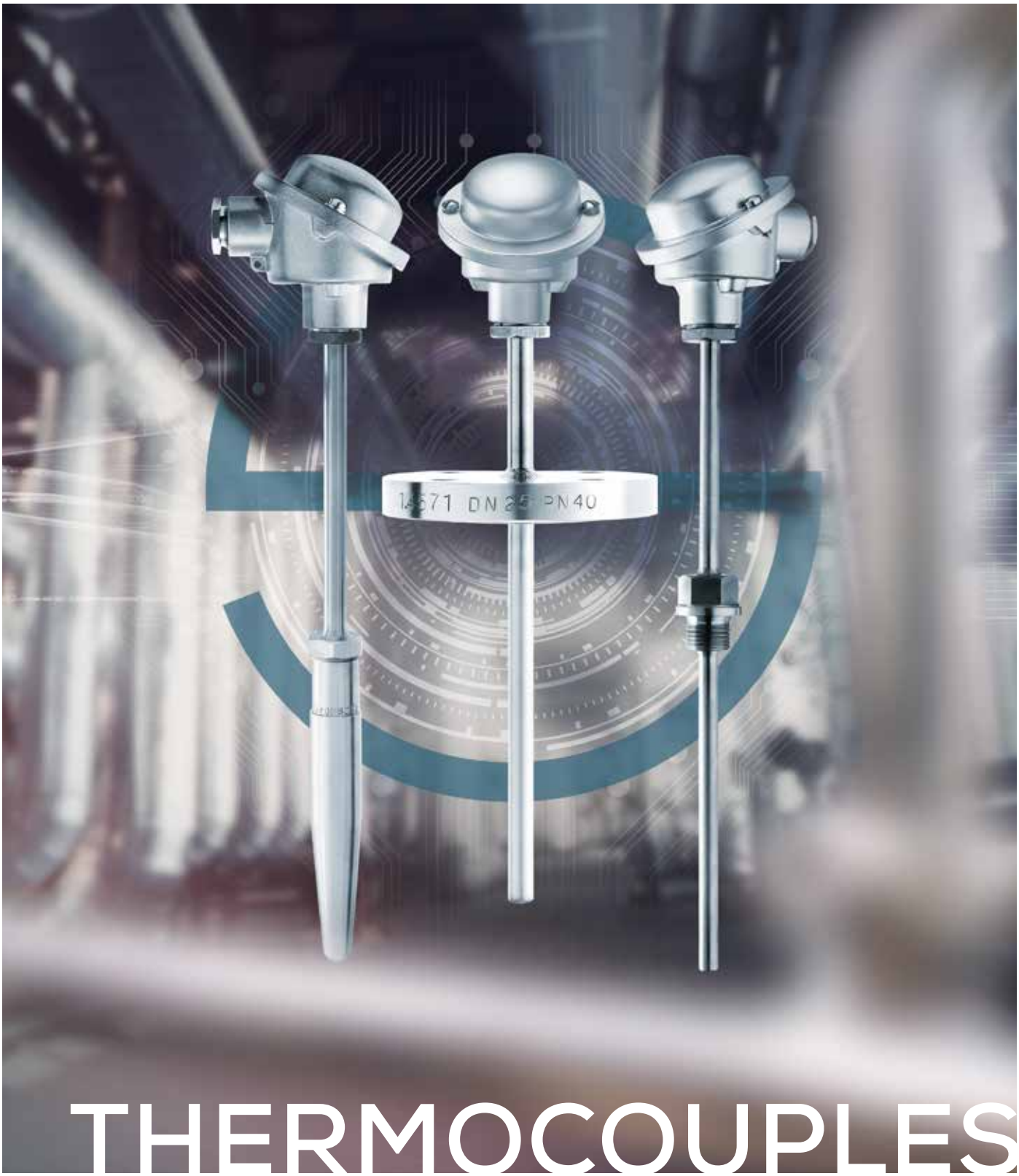
LUDWIG
SCHNEIDER



THERMOCOUPLES

TABLE OF CONTENTS

HOW TO ORDER

All thermocouples in this catalogue are exactly described in their technical execution and correspond to valid standards and prescribed manufacturing methods. All thermocouples in standard design have an own catalogue number, which is sufficient for your order specification.

Under the point "options" you will find additional numbers, with which you can modify the thermocouples. These additional numbers are to be appended to the catalogue numbers of the standard design, whereat no sequence must be considered.

EXAMPLE 1: Order of a thermocouple in standard design

Catalogue number: 1111111

EXAMPLE 2: Order of a thermocouple with modification

Catalogue number: 1111111 Additional numbers: - 01 ..... - 99

EXAMPLE 3: Order of a thermocouple with questionnaire

In all cases where you cannot combine your requirements with the options available in the catalogue, please fill out the questionnaire on page 52. Enter the required parameters and send the filled out form to us.

The questionnaire is also available on our Internet site:

www.ludwig-schneider.de/en/thermocouples-questionnaire/

ELECTRICAL TEMPERATURE MEASUREMENT WITH THERMOCOUPLES

TEMPERATURE

From the point of view of physics, heat is an expression of the internal energy in a body arising from the molecular movement within it. Just like the kinetic energy of a vehicle increases as the speed increases, the internal energy of a body also increases as the temperature increases. Correspondingly the temperature is a variable of state that is suitable for describing the internal energy of a body. In physics the Kelvin [K] is used as the unit of measurement for temperature. At zero Kelvin the lowest state of energy is reached and molecular movement no longer takes place. To achieve objective representation of the temperature corresponding effects of the change in temperature such as, for example, a change in the electrical resistance or the measurement of an occurring thermoelectric voltage are used.

In addition to the meter, kilogram, second, mole, candela and ampere, the temperature is a basic unit within the metric system of units (SI) and is represented by the formula sign T. In addition to the temperature scale to Kelvin, measurement in degrees Celsius is very common. The following correlation exists between the two units:

0 K = –273.15 °C **0 °C = 273.15 K**

TEMPERATURE SCALE

The physical basis of the temperature measurement is the thermodynamic temperature scale. It is based on the laws of Boyle-Mariotte (p ~ 1/V) as well as Gay-Lussac (p ~ V) and the resulting equation for ideal gases:

p · V = R · T

p = Pressure, V = Specific volume, R = Specific gas constant, T = Temperature

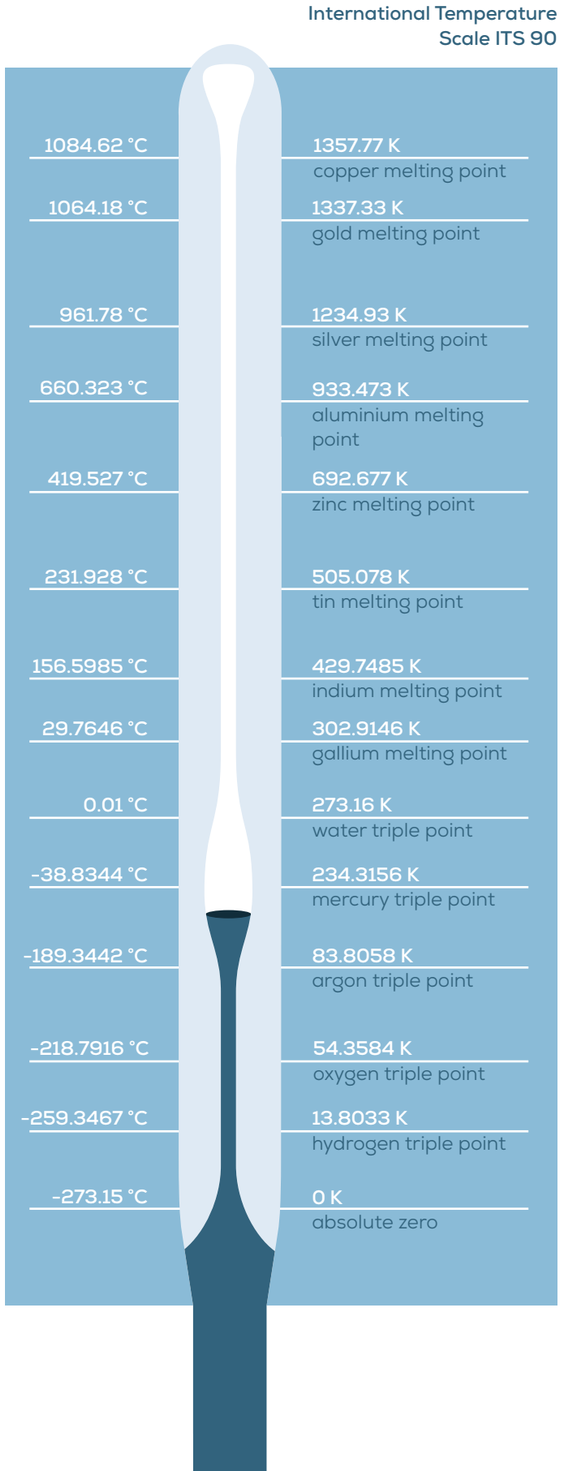
The thermodynamic temperature can be represented excellently with a gas thermometer. Since this method is too laborious for practical temperature measurement, an international temperature scale has been created that was specified through defined fixed points of pure substances.

The term 'fixed points' is used for states of equilibrium at phase transitions (such as freezing point and boiling point). The International Temperature Scale (ITS 90) has been valid since 1990. This replaced the International Practical Temperature Scale (IPTS 68) of 1968 due to improved possibilities with regard to the reproducibility of fixed points.

THERMOELECTRIC EFFECT

Temperature evaluation in industrial processes belongs to the common tasks within sensor technology.

Since the measured value acquisition often takes place some meters away from the temperature evaluation and regulation, electrical measuring elements are used here to convert the measured temperature into an electrical voltage signal. Thanks to their robust structure and their maintenance freedom, thermocouples are also used increasingly in addition to resistance thermometers in industrial applications.



The functional principle is based on the effect described by Seebeck in 1821 that a current flow arises when two metal conductors made of different materials are connected with each other and a temperature change takes place at a connection point. The connected conductors are designated as thermocouples and the physical process is defined as the thermoelectric effect. The thermoelectric voltage, meaning the voltage at the thermocouple, increases as the temperature increases.

Thermocouples have some advantages compared to resistance thermometers: Smaller construction forms are possible, they have a larger temperature measuring range and are notably less sensitive to mechanical stresses. However, the higher temperature tolerance classes and the increased installation work are opposing factors. The combination of the thermoelectric wires and the material composition are standardized in order to ensure trouble-free interchangeability.

The thermoelectric voltage is very low and amounts to only a few µV/K (microvolts/kelvin). In order to carry out the measurement the electric circuit has to be closed, whereby thermoelectric voltage also arises at the connection point (reference junction). In the case of thermoelectric temperature measurement it has to be taken into account that only the temperature difference between the measuring point and the reference junction is measured. In the case of the same temperatures at the measuring and reference point the two thermoelectric voltages offset each other. In the case of differing temperatures a voltage difference between the two partial voltages ensues and a current flow arises. In order to carry out correct temperature measurement with a thermocouple it is important to know the reference junction temperature and to keep it constant as far as possible. Otherwise the reference junction temperature has to be acquired constantly and to be taken into consideration.

In addition it has to be ensured that additional thermoelectric voltages arise in the transmission line between the reference junction and measuring point in order to exclude measurement errors. The most reliable connection method would thus be the connection of the thermo-legs to the reference junction.

Practically, however a compensating cable is often used as a transmission line for grounds of cost. At a compensating cable spare materials are used that correspond to the thermoelectric properties of the thermocouple. This ensures that no additional thermoelectric voltage is caused.

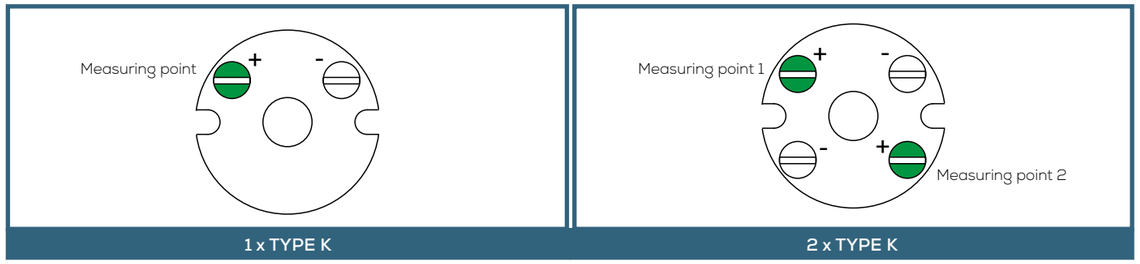
STANDARDS FOR THERMOCOUPLES

The specifications of the thermocouples are described in the standards IEC 584 or EN 60584 respectively. The temperature specific thermoelectric voltages, the limiting deviations and in part the material composition of the thermoelectric wires were in particular defined. The color coding was specified in IEC 584-2 and is to be applied symbolically or in color. Therefore the connections at the ceramic base are correspondingly marked by us. The specified identification colors and the thermocouples mentioned in IEC 584-1 are shown in the following overview.

TYPE T - Cu/CuNi	copper/constantan	Identification color brown
TYPE J - Fe/CuNi	ferric/constantan	Identification color black
TYPE E - NiCr/CuNi	nickel-chromium/constantan	Identification color purple
TYPE K - NiCr/Ni	nickel-chromium/nickel	Identification color green
TYPE N - NiCrSi/NiSi	nicrosil/nisil	Identification color pink
TYPE S - Pt10Rh/Pt	platinumrhodium/platinum	Identification color orange
TYPE R - Pt13Rh/Pt	platinumrhodium/platinum	Identification color orange
TYPE B - Pt30Rh/Pt6Rh	platinumrhodium/platinumrhodium	Identification color gray

COLOR CODING AND TERMINAL ASSIGNMENT OF THE CERAMIC BASE

Example



MEASURING INSERTS

The measuring insert is an autonomous module that is ready to connect. It consists mainly of a mineral-insulated thermoelectric lead with the actual thermocouple and the ceramic base. A mineral-insulated thermoelectric lead is a lead with an external sheath made of stainless steel in which the thermo-legs are embedded in highly compressed magnesium oxide. The external sheath of the mineral-insulated thermoelectric lead forms the outer mantle and the measuring point is always located directly at the tip of the measuring insert. The thermoelectric voltage is transferred via the thermo-legs to the ceramic base. The measuring inserts in this structural form are flexible and can also be used in applications that are characterized by high mechanical stresses and vibrations. The structure and the dimensions are defined in the standard DIN 43735.

The measuring insert is pressed in the built-in state into the inside of the protection tube tip by means of two compression springs at the fastening screws. This ensure optimal heat transition. The two compression springs also compensate different length extensions of the protection tube and measuring insert. The measuring insert is attuned to the agreed protection tube with connection head with regard to the diameter and length. The use of a replaceable measuring insert has the great advantage that the plant does not have to be emptied or depressurized in the case of a replacement.

PROTECTIVE TUBES

The protective tubes are divided into the Forms 1 - 9 in accordance with the standard DIN 43772. Depending on their form, protective tubes are manufactured as a welded version or from solid material and can be mounted by means of clamps, screwing in, flange-mounting or welding in. The protective tubes are made by preference of stainless steel 1.4571. Since the protective tube comes directly into contact with the measured medium, it is imperative that the pressure loads, the velocities of approach and the temperature loads be taken into consideration when selecting the protective tube form. The load diagrams of the standard DIN 43772 can be used to this purpose.

The chemical durability as well as the mechanical load also have to be taken into consideration when selecting the material. In the field of protective tubes there are numerous non-standardized forms in addition to the standardized forms. These are manufactured by us for the customer-specific application. The form of the protective tubes is identified by means of codes in accordance with the valid standard DIN 43772.

BASIC VALUE

Put generally, the thermoelectric voltage/K is higher, the greater the difference in the metals of both legs is. Of the thermocouples listed, the NiCr/CuNi element (Type E) has the highest electromotive force (EMF). By contrast, the thermocouple Pt30Rh/Pt6Rh (Type B) has the lowest EMF, since the two thermo-legs differ only in the rhodium alloy content. The thermoelectric voltages as a factor of the temperature were calculated as the basic values and defined in the standards IEC 584 or EN 60584 respectively. These values all reference a reference junction temperature of zero degrees Celsius. If a deviating reference junction temperature is used, the listed values have to be corrected correspondingly.

The basic values for the thermocouples are specified in microvolt, calculated on the basis of the international temperature scale (ITS 90), and listed for the temperature range of -200 °C to 1800 °C. The step line is to be understood as the limit for the continuous operating temperature of the thermocouples in pure air. Since changes in the thermoelectric voltage can be caused by many factors, exact specifications on the limit of the continuous operating temperature are unfortunately not possible.

BASIC VALUES IN µV, REFERENCED TO A REFERENCE JUNCTION TEMPERATURE OF 0 °C

Plus-terminal Minus-terminal	Type T Cu CuNi	Type J Fe CuNi	Type E NiCr CuNi	Type K NiCr Ni	Type N NiCrSi NiSi	Type S Pt10Rh Pt	Type R Pt13Rh Pt	Type B Pt30Rh Pt6Rh
°C	µV	µV	µV	µV	µV	µV	µV	µV
-200	-5603	-7890	-8825	-5891	-3990	-	-	-
-175	-5167	-7265	-8121	-5454	-3702	-	-	-
-150	-4648	-6500	-7279	-4913	-3336	-	-	-
-125	-4052	-5616	-6314	-4276	-2902	-	-	-
-100	-3379	-4633	-5237	-3554	-2407	-	-	-
-75	-2633	-3566	-4058	-2755	-1859	-	-	-
-50	-1819	-2431	-2787	-1889	-1269	-	-	-
-25	-940	-1239	-1432	-968	-646	-	-	-
0	0	0	0	0	0	0	0	0
25	992	1277	1495	1000	659	143	141	-
50	2036	2585	3048	2023	1340	299	296	-
75	3132	3918	4656	3059	2045	467	466	-
100	4279	5269	6319	4096	2774	646	647	-
125	5470	6634	8031	5124	3527	834	839	-
150	6704	8010	9789	6138	4302	1029	1041	-
175	7977	9392	11587	7140	5098	1232	1251	-
200	9288	10779	13421	8138	5913	1441	1469	178
225	10634	12167	15287	9141	6747	1655	1693	231
250	12013	13555	17181	10153	7597	1874	1923	291
275	13423	14942	19098	11176	8462	2096	2159	358
300	14862	16327	21036	12209	9341	2323	2401	431
325	16327	17710	22993	13248	10233	2553	2646	510
350	17819	19090	24964	14293	11136	2786	2896	596
375	19335	20469	26950	15343	12050	3021	3150	688
400	20872	21848	28946	16397	12974	3259	3408	787
425		23228	30952	17455	13906	3500	3669	891
450		24610	32965	18516	14846	3742	3933	1002
475		25998	34983	19579	15794	3987	4201	1119
500		27393	37005	20644	16748	4233	4471	1242
550		30216	41053	22776	18672	4732	5021	1505
575		31650	43075	23842	19641	4984	5301	1646
600		33102	45093	24905	20613	5239	5583	1792
625		34575	47107	25967	21588	5495	5869	1944
650		36071	49116	27025	22566	5753	6157	2101
675		37590	51118	28079	23546	6013	6448	2263
700		39132	53112	29129	24527	6275	6743	2431
725		40696	55100	30174	25508	6539	7040	2604
750		42281	57080	31213	26491	6806	7340	2782
775		43881	59053	32247	27473	7074	7644	2965
800		45494	61017	33275	28455	7345	7950	3154
825		47109	62974	34297	29436	7618	8259	3347
850		48715	64922	35313	30416	7893	8571	3546
875		50306	66860	36323	31394	8170	8887	3749
900		51877	68787	37326	32371	8449	9205	3957
925		53427	70701	38323	33346	8731	9526	4170
950		54956	72603	39314	34319	9014	9850	4387
975		56464	74492	40298	35289	9300	10177	4608
1000		57953	76373	41276	36256	9587	10506	4834
1100				45119	40087	10757	11850	5780
1200				48838	43846	11951	13228	6786
1300				52410	47513	13159	14629	7848
1400						14373	16040	8956
1500						15582	17451	10099
1600						16777	18849	11263
1700								12433
1800								13591

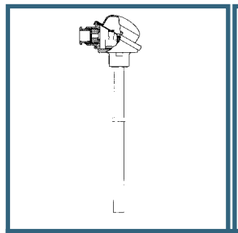
DEVIATION LIMITS ACC. TO IEC 751 RESP. DIN EN 60751

According to EN 60584 thermocouples are divided into three tolerance classes. These reference thermoelectric wires with a ø 0.25 to 3 mm and refer to the state of delivery. Possible aging during operation cannot be taken into consideration, since these are application-specific. The specified temperature ranges do no contain any limits for the application. These are ranges within which the described tolerances are defined.

DEVIATION LIMITS ACC. TO DIN EN 60584

Type	Class		
Type J Fe - CuNi	1	-40 °C to 375 °C ± 1.5 °C	375 °C bis 750 °C ± 0.004 • | t | °C
	2	-40 °C to 333 °C ± 1.5 °C	333 °C bis 750 °C ± 0.0075 • | t | °C
	3	-	-
Type T Cu - CuNi	1	-40 °C to 125 °C ± 0.5 °C	125 °C to 350 °C ± 0.004 • | t | °C
	2	-40 °C to 133 °C ± 1.0 °C	133 °C to 350 °C ± 0.0075 • | t | °C
	3	-67 °C to 40 °C ± 1.0 °C	-200 °C to -67 °C ± 0.015 • | t | °C
Type K NiCr - Ni	1	-40 °C to 375 °C ± 1.5 °C	375 °C to 1,000 °C ± 0.004 • | t | °C
	2	-40 °C to 333 °C ± 2.5 °C	333 °C to 1,200 °C ± 0.0075 • | t | °C
	3	-167 °C to 40 °C ± 2.5 °C	-200 °C bis -167 °C ± 0.015 • | t | °C
Type N NiCrSi - NiSi	1	-40 °C to 375 °C ± 1.5 °C	375 °C bis 1,000 °C ± 0.004 • | t | °C
	2	-40 °C to 333 °C ± 2.5 °C	333 °C to 1,200 °C ± 0.0075 • | t | °C
	3	-167 °C to 40 °C ± 2.5 °C	-200 °C to -167 °C ± 0.015 • | t | °C
Type E NiCr - CuNi	1	-40 °C to 375 °C ± 1.5 °C	375 °C to 800 °C ± 0.004 • | t | °C
	2	-40 °C to 333 °C ± 2.5 °C	333 °C to 900 °C ± 0.0075 • | t | °C
	3	-167 °C to 40 °C ± 2.5 °C	-200 °C to -167 °C ± 0.015 • | t | °C
Type S Pt10Rh - Pt	1	0 °C to 1,100 °C ± 1.0 °C	1,100 °C to 1,600 °C ± [1 + 0.003 • (| t | - 1,100)] °C
	2	0 °C to 600 °C ± 1.5 °C	600 °C to 1,600 °C ± 0.0025 • | t | °C
	3	-	-
Type R Pt13Rh - Pt	1	0 °C to 1,100 °C ± 1.0 °C	1,100 °C to 1,600 °C ± [1 + 0.003 • (| t | - 1,100)] °C
	2	0 °C to 600 °C ± 1.5 °C	600 °C to 1,600 °C ± 0.0025 • | t | °C
	3	-	-
Type B Pt30Rh - Pt6Rh	1	-	-
	2	-	600 °C to 1,700 °C ± 0.0025 • | t | °C
	3	600 °C to 800 °C ± 4.5 °C	800 °C to 1,700 °C ± 0.005 • | t | °C

SUMMARY OF THERMOWELL AND INSERTS



TE-BA

DIN 43772 form 1

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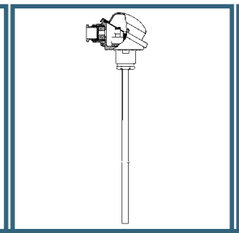

TE-BE

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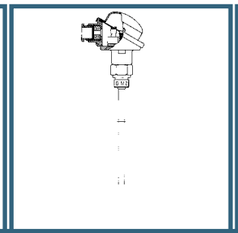

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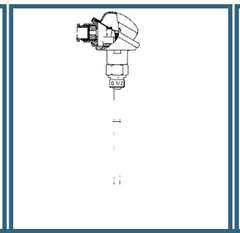

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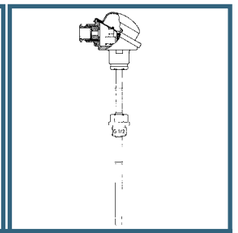

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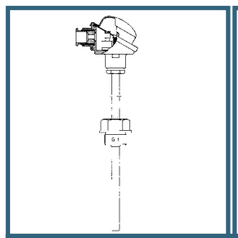

TE-BC

DIN 43772 form 2G

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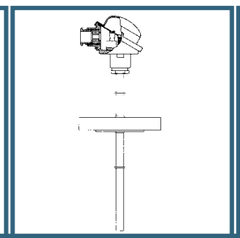

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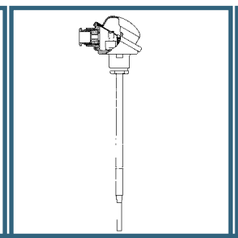

TE-BE (R)

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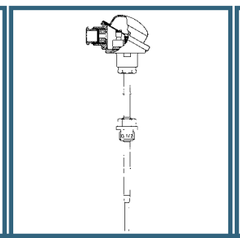

TE-BB (R)

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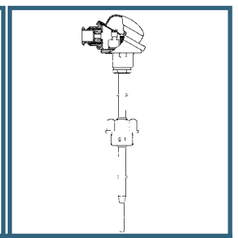

TE-BC (R)

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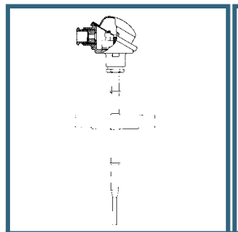

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DIN 43772 form 3F

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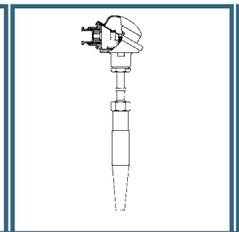

TE-BD

DIN 43772 form 4

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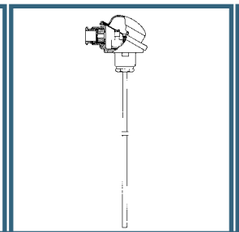

TE-BL

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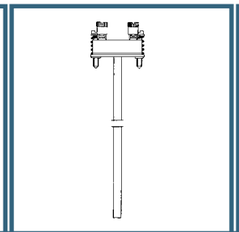

TE-ME

DIN 43735

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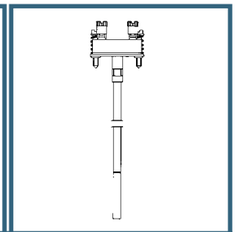

TE-ME-MI

DIN 43735

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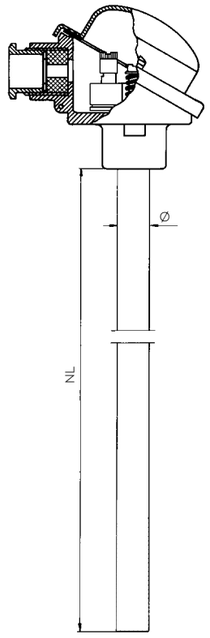
TE-BA

INSERTIBLE THERMOCOUPLE ACC. TO DIN 43772 FORM 1, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head Type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell at stainless steel 1.4571
+ Thermowell ø and nominal length according to table
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Immersion depth adjustable (with stopflange)
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell ø mm	Material	Nominal Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BA-15	15	1.4571 X6CrNiMoTi 17-12-2	500	8	525	8611062	8611162	8611262	8611362
			710		735	8611063	8611163	8611263	8611363
			1,000		1,025	8611064	8611164	8611264	8611364
			1,400		1,425	8611065	8611165	8611265	8611365
			2,000		2,025	8611066	8611166	8611266	8611366

ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C

	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-8	8	525	8661080	8661180	8661280	8661380
		735	8661082	8661182	8661282	8661382
		1,025	8661083	8661183	8661283	8661383
		1,425	8661084	8661184	8661284	8661384
		2,025	8661086	8661186	8661286	8661386

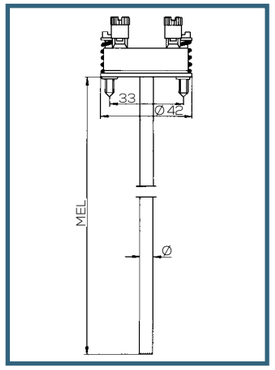
ACCESSORIES

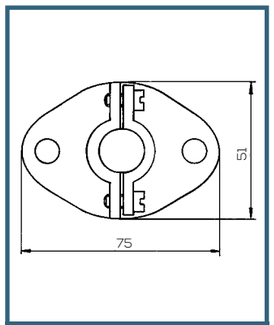
	Order-No.
Flange acc. to DIN EN 50446	
+ At GTW-35, max. temperature range to 400 °C	**7631601**
Mating flange NW15 acc. to DIN EN 50446	
+ At GTW-38, max. temperature range to 400 °C	**7631701**
Coupling adjustable (at steel, gas-tight up to 1 bar)	
+ With threading G 1/2	**7631801**
+ With threading G 3/4	**7631851**
+ With threading G 1	**7631900**

OPTIONS (Order note on page 4)

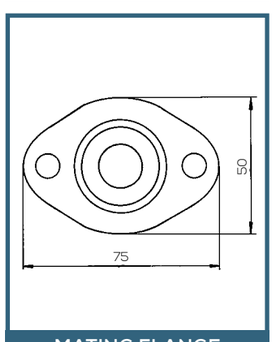
	Add.-No.
Material	
+ Thermowell at steel 1.0305 (St 35.8)	**No. -92**
+ Thermowell at steel 1.0305 (St 35.8 enamelled)	**No. -93**
Complete instruments with connection heads (from page 48)	
+ Type BBK	**No. -11**
+ Type BBG	**No. -12**
+ Type DAN	**No. -13**
+ Type DAN-S	**No. -14**
+ Type DANH	**No. -15**
+ Type DANH-S	**No. -16**
Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

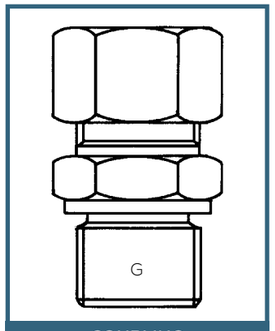




FLANGE



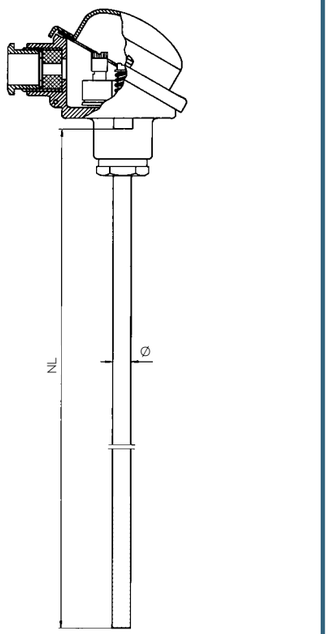
MATING FLANGE



COUPLING

TE-BE

INSERTIBLE THERMOCOUPLE ACC. TO DIN 43772 FORM 2, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head Type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell at stainless steel 1.4571
+ Thermowell ø and nominal length according to table
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell ø mm	Material	Nominal Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BE-9	9	1.4571 X6CrNiMoTi 17-12-2	305	6	315	8612001	8612101	8612201	8612301
			395		405	8612002	8612102	8612202	8612302
			545		555	8612003	8612103	8612203	8612303
TE-BE-11	11		305	6	315	8612011	8612111	8612211	8612311
			395		405	8612012	8612112	8612212	8612312
			545		555	8612013	8612113	8612213	8612313
TE-BE-12	12		305	6	315	8612021	8612121	8612221	8612321
			395		405	8612022	8612122	8612222	8612322
			545		555	8612023	8612123	8612223	8612323
TE-BE-14	14		305	8	315	8612031	8612131	8612231	8612331
			395		405	8612032	8612132	8612232	8612332
			545		555	8612033	8612133	8612233	8612333

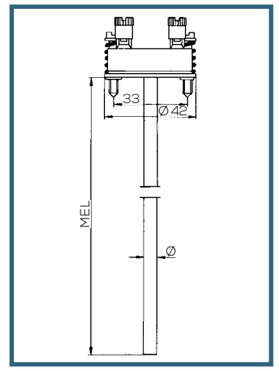
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-6	6	315	8671084	8671184	8671284	8671384
		405	8671086	8671186	8671286	8671386
		555	8671090	8671190	8671290	8671390
TE-ME-8	8	315	8681004	8681104	8681204	8681304
		405	8681006	8681106	8681206	8681306
		555	8681011	8681111	8681211	8681311

OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**

Complete instruments with connection heads (from page 48)

+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

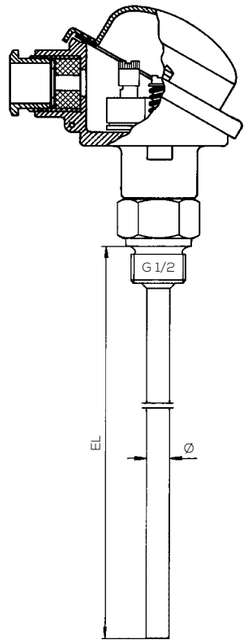
Head transmitters (from page 50)

+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BB-ko

SCREW-IN THERMOCOUPLE SIMILAR DIN 43772 FORM 2G, INSERT NOT EXCHANGEABLE



COMPLETE INSTRUMENTS
SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell at stainless steel 1.4571
+ Mounting bush G 1/2 at stainless steel 1.4571
+ Immersion length EL and thermowell ø acc. to table
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell ø mm	Material	Immersion Length in mm	Type K		Type J	
				simplex	duplex	simplex	duplex
TE-BB-ko-6	6	1.4571 X6CrNiMoTi 17-12-2	100	8613001	8613101	8613201	8613301
			160	8613002	8613102	8613202	8613302
			200	8613003	8613103	8613203	8613303
			250	8613004	8613104	8613204	8613304
			300	8613005	8613105	8613205	8613305
TE-BB-ko-8	8		100	8613011	8613111	8613211	8613311
			160	8613012	8613112	8613212	8613312
			200	8613013	8613113	8613213	8613313
			250	8613014	8613114	8613214	8613314
			300	8613015	8613115	8613215	8613315
			400	8613016	8613116	8613216	8613316
TE-BB-ko-9	9		100	8613021	8613121	8613221	8613321
			160	8613022	8613122	8613222	8613322
			200	8613023	8613123	8613223	8613323
			250	8613024	8613124	8613224	8613324
			300	8613025	8613125	8613225	8613325
			400	8613026	8613126	8613226	8613326
TE-BB-ko-11	11		100	8613031	8613131	8613231	8613331
			160	8613032	8613132	8613232	8613332
			200	8613033	8613133	8613233	8613333
			250	8613034	8613134	8613234	8613334
			300	8613035	8613135	8613235	8613335
			400	8613036	8613136	8613236	8613336

ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.
The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

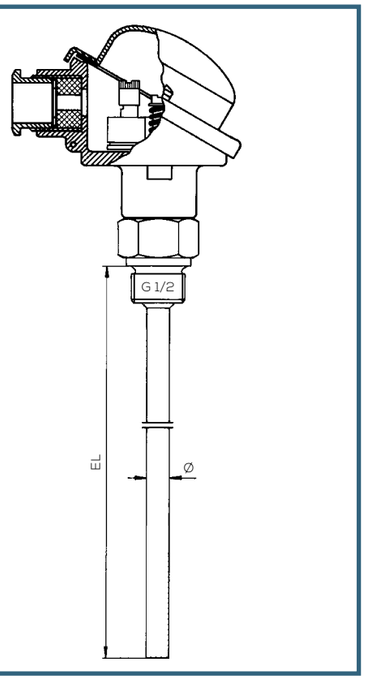
OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**
Complete instruments with connection heads (from page 48)	
+ Type BBK	**No. -11**
+ Type BBG	**No. -12**
+ Type DAN	**No. -13**
+ Type DAN-S	**No. -14**
+ Type DANH	**No. -15**
+ Type DANH-S	**No. -16**
Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BB-k

SCREW-IN THERMOCOUPLE SIMILAR DIN 43772 FORM 2G, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head Type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell at stainless steel 1.4571
+ Mounting bush G 1/2 at stainless steel 1.4571
+ Immersion length EL and thermowell ø acc. to table
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell ø mm	Material	Nominal Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BB-k-9	9	1.4571 X6CrNiMoTi 17-12-2	160	6	205	8614001	8614101	8614201	8614301
			250		295	8614002	8614102	8614202	8614302
			400		445	8614003	8614103	8614203	8614303
TE-BB-k-11	11		160	6	205	8614011	8614111	8614211	8614311
			250		295	8614012	8614112	8614212	8614312
			400		445	8614013	8614113	8614213	8614313
TE-BB-k-12	12		160	6	205	8614021	8614121	8614221	8614321
			250		295	8614022	8614122	8614222	8614322
			400		445	8614023	8614123	8614223	8614323
TE-BB-k-14	14		160	8	205	8614031	8614131	8614231	8614331
			250		295	8614032	8614132	8614232	8614332
			400		445	8614033	8614133	8614233	8614333

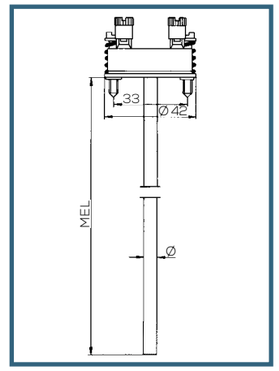
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	205	8671082	8671182	8671282	8671382
		295	8671083	8671183	8671283	8671383
		445	8671088	8671188	8671288	8671388
TE-ME-MI-8	8	205	8681002	8681102	8681202	8681302
		295	8681003	8681103	8681203	8681303
		445	8681008	8681108	8681208	8681308

OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**

Complete instruments with connection heads (from page 48)

+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

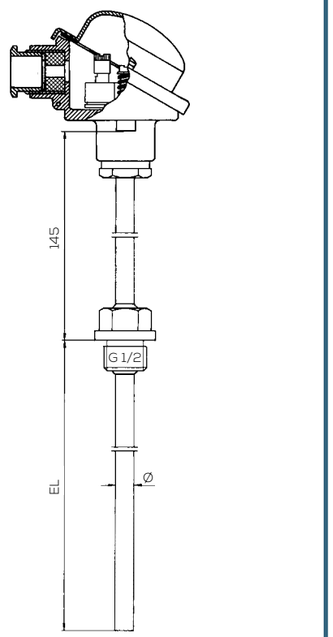
Head transmitters (from page 50)

+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BB

SCREW-IN THERMOCOUPLE ACC. TO DIN 43772 FORM 2G, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head Type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell and neck tube at stainless steel 1.4571
+ Mounting bush G 1/2 at stainless steel 1.4571
+ Immersion length EL and thermowell/neck tube ø acc. to table
+ Neck tube length HL = 145 mm
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell & Neck Tube ø mm	Material	Immersion Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BB-9	9	1.4571 X6CrNiMoTi 17-12-2	160	6	315	8615001	8615101	8615201	8615301
			250		405	8615002	8615102	8615202	8615302
			400		555	8615003	8615103	8615203	8615303
TE-BB-11	11		160	6	315	8615011	8615111	8615211	8615311
			250		405	8615012	8615112	8615212	8615312
			400		555	8615013	8615113	8615213	8615313
TE-BB-12	12		160	6	315	8615021	8615121	8615221	8615321
			250		405	8615022	8615122	8615222	8615322
			400		555	8615023	8615123	8615223	8615323
TE-BB-14	14		160	8	315	8615031	8615131	8615231	8615331
			250		405	8615032	8615132	8615232	8615332
			400		555	8615033	8615133	8615233	8615333

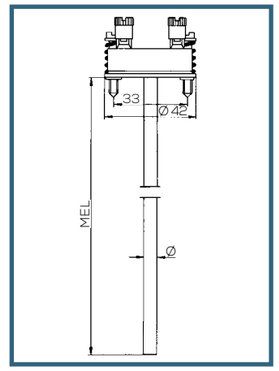
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		405	8671086	8671186	8671286	8671386
		555	8671090	8671190	8671290	8671390
TE-ME-MI-8	8	315	8681004	8681104	8681204	8681304
		405	8681006	8681106	8681206	8681306
		555	8681011	8681111	8681211	8681311

OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	No. -91

Complete instruments with connection heads (from page 48)

+ Type BBK	No. -11	+ Type DAN-S	No. -14
+ Type BBG	No. -12	+ Type DANH	No. -15
+ Type DAN	No. -13	+ Type DANH-S	No. -16

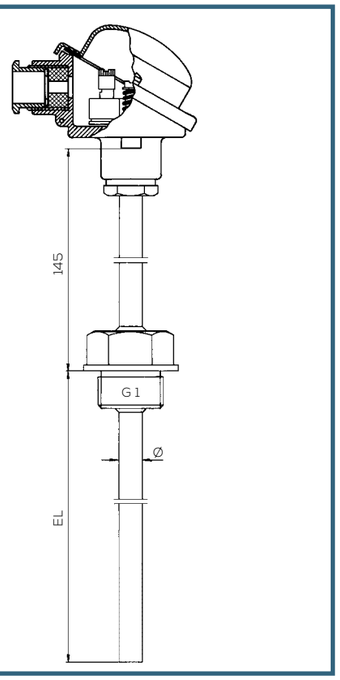
Head transmitters (from page 50)

+ With 45 mm long open wire ends for connection of a head transmitter subsequently	No. -31
+ With head transmitter Type 2 (programmable, elect. insulation)*	No. -33
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	No. -34

* Name the measuring range.

TE-BC

SCREW-IN THERMOCOUPLE ACC. TO DIN 43772 FORM 2G, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head Type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell and neck tube at stainless steel 1.4571
+ Mounting bush G 1 at stainless steel 1.4571
+ Immersion length EL and thermowell/neck tube ø acc. to table
+ Neck tube length HL = 145 mm
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell & Neck Tube ø mm	Material	Immersion Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BC-11	11	1.4571 X6CrNiMoTi 17-12-2	160	6	315	8616001	8616101	8616201	8616301
			250		405	8616002	8616102	8616202	8616302
			400		555	8616003	8616103	8616203	8616303
TE-BC-12	12		160	6	315	8616011	8616111	8616211	8616311
			250		405	8616012	8616112	8616212	8616312
			400		555	8616013	8616113	8616213	8616313
TE-BC-14	14		160	8	315	8616021	8616121	8616221	8616321
			250		405	8616022	8616122	8616222	8616322
			400		555	8616023	8616123	8616223	8616323

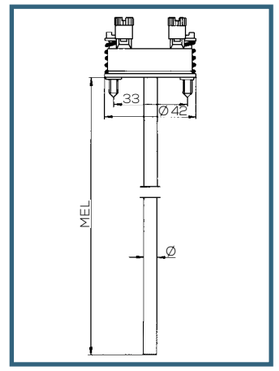
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		405	8671086	8671186	8671286	8671386
		555	8671090	8671190	8671290	8671390
TE-ME-MI-8	8	315	8681004	8681104	8681204	8681304
		405	8681006	8681106	8681206	8681306
		555	8681011	8681111	8681211	8681311

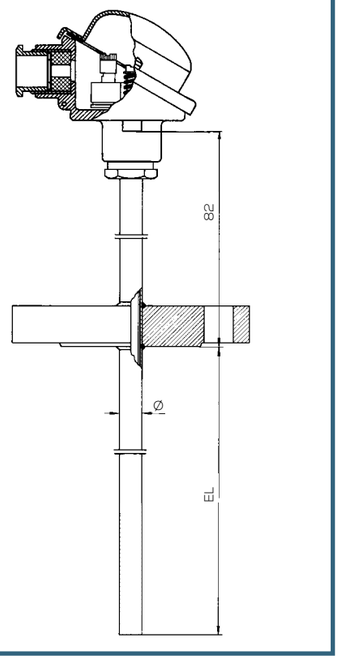
OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**
Complete instruments with connection heads (from page 48)	
+ Type BBK **No. -11**	+ Type DAN-S **No. -14**
+ Type BBG **No. -12**	+ Type DANH **No. -15**
+ Type DAN **No. -13**	+ Type DANH-S **No. -16**
Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BF

FLANGED THERMOCOUPLE ACC. TO DIN 43772 FORM 2F, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell and neck tube at stainless steel 1.4571
+ Flange NW25 ND40 form C at stainless steel 1.4571 (acc. to DIN EN 1092-1)
+ Immersion length EL and thermowell/neck tube ø acc. to table
+ Neck tube length HL = 82 mm
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range –100 °C to 600 °C

	Thermowell & Neck Tube ø mm	Material	Immersion Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BF-11	11	1.4571 X6CrNiMoTi 17-12-2	225	6	315	8617001	8617101	8617201	8617301
			315		405	8617002	8617102	8617202	8617302
			465		555	8617003	8617103	8617203	8617303
TE-BF-12	12		225	6	315	8617011	8617111	8617211	8617311
			315		405	8617012	8617112	8617212	8617312
			465		555	8617013	8617113	8617213	8617313
TE-BF-14	14		225	8	315	8617021	8617121	8617221	8617321
			315		405	8617022	8617122	8617222	8617322
			465		555	8617023	8617123	8617223	8617323

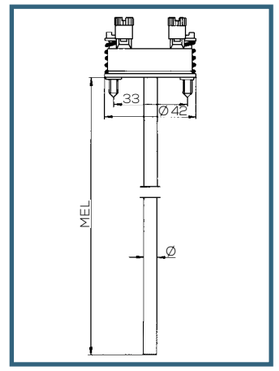
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		405	8671086	8671186	8671286	8671386
		555	8671090	8671190	8671290	8671390
TE-ME-MI-8	8	315	8681004	8681104	8681204	8681304
		405	8681006	8681106	8681206	8681306
		555	8681011	8681111	8681211	8681311

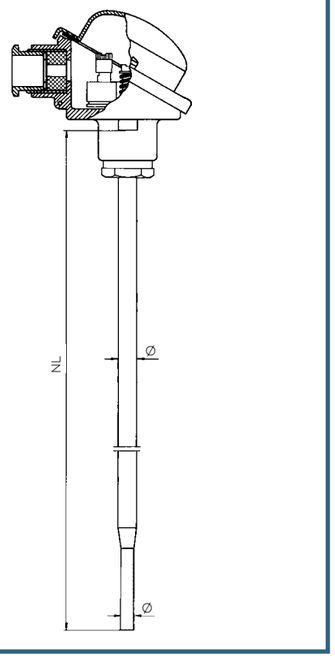
OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**
Complete instruments with connection heads (from page 48)	
+ Type BBK **No. -11**	+ Type DAN-S **No. -14**
+ Type BBG **No. -12**	+ Type DANH **No. -15**
+ Type DAN **No. -13**	+ Type DANH-S **No. -16**
Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BE (R)

INSERTIBLE THERMOCOUPLE ACC. TO DIN 43772 FORM 3, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ (R) = fast reaction
+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell at stainless steel 1.4571
+ Thermowell ø and nominal length according to table
+ Measuring tip ca. 50 mm length tapered
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range –100 °C to 600 °C

	Thermowell ø mm	Material	Nominal Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BE-12 (R)	12 (9)	1.4571 X6CrNiMoTi 17-12-2	307	6	315	8618001	8618101	8618201	8618301
			367		375	8618002	8618102	8618202	8618302
			427		435	8618003	8618103	8618203	8618303
TE-BE-14 (R)	14 (11)		307	8	315	8618011	8618111	8618211	8618311
			367		375	8618012	8618112	8618212	8618312
			427		435	8618013	8618113	8618213	8618313

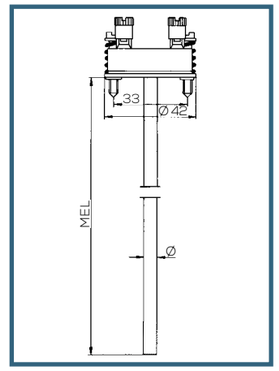
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		375	8671085	8671185	8671285	8671385
		435	8671087	8671187	8671287	8671387
TE-ME-MI-8	8	315	8681004	8681104	8681204	8681304
		375	8681005	8681105	8681205	8681305
		435	8681015	8681115	8681215	8681315

OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**

Complete instruments with connection heads (from page 48)

+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

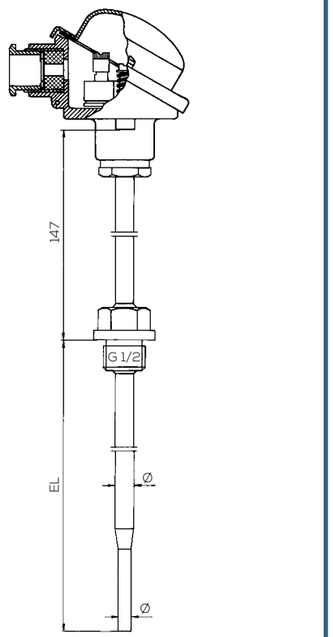
Head transmitters (from page 50)

+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BB (R)

INSERTIBLE THERMOCOUPLE ACC. TO DIN 43772 FORM 3G, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ (R) = fast reaction
+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. To DIN EN 50446)
+ Thermowell and neck tube at stainless steel 1.4571
+ Mounting bush G 1/2 at stainless steel 1.4571
+ Immersion length EL and thermowell/neck tube ø acc. to table
+ Neck tube length HL = 147 mm
+ Measuring tip ca. 50 mm length tapered
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range –100 °C to 600 °C

	Thermowell & Neck Tube ø mm	Material	Immersion Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BB-12 (R)	12 (9)	1.4571 X6CrNiMoTi 17-12-2	160	6	315	8619001	8619101	8619201	8619301
			220		375	8619002	8619102	8619202	8619302
			280		435	8619003	8619103	8619203	8619303
TE-BB-14 (R)	14 (11)		160	8	315	8619011	8619111	8619211	8619311
			220		375	8619012	8619112	8619212	8619312
			280		435	8619013	8619113	8619213	8619313

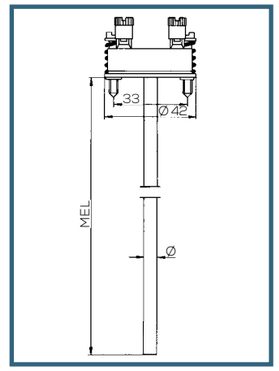
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		375	8671085	8671185	8671285	8671385
		435	8671087	8671187	8671287	8671387
TE-ME-MI-8	8	315	8681004	8681104	8681204	8681304
		375	8681005	8681105	8681205	8681305
		435	8681015	8681115	8681215	8681315

OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**

Complete instruments with connection heads (from page 48)

+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

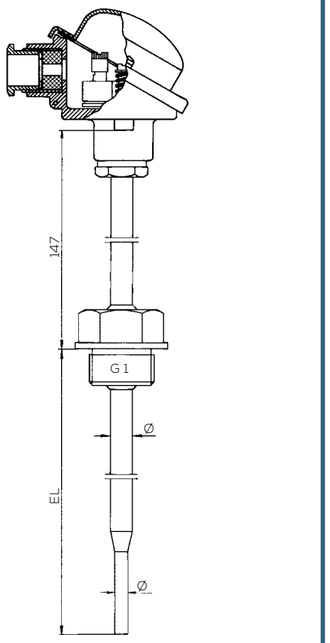
Head transmitters (from page 50)

+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BC (R)

SCREW-IN THERMOCOUPLE ACC. TO DIN 43772 FORM 3G, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ (R) = fast reaction
+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell and neck tube at stainless steel 1.4571
+ Mounting bush G 1 at stainless steel 1.4571
+ Immersion length EL and thermowell/neck tube ø acc. to table
+ Neck tube length HL = 147mm
+ Measuring tip ca. 50 mm length tapered
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell & Neck Tube ø mm	Material	Immersion Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BC-12 (R)	12 (9)	1.4571 X6CrNiMoTi 17-12-2	160	6	315	8620001	8620101	8620201	8620301
			220		375	8620002	8620102	8620202	8620302
			280		435	8620003	8620103	8620203	8620303
TE-BC-14 (R)	14 (11)		160	8	315	8620011	8620111	8620211	8620311
			220		375	8620012	8620112	8620212	8620312
			280		435	8620013	8620113	8620213	8620313

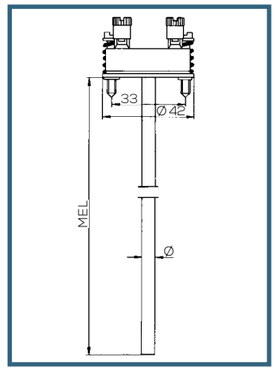
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		375	8671085	8671185	8671285	8671385
		435	8671087	8671187	8671287	8671387
TE-ME-MI-8	8	315	8681004	8681104	8681204	8681304
		375	8681005	8681105	8681205	8681305
		435	8681015	8681115	8681215	8681315

OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	No. -91

Complete instruments with connection heads (from page 48)

+ Type BBK	No. -11	+ Type DAN-S	No. -14
+ Type BBG	No. -12	+ Type DANH	No. -15
+ Type DAN	No. -13	+ Type DANH-S	No. -16

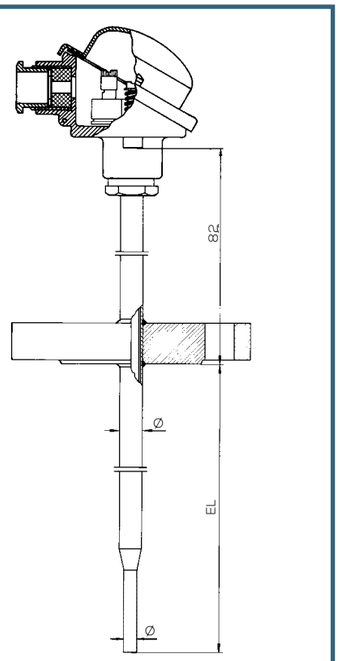
Head transmitters (from page 50)

+ With 45 mm long open wire ends for connection of a head transmitter subsequently	No. -31
+ With head transmitter Type 2 (programmable, elect. insulation)*	No. -33
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	No. -34

* Name the measuring range.

TE-BF (R)

FLANGED THERMOCOUPLES ACC. TO DIN 43772 FORM 3F, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ (R) = fast reaction
+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Thermowell and neck tube at stainless steel 1.4571
+ Flange NW25 ND40 form C at stainless steel 1.4571 (acc. to DIN EN 1092)
+ Immersion length EL and thermowell/neck tube ø acc. to table
+ Neck tube length HL = 82mm
+ Measuring tip ca. 50 mm length tapered
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Thermowell & Neck Tube ø mm	Material	Immersion Length in mm	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BF-12 (R)	12 (9)	1.4571 X6CrNiMoTi 17-12-2	225	6	315	8622001	8622101	8622201	8622301
			285		375	8622002	8622102	8622202	8622302
			345		435	8622003	8622103	8622203	8622303
TE-BF-14 (R)	14 (11)		225	8	315	8622011	8622111	8622211	8622311
			285		375	8622012	8622112	8622212	8622312
			345		435	8622013	8622113	8622213	8622313

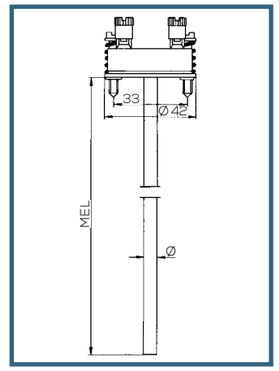
ORDER: You can´t find an option suitable for you on the right? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		375	8671085	8671185	8671285	8671385
		435	8671087	8671187	8671287	8671387
TE-ME-MI-8	8	315	8681004	8681104	8681204	8681304
		375	8681005	8681105	8681205	8681305
		435	8681015	8681115	8681215	8681315

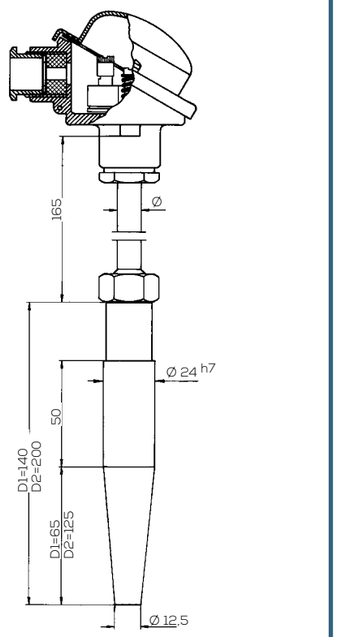
OPTIONS (Order note on page 4)

Material	Add.-No.
+ Thermowell at stainless steel 1.4541	**No. -91**
Complete instruments with connection heads (from page 48)	
+ Type BBK	**No. -11**
+ Type BBG	**No. -12**
+ Type DAN	**No. -13**
+ Type DAN-S	**No. -14**
+ Type DANH	**No. -15**
+ Type DANH-S	**No. -16**
Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

* Name the measuring range.

TE-BD

WELD-IN THERMOCOUPLE ACC. TO DIN 43772 FORM 4, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Neck tube ø 11 mm designed in stainless steel 1.4571
+ Neck tube length HL = 165 mm
+ Weld-in thermowell ø 24 h7 mm
+ Material of weld-in thermowell acc. to table
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex with insulated measuring point Tolerance acc. to DIN EN 60584 class 2
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

SPARE WELD-IN THERMOWELLS AT STANDARD DESIGN

SPECIFICATION:

+ See the standard design

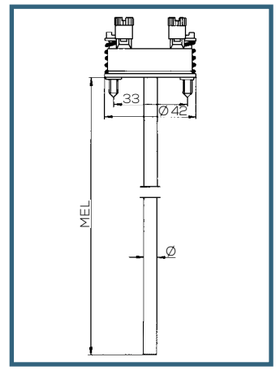
	1.0460 C22.8	1.5415 15Mo 3	1.7335 13CrMo 44	1.7380 10CrMo 9 10	1.4571 X6CrNiMoTi 17-12-2
D1	437006	437002	437003	437004	437005
D2	437106	437102	437103	437104	437105

	Weld-in Thermo-well Length in mm	Taper Length	Material	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BD-D1	140	65	1.0460 C22.8	6	315	8641041	8641141	8641241	8641341
			1.5415 15Mo 3			8641042	8641142	8641242	8641342
			1.7335 13CrMo 44			8641043	8641143	8641243	8641343
			1.7380 10CrMo 9 10			8641044	8641144	8641244	8641344
			1.4571 X6CrNiMoTi 17-12-2			8641045	8641145	8641245	8641345
TE-BD-D2	200	125	1.0460 C22.8	6	375	8641051	8641151	8641251	8641351
			1.5415 15Mo 3			8641052	8641152	8641252	8641352
			1.7335 13CrMo 44			8641053	8641153	8641253	8641353
			1.7380 10CrMo 9 10			8641054	8641154	8641254	8641354
			1.4571 X6CrNiMoTi 17-12-2			8641055	8641155	8641255	8641355

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	315	8671084	8671184	8671284	8671384
		375	8671085	8671185	8671285	8671385

OPTIONS (Order note on page 4)

Complete instruments with connection heads (from page 48)	**Add.-No.**		
+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

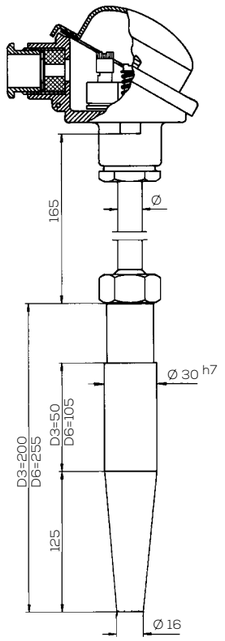
ORDER: You can´t find an option suitable for you? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

* Name the measuring range.

TE-BD

WELD-IN THERMOCOUPLE ACC. TO DIN 43772 FORM 4, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Neck tube ø 11 mm designed in stainles steel 1.4571
+ Neck tube length HL = 165 mm
+ Weld-in thermowell ø 30 h7 mm
+ Material of weld-in thermowell acc. to table
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex with insulated measuring point Tolerance acc. to DIN EN 60584 class 2
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

SPARE WELD-IN THERMOWELLS AT STANDARD DESIGN

SPECIFICATION:

+ See the standard design

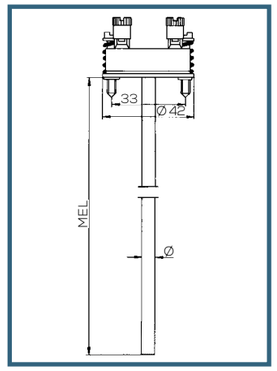
	1.0460 C22.8	1.5415 15Mo 3	1.7335 13CrMo 44	1.7380 10CrMo 9 10	1.4571 X6CrNiMoTi17-12-2
D3	437206	437202	437203	437204	437205
D6	437506	437502	437503	437504	437505

	Weld-in Thermo-well Length in mm	Taper Length	Material	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BD-D3	200	125	1.0460 C22.8	8	375	8641061	8641161	8641261	8641361
			1.5415 15Mo 3			8641062	8641162	8641262	8641362
			1.7335 13CrMo 44			8641063	8641163	8641263	8641363
			1.7380 10CrMo 9 10			8641064	8641164	8641264	8641364
			1.4571 X6CrNiMoTi 17-12-2			8641065	8641165	8641265	8641365
TE-BD-D6	255	125	1.0460 C22.8	8	430	8641071	8641171	8641271	8641371
			1.5415 15Mo 3			8641072	8641172	8641272	8641372
			1.7335 13CrMo 44			8641073	8641173	8641273	8641373
			1.7380 10CrMo 9 10			8641074	8641174	8641274	8641374
			1.4571 X6CrNiMoTi 17-12-2			8641075	8641175	8641275	8641375

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-8	8	375	8681005	8681105	8681205	8681305
		430	8681007	8681107	8681207	8681307

OPTIONS (Order note on page 4)

Complete instruments with connection heads (from page 48)	**Add.-No.**		
+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

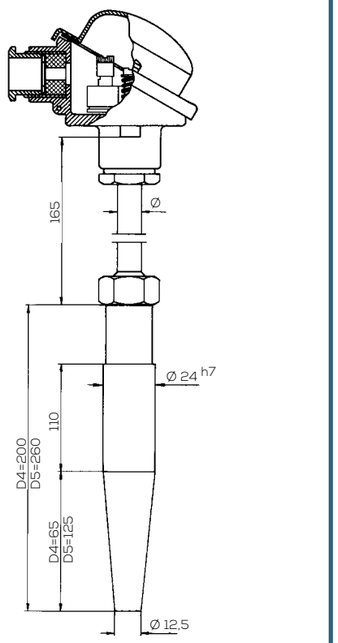
ORDER: You can´t find an option suitable for you? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

* Name the measuring range.

TE-BD

WELD-IN THERMOCOUPLE ACC. TO DIN 43772 FORM 4, WITH EXCHANGEABLE INSERT



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Neck tube ø 11 mm designed in stainless steel 1.4571
+ Neck tube length HL = 165 mm
+ Weld-in thermowell ø 24 h7 mm
+ Material of weld-in thermowell acc. to table
+ Measuring insert with mineral insulated sheathed cable (bendable) stainless steel sheath with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex with insulated measuring point Tolerance acc. to DIN EN 60584 class 2
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

SPARE WELD-IN THERMOWELLS AT STANDARD DESIGN

SPECIFICATION:

+ See the standard design

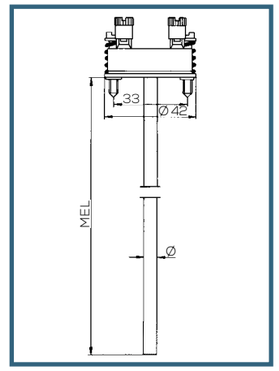
	1.0460 C22.8	1.5415 15Mo 3	1.7335 13 13CrMo 44	1.7380 10CrMo 9 10	1.4571 X6CrNiMoTi17-12-2
D4	437306	437302	437303	437304	437305
D5	437406	437402	437403	437404	437405

	Weld-in Thermo-well Length in mm	Taper Length	Material	Insert ø mm	Insert Length in mm	Type K		Type J	
						simplex	duplex	simplex	duplex
TE-BD-D4	200	65	1.0460 C22.8	6	375	8641081	8641181	8641281	8641381
			1.5415 15Mo 3			8641082	8641182	8641282	8641382
			1.7335 13CrMo 44			8641083	8641183	8641283	8641383
			1.7380 10CrMo 9 10			8641084	8641184	8641284	8641384
			1.4571 X6CrNiMoTi 17-12-2			8641085	8641185	8641285	8641385
TE-BD-D5	260	125	1.0460 C22.8	6	435	8641091	8641191	8641291	8641391
			1.5415 15Mo 3			8641092	8641192	8641292	8641392
			1.7335 13CrMo 44			8641093	8641193	8641293	8641393
			1.7380 10CrMo 9 10			8641094	8641194	8641294	8641394
			1.4571 X6CrNiMoTi 17-12-2			8641095	8641195	8641295	8641395

SPARE INSERTS AT BENDABLE DESIGN

SPECIFICATION:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Temperature range -100 °C to 600 °C



	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-8	6	375	8681085	8681185	8681285	8681385
		435	8681087	8681187	8681287	8681387

OPTIONS (Order note on page 4)

Complete instruments with connection heads (from page 48)	**Add.-No.**		
+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

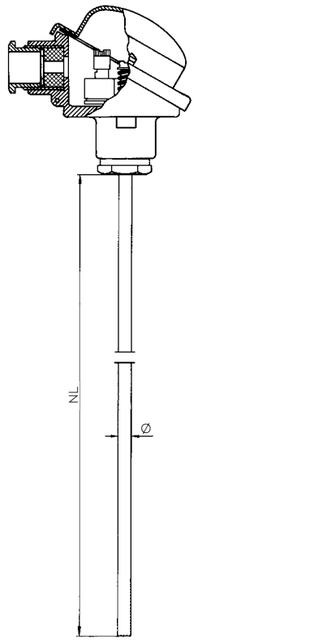
ORDER: You can´t find an option suitable for you? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

* Name the measuring range.

TE-BL-ME

THERMOCOUPLE WITHOUT ADDITIONAL THERMOWELL WITH RIGID INSERT INSERT EXPOSED AND NOT EXCHANGEABLE



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Nominal length NL and measuring insert ø acc. to table
+ Measuring insert with rigid thermowell designed in stainless steel
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Insert ø mm	Material	Nominal Length in mm	Type K		Type J	
				simplex	duplex	simplex	duplex
TE-BL-ME-6	6	Stainless Steel	250	8611001	8611101	8611201	8611301
			350	8611002	8611102	8611202	8611302
			380	8611003	8611103	8611203	8611303
			500	8611004	8611104	8611204	8611304
			530	8611005	8611105	8611205	8611305
			630	8611006	8611106	8611206	8611306
			710	8611007	8611107	8611207	8611307
			800	8611008	8611108	8611208	8611308
TE-BL-ME-8	8		250	8611021	8611121	8611221	8611321
			350	8611022	8611122	8611222	8611322
			500	8611023	8611123	8611223	8611323
			530	8611024	8611124	8611224	8611324
			630	8611025	8611125	8611225	8611325
			710	8611026	8611126	8611226	8611326
			800	8611027	8611127	8611227	8611327
			1,000	8611028	8611128	8611228	8611328

COUPLING GENERALLY	Ord.-No.
+ For insert Ø 6 mm	
+ Coupling and cutting ring at stainless steel	
with threading G 1/8	GEV-06L-G1.8-D
with threading G 1/4	GEV-06L-G1.4-D
with threading G 3/8	GEV-06L-G3.8-D
with threading G 1/2	GEV-06L-G1.2-D
with threading M10 x 1	GEV-06L-M10x1-D
with threading 1/8"NPT	GEV-06L-NPT1.8-D
with threading 1/4"NPT	GEV-06L-NPT1.4-D
with threading 3/8"NPT	GEV-06L-NPT3.8-D
with threading 1/2"NPT	GEV-06L-NPT1.2-D

COUPLING GENERALLY	Ord.-No.
+ For insert Ø 8 mm	
+ Coupling and cutting ring at stainless steel	
with threading G 1/4	GEV-08L-G1.4-D
with threading G 3/8	GEV-08L-G3.8-D
with threading G 1/2	GEV-08L-G1.2-D
with threading M12 x 1,5	GEV-08L-M12x1,5-D
with threading 1/4"NPT	GEV-08L-NPT1.4-D
with threading 3/8"NPT	GEV-08L-NPT3.8-D
with threading 1/2"NPT	GEV-08L-NPT1.2-D

OPTIONS (Order note on page 4)

Clamping ring at teflon	Add.-No.
+ Coupling with clamping ring at teflon	No. -PTFE

Complete instruments with connection heads (from page 48)

+ Type BBK	No. -11	+ Type DAN-S	No. -14
+ Type BBG	No. -12	+ Type DANH	No. -15
+ Type DAN	No. -13	+ Type DANH-S	No. -16

Head transmitters (from page 50)

+ With 45 mm long open wire ends for connection of a head transmitter subsequently	No. -31
+ With head transmitter Type 2 (programmable, elect. insulation)*	No. -33
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	No. -34

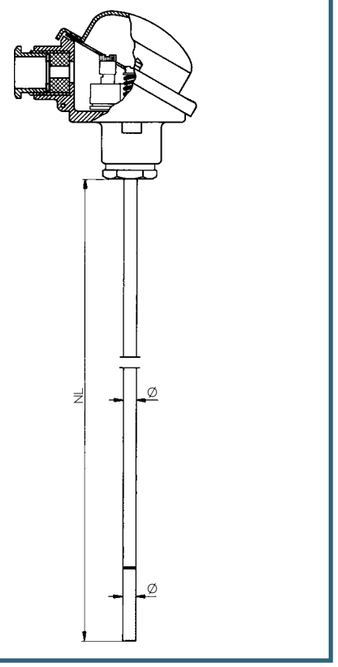
ORDER: You can´t find an option suitable for you? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

* Name the measuring range.

TE-BL-MI

THERMOCOUPLE WITHOUT ADDITIONAL THERMOWELL WITH FLEXIBLE INSERT INSERT EXPOSED AND NOT EXCHANGEABLE



COMPLETE INSTRUMENTS

SPECIFICATION OF THE STANDARD DESIGN:

+ Connection head type B at light metal with cable gland M 20 x 1,5 (acc. to DIN EN 50446)
+ Nominal length NL and measuring insert ø acc. to table
+ Measuring insert with mineral insulated sheathed cable (bendable)
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J); simplex or duplex
  Tolerance acc. to DIN EN 60584 class 2
+ Measuring point insulated
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Insert ø mm	Material	Nominal Length in mm	Type K		Type J	
				simplex	duplex	simplex	duplex
TE-BL-MI-6	6	Stainless Steel	250	8681071	8681171	8681271	8681371
			350	8681072	8681172	8681272	8681372
			380	8681073	8681173	8681273	8681373
			500	8681074	8681174	8681274	8681374
			530	8681075	8681175	8681275	8681375
			630	8681076	8681176	8681276	8681376
			710	8681077	8681177	8681277	8681377
			800	8681078	8681178	8681278	8681378
TE-BL-MI-8	8		250	8681081	8681181	8681281	8681381
			350	8681082	8681182	8681282	8681382
			500	8681083	8681183	8681283	8681383
			530	8681084	8681184	8681284	8681384
			630	8681085	8681185	8681285	8681385
			710	8681086	8681186	8681286	8681386
			800	8681087	8681187	8681287	8681387
			1,000	8681088	8681188	8681288	8681388

COUPLING GENERALLY	Ord.-No.
+ For insert Ø 6 mm	
+ Coupling and cutting ring at stainless steel	
with threading G 1/8	**GEV-06L-G1.8-D**
with threading G 1/4	**GEV-06L-G1.4-D**
with threading G 3/8	**GEV-06L-G3.8-D**
with threading G 1/2	**GEV-06L-G1.2-D**
with threading M10 x 1	**GEV-06L-M10x1-D**
with threading 1/8"NPT	**GEV-06L-NPT1.8-D**
with threading 1/4"NPT	**GEV-06L-NPT1.4-D**
with threading 3/8"NPT	**GEV-06L-NPT3.8-D**
with threading 1/2"NPT	**GEV-06L-NPT1.2-D**

COUPLING GENERALLY	Ord.-No.
+ For insert Ø 8 mm	
+ Coupling and cutting ring at stainless steel	
with threading G 1/4	**GEV-08L-G1.4-D**
with threading G 3/8	**GEV-08L-G3.8-D**
with threading G 1/2	**GEV-08L-G1.2-D**
with threading M12 x 1,5	**GEV-08L-M12x1,5-D**
with threading 1/4"NPT	**GEV-08L-NPT1.4-D**
with threading 3/8"NPT	**GEV-08L-NPT3.8-D**
with threading 1/2"NPT	**GEV-08L-NPT1.2-D**

OPTIONS (Order note on page 4)

Clamping ring at teflon	Add.-No.
+ Coupling with clamping ring at teflon	**No. -PTFE**

Complete instruments with connection heads (from page 48)			
+ Type BBK	**No. -11**	+ Type DAN-S	**No. -14**
+ Type BBG	**No. -12**	+ Type DANH	**No. -15**
+ Type DAN	**No. -13**	+ Type DANH-S	**No. -16**

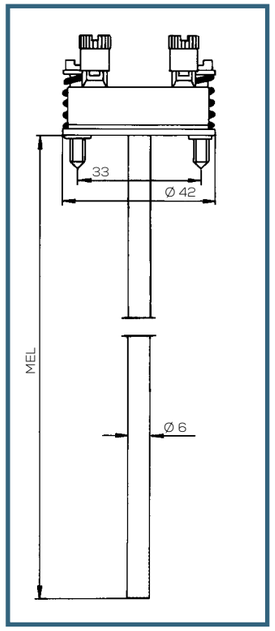
Head transmitters (from page 50)	
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

ORDER: You can´t find an option suitable for you? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.
The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

* Name the measuring range.

TE-ME

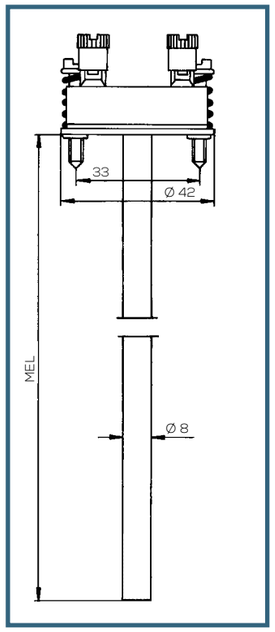
INSERT FOR THERMOCOUPLE ACC. TO DIN 43735



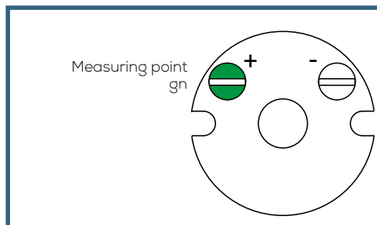
SPECIFICATION OF THE STANDARD DESIGN:

+ Measuring insert with rigid protection tube designed in stainless steel
+ Measuring insert length MEL according to table
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J);
  simplex or duplex with insulated measuring point
  Tolerance acc. to DIN EN 60584 class 2
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-6	6	145	8671041	8671141	8671241	8671341
		205	8671042	8671142	8671242	8671342
		295	8671043	8671143	8671243	8671343
		315	8671044	8671144	8671244	8671344
		375	8671045	8671145	8671245	8671345
		405	8671046	8671146	8671246	8671346
		435	8671047	8671147	8671247	8671347
		445	8671048	8671148	8671248	8671348
		455	8671049	8671149	8671249	8671349
		555	8671050	8671150	8671250	8671350

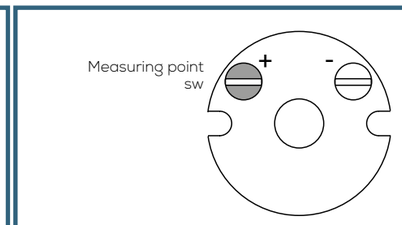


	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-8	8	145	8671071	8671171	8671271	8671371
		205	8671072	8671172	8671272	8671372
		295	8671073	8671173	8671273	8671373
		315	8671074	8671174	8671274	8671374
		375	8671075	8671175	8671275	8671375
		405	8671076	8671176	8671276	8671376
		430	8671077	8671177	8671277	8671377
		435	8671085	8671185	8671285	8671385
		445	8671078	8671178	8671278	8671378
		455	8671079	8671179	8671279	8671379
		525	8671080	8671180	8671280	8671380
		555	8671081	8671181	8671281	8671381
		735	8671082	8671182	8671282	8671382
		1,025	8671083	8671183	8671283	8671383
		1,425	8671084	8671184	8671284	8671384
		2,025	8671086	8671186	8671286	8671386



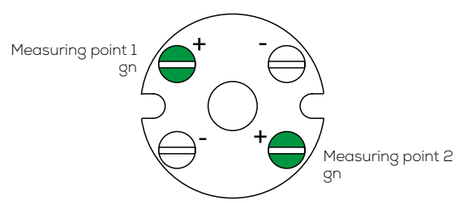
TYPE K

simplex



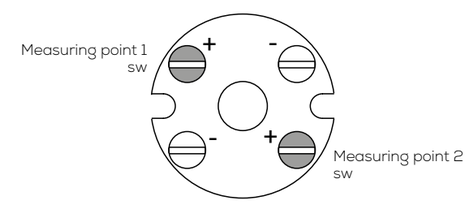
TYPE J

simplex



TYPE K

duplex



TYPE J

duplex

OPTIONS (Order note on page 4)

Head transmitters (from page 50)	Add.-No.
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	**No. -31**
+ With head transmitter Type 2 (programmable, elect. insulation)*	**No. -33**
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	**No. -34**

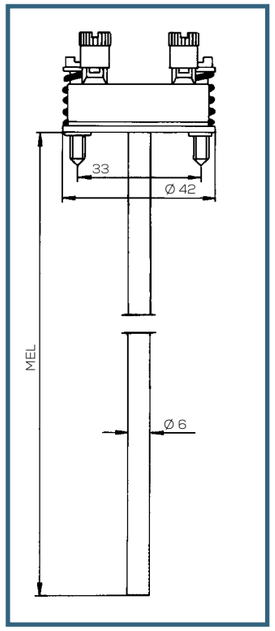
ORDER: You can´t find an option suitable for you? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

* Name the measuring range.

TE-ME-MI

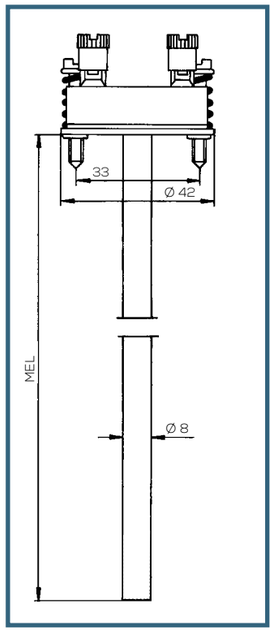
INSERT FOR THERMOCOUPLE ACC. TO DIN 43735
FLEXIBLE DESIGN



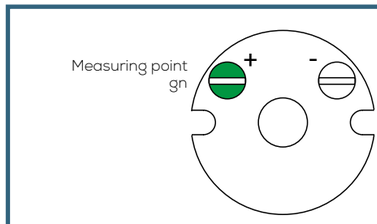
SPECIFICATION OF THE STANDARD DESIGN:

+ Measuring insert with mineral insulated sheathed cable (bendable) at stainless steel
+ Insert length MEL acc. to table
+ Insert with constant diameter
+ Thermocouple NiCr-Ni (Type K) or Fe-CuNi (Type J);
  simplex or duplex with insulated measuring point. Tolerance acc. to DIN EN 60584 class 2
+ Connection via ceramic terminal block with connection pins
+ Range -100 °C to 600 °C

	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-6	6	145	8671001	8671101	8671201	8671301
		205	8671002	8671102	8671202	8671302
		295	8671003	8671103	8671203	8671303
		315	8671004	8671104	8671204	8671304
		375	8671005	8671105	8671205	8671305
		405	8671006	8671106	8671206	8671306
		435	8671007	8671107	8671207	8671307
		445	8671008	8671108	8671208	8671308
		455	8671009	8671109	8671209	8671309
		555	8671010	8671110	8671210	8671310

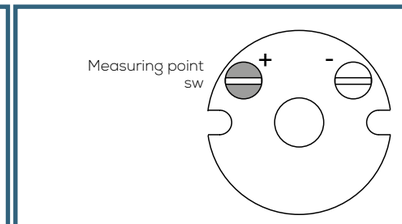


	Insert ø mm	Insert Length in mm	Type K		Type J	
			simplex	duplex	simplex	duplex
TE-ME-MI-8	8	145	8671021	8671121	8671221	8671321
		205	8671022	8671122	8671222	8671322
		295	8671023	8671123	8671223	8671323
		315	8671024	8671124	8671224	8671324
		375	8671025	8671125	8671225	8671325
		405	8671026	8671126	8671226	8671326
		430	8671027	8671127	8671227	8671327
		435	8671035	8671135	8671235	8671335
		445	8671028	8671128	8671228	8671328
		455	8671029	8671129	8671229	8671329
		525	8671030	8671130	8671230	8671330
		555	8671031	8671131	8671231	8671331
		735	8671032	8671132	8671232	8671332
		1,025	8671033	8671133	8671233	8671333
		1,425	8671034	8671134	8671234	8671334
		2,025	8671036	8671136	8671236	8671336



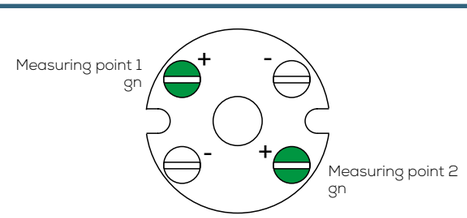
TYPE K

simplex



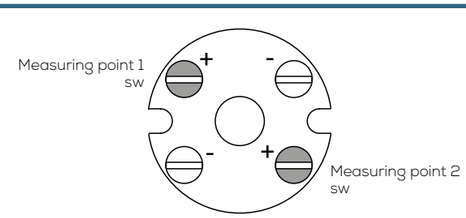
TYPE J

simplex



TYPE K

duplex



TYPE J

duplex

OPTIONS (Order note on page 4)

Head transmitters (from page 50)	Add.-No.
+ With 45 mm long open wire ends for connection of a head transmitter subsequently	No. -31
+ With head transmitter Type 2 (programmable, elect. insulation)*	No. -33
+ With head transmitter Type 3 (as Type 2, but EEx-Version)*	No. -34

ORDER: You can´t find an option suitable for you? Then please enter your required parameters in the questionnaire on page 52. We will then contact you as fast as possible.

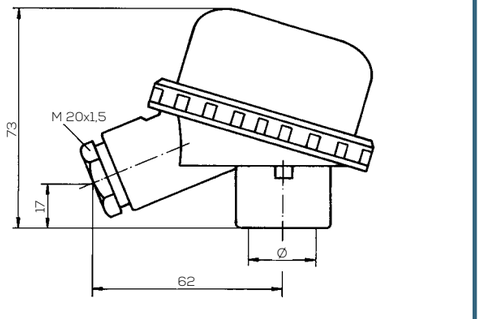
The questionnaire is also available online: **www.ludwig-schneider.de/en/thermocouples-questionnaire/**

* Name the measuring range.

SUMMARY OF CONNECTION HEADS

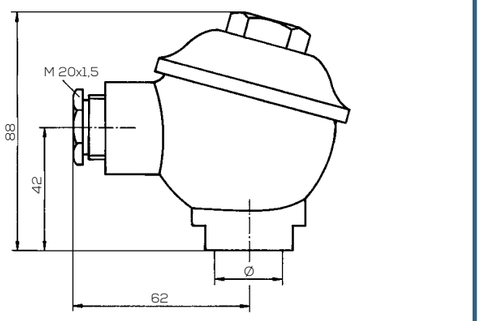
All the connection heads are similary form B acc. to DIN EN 50446 and are suitable for mounting of a terminal block or a head transmitter (max. Ø 44 mm). They are generally furnished with a rubber sealing in the cable threading and in the folding cover. The max. temperature load is 80 °C.

Further the high folding cover of the connection heads DANH and DANH-S are suitable for mounting of an additional terminal block or head transmitter.



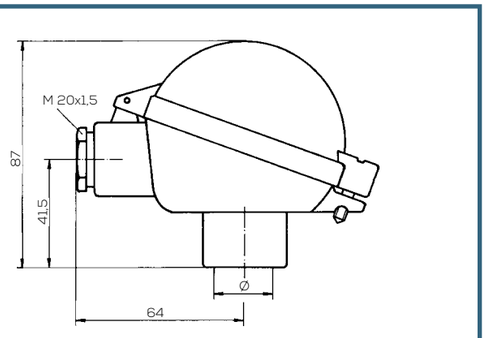
BBK

SPECIFICATION
- Material: black plastic
- Protection class: IP54
- Screw cover in black (optional in white, yellow, green, transparent)
- Cable gland M 20 x 1,5



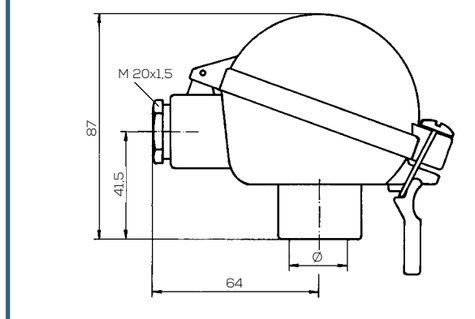
BBG

SPECIFICATION
- Material: cast iron
- Protection class: IP54
- Screw cover
- Cable gland M 20 x 1,5



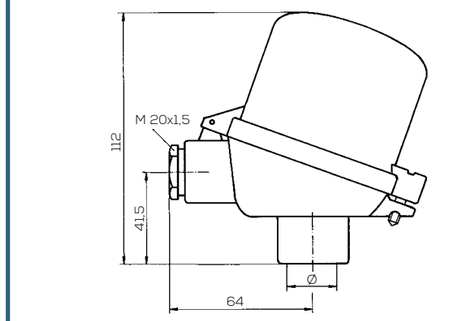
DAN

SPECIFICATION
- Material: light metal
- Protection class: IP54
- Folding cover and fastening screw
- Cable gland M 20 x 1,5



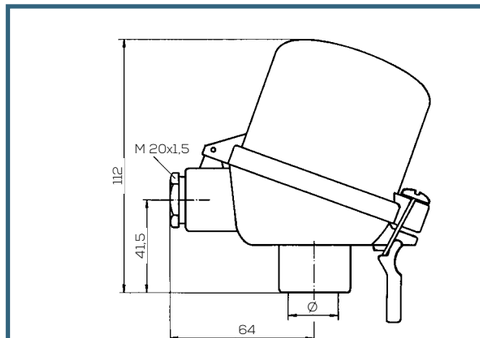
DAN-S

SPECIFICATION
- Material: light metal
- Protection class: IP54
- Folding cover and fast clamping device
- Cable gland M 20 x 1,5



DANH

SPECIFICATION
- Material: light metal
- Protection class: IP54
- High folding cover and fastening screw
- Cable gland M 20 x 1,5



DANH-S

SPECIFICATION
- Material: light metal
- Protection class: IP54
- High folding cover and fast clamping device
- Cable gland M 20 x 1,5

HEAD TRANSMITTER

The following head transmitters are mainly designed for mounting in connection head form B acc. to DIN EN 50446 or any larger size. They are all dual-wire temperature transmitters (loop-transmitters).

SPECIFICATION OF TYPE 2:
Universal transmitter for RTD, TC, lin. Ω and mV, input free programmable, elect. insulation, temperature range free programmable, output temperature linear, sensor error detection.

SPECIFICATION OF TYPE 3:
Universal transmitter for RTD, TC, lin. Ω and mV, EEx-version, input free programmable, elect. insulation, temperature range free programmable, output temperature linear, sensor error detection.

COMMON SPECIFICATIONS	TYPE 2	TYPE 3
Supply Voltage	7.2 to 35 VDC	7.2 to 28 VDC
Supply Voltage Influx	< 0.005 % VDC	< 0.005 % VDC
Isolation Voltage	1500 VAC	1500 VAC
Linearity Error	≤ 0.05 %	≤ 0.05 %
Response Time	1 to 60 s*	1 to 60 s*
EEprom error check (output by error)	< 3.5 s (≤ 3.5 mA)	< 3.5 s (≤ 3.5 mA)
Licence for explosion area	-	EEx ia IIC T1 - T6
Max. wire size	1.5 mm²	1.5 mm²
Working temperature	–40 °C to 85 °C	–40 °C to 85 °C
Relative air humidity	0 to 95 %	0 to 95 %
Dimensions	ø 44 x 20.2 mm	ø 44 x 20.2 mm
Weight	50 g	50 g

INPUT SPECIFICATIONS FOR RTD	TYPE 2	TYPE 3
Temperature span for Pt100	–200 °C to 850 °C	–200 °C to 850 °C
Temperature span for Ni100	–60 °C to 250 °C	–60 °C to 250 °C
Min. meausuring span	25 °C	25 °C
Wire connection	2, 3, 4*	2, 3, 4*
Resistor current	0.2 mA	0.2 mA
Basic accuracy	± 0.2 °C	± 0.2 °C
Max. lead resistance per wire	5 Ω	5 Ω
Effect of the lead resistance	< 0.008 °C / Ω***	< 0.008 °C / Ω***

* Programmable
** By preference –50 °C to 50 °C, 0 °C to 50 °C, 0 °C to 100 °C, 0 °C to 150 °C, 0 °C to 200 °C
*** At 3- and 4-wire connection
**** Name the adjustments

INPUT SPECIFICATIONS FOR TC	TYPE 2	TYPE 3
Temperature span for type B	400 °C to 1,820 °C*	400 °C to 1,820 °C*
Temperature span for type E	–100 °C to 1,000 °C*	–100 °C to 1,000 °C*
Temperature span for type J	–100 °C to 1,200 °C*	–100 °C to 1,200 °C*
Temperature span for type K	–180 °C to 1,372 °C*	–180 °C to 1,372 °C*
Temperature span for type L	–100 °C to 900 °C*	–100 °C to 900 °C*
Temperature span for type N	–180 °C to 1,300 °C*	–180 °C to 1,300 °C*
Temperature span for type R	–50 °C to 1,760 °C*	–50 °C to 1,760 °C*
Temperature span for type S	–50 °C to 1,760 °C*	–50 °C to 1,760 °C*
Temperature span for type T	–200 °C to 400 °C*	–200 °C to 400 °C*
Temperature span for type U	–200 °C to 600 °C*	–200 °C to 600 °C*
Temperature span for type W3	0 °C to 2,300 °C*	0 °C to 2,300 °C*
Temperature span for type W5	0 °C to 2,300 °C*	0 °C to 2,300 °C*
Min. measuring span for type E, J, K, L, T	50 °C	50 °C
Min. measuring span for type U	75 °C	75 °C
Min. measuring span for type N	100 °C	100 °C
Min. measuring span for type B, R, S, W3, W5	200 °C	200 °C
Basic accuracy for type E, J, K, L, N, T, U	≤ 1 °C	≤ 1 °C
Basic accuracy for type B, R, S, W3, W5	≤ 2 °C	≤ 2 °C
Cold junction	internal, external*	internal, external*
Cold junction compensation	< 1 °C	< 1 °C

INPUT SPECIFICATIONS FOR LIN. RESISTOR	TYPE 2	TYPE 3
Measuring span	0 to 5,000 Ω*	0 to 5,000 Ω*
Min. measuring span	30 Ω	30 Ω
Max. lead resistance per wire	5 Ω	5 Ω
Resistor current	0.2 mA	0.2 mA
Effect of the lead resistance	< 0.002 Ω / Ω***	< 0.002 Ω / Ω***

INPUT SPECIFICATIONS FOR VOLTAGE	TYPE 2	TYPE 3
Measuring span	–12 to 800 mV*	–12 to 800 mV*
Min. measuring span	5 mV	5 mV
Input resistance	10 MΩ	10 MΩ

OUTPUT SPECIFICATIONS	TYPE 2	TYPE 3
Current signal	4 - 20 mA, 20 - 4 mA*	4 - 20 mA, 20 - 4 mA*

SENSOR ERROR DETECTIONS	TYPE 2	TYPE 3
No function	-	-
Upscale	≥ 23 mA*	≥ 23 mA*
Downscale	≤ 3.8 mA*	≤ 3.8 mA*
Acc. to Namur NE43 upscale	23 mA*	23 mA*
Acc. to Namur NE43 downscale	3.5 mA*	3.5 mA*

ORDER NUMBER	TYPE 2	TYPE 3
	7691111****	7691011****

QUESTIONNAIRE

If you haven´t found a thermocouple in the version required by you in our catalogue, please fill out this questionnaire. Enter your required parameters and send it to us. We will then contact you as fast as possible.

1. VARIANT THERMOCOUPLE-TYPES
(FROM PAGE 11)
❑ TE-BA ❑ TE-BE ❑ TE-BB-ko ❑ TE-BB-k ❑ TE-BB
❑ TE-BC ❑ TE-BF ❑ TE-BE (R) ❑ TE-BB (R) ❑ TE-BC (R)
❑ TE-BF (R) ❑ TE-BD ❑ TE-BL-ME ❑ TE-BL-MI ❑ TE-ME
❑ TE-ME-MI

2. VARIANT CONNECTION HEADS
(FROM PAGE 48 + 49)
❑ BBK ❑ BBG ❑ DAN
❑ DAN-S ❑ DANH ❑ DANH-S

3. THERMOWELL ❑ **YES** MATERIAL ..... DIAMETER .....

VARIANT THERMOWELL
❑ STANDARD IMMERSION LENGTH ..... ❑ NECK TUBE LENGTH .....
❑ WELD-IN IMMERSION LENGTH ..... ❑ NECK TUBE LENGTH .....

❑ **NO** NOMINAL LENGTH ..... SENSOR-DIAMETER .....

VARIANT COUPLING
❑ CUTTING RING AT STAINLESS STEEL ❑ CLAMPING RING

4. ACCURACY CLASS ❑ CLASS 1 ❑ CLASS 2

5. TEMPERATURE RANGE ..... ° C

6. THERMOCOUPLE TYPE
❑ TYPE J ❑ TYPE K ❑ TYPE E ❑ TYPE R
❑ TYPE T ❑ TYPE N ❑ TYPE S ❑ TYPE B

7. HEAD TRANSMITTER
(FROM PAGE 50 + 51)
❑ TYPE 2 ❑ TYPE 3

8. THERMOCOUPLE
❑ SIMPLEX ❑ DUPLEX

9. QUESTIONS ABOUT DELIVERY

DATE ..... NUMBER OF PIECES ..... DATE OF DELIVERY .....

YOUR ADDRESS

COMPANY NAME ..... CONTACT PERSON .....

STREET, NR. ..... COUNTRY, POSTAL CODE, TOWN .....

PHONE NUMBER ..... EMAIL .....

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NOTES

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■	Catalogue	CABLE-TEMPERATURE PROBES
■	Catalogue	RESISTANCE THERMOMETERS
■	Catalogue	THERMOCOUPLES
■	Catalogue	ACCU-SAFE
■	Catalogue	PRECISION THERMOMETERS FOR METEOROLOGY
■	Catalogue	ENGINE THERMOMETERS
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LUDWIG SCHNEIDER GMBH & CO. KG

Am Eichamt 4–6
D-97877 Wertheim
T +49 9342 8560-0
F +49 9342 84671

info@ludwig-schneider.de
www.ludwig-schneider.com