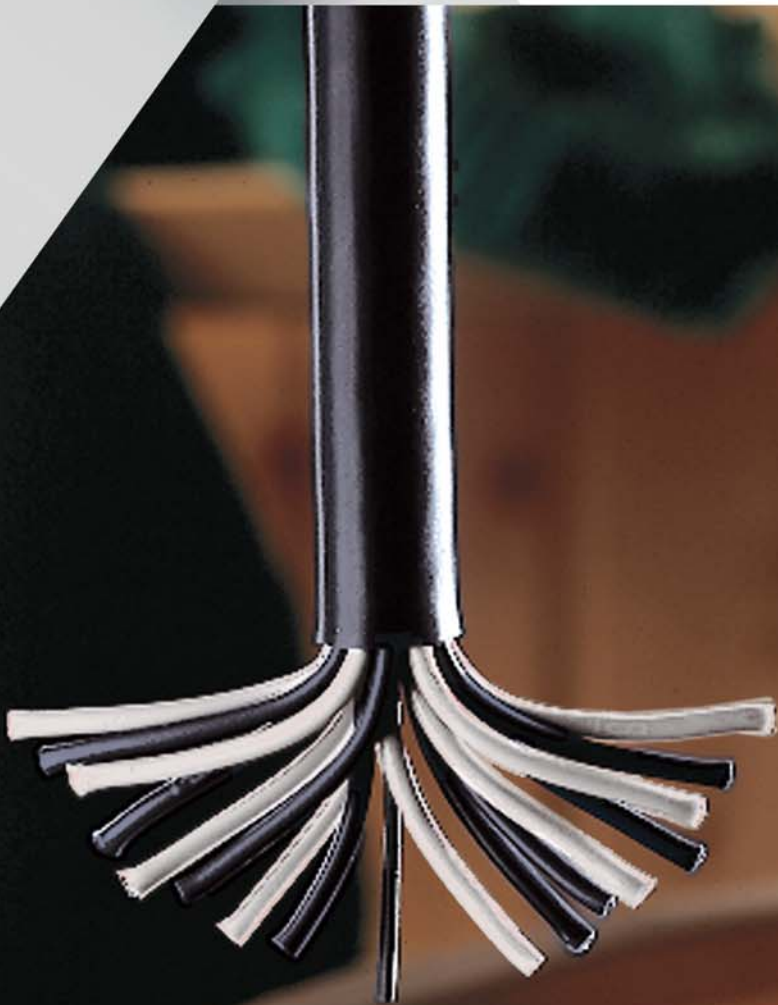
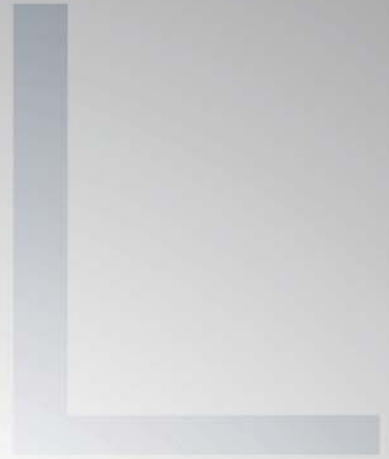


COMPENSATING AND EXTENSION CABLES



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Compensating and extension cables

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Compensating and extension cables for thermocouples

PVC insulated compensating and extension cables

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NEW

Besilen® insulated compensating and extension cables

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■ A 15-050 L		up to +180°C	... ○ round ...	L/16	
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Compensating and extension cables

Content

	temperature	shape	page
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■ A 6 L	with alu-foil screen up to +180°C	○ round ...	L/20
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■ A 6 D	with alu-foil screen up to +180°C	○ round ...	L/20
■ A 15 LC	with overall copper screen up to +180°C	○ round ...	L/21
■ A 15-075 LC	with overall copper screen up to +180°C	○ round ...	L/21
■ A 15-050 LC	with overall copper screen up to +180°C	○ round ...	L/21
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■ A 4 L	with SABtex braiding and steel wire armouring up to +200°C	○ oval ...	L/23
FEP insulated compensating and extension cables			
■ A 18 L	 up to +180°C	○ round ...	L/24
■ A 18-022 L	 up to +180°C	○ round ...	L/24
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Connection cables for resistance thermometers			
FEP, PFA or Besilen® insulated connection cables			
■ RTD sensor cable 	connection cables for RTD +180°C/+250°C	○ round ...	L/27 NEW
PFA insulated connection cables			
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Besilen® is a specially developed Silicone rubber-based material with good electrical characteristics and it is a registered trademark of SAB BRÖCKSKES GmbH & Co. KG.

Compensating and extension cables

Applications

■ General Information

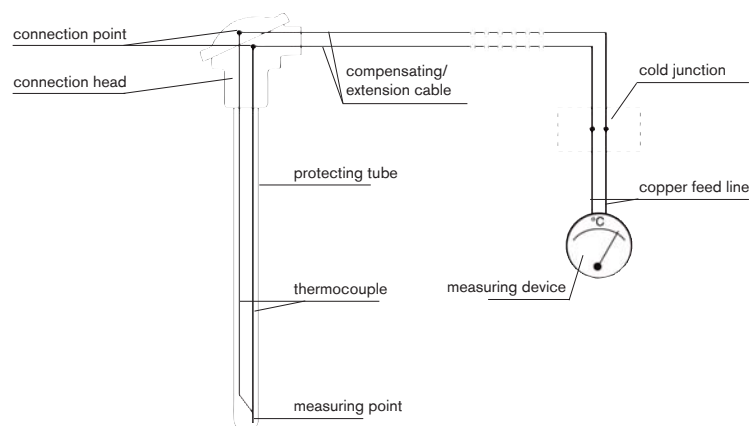
Temperature is an important factor in many areas concerning the environment, scientific research and production. It is a thermodynamic variable that defines the heat content of a material. Material strength changes with alternating temperature. As a consequence, the characteristics of materials have to be examined at different temperatures. To obtain a temperature value, defined temperature parameters are used. Here the parameters can be defined, for example, as the freezing and boiling points of water.

For temperature measurement temperature dependent characteristics of materials have to be taken into account. These include such things as thermal expansion (expansion thermometer), the dependance of the electric resistance on metallic conductors (electrical thermometer) and electromotive force (thermocouple) etc. A temperature measuring device with a thermocouple as a data indicator tends to consist of the thermometer itself with a measuring point, an extension cable, a cold junction with a specified constant temperature and a voltmeter.

The value of the electromotive force (EMF) produced by the thermocouple is determined by the difference between the measuring temperature and the so-called free ends of the thermocouple which are mounted in the connection head. As the connection head is usually relatively close to the measuring point, it is frequently exposed to temperature fluctuations. For this reason, a connection cable with the same thermo-electric properties as the thermocouple is used between the thermocouple and the cold junction.

This link-up provides the compensating/extension cable.

■ Sketch



■ Materials

We differentiate between thermocouple cable and compensating cable. Cables made of original materials are called extension or thermocouple cables, whereas conductor materials made of substitutes are known as compensating cables.

■ Compensating cables

The compensating wires and strands are composed of alloys which do not have to be identical with the corresponding thermocouple. Substitute material means that the thermo-electric characteristics in the allowed temperature range (usually 0 up to +200 °C) for the compensating cable must be the same as those of the corresponding thermocouple. They are identified with the letter "C" adapted to IEC 60584. The "C" appears behind the code letter identifying the thermocouple, for example "KC".

■ Extension cables

Extension cables are made of conductors with identical nominal structure to the corresponding thermocouple. They are identified with the letter "X" adapted to IEC 60584, which appears behind the code letter identifying the thermocouple, for example "JX". They are normally tested within a temperature range of 0 up to +200°C.

■ Thermocouple cables

Thermocouple cables consist of the same element material as the thermocouple and are tested for the same temperatures. These SAB special cables are manufactured on customer request. PVC, fibre-glass and SABtex insulated or sheathed compensating and extension cables are not suitable for outdoor use. Exception: PVC sheathed solid conductors can be used for underground laying.

Compensating and extension cables

Applications

■ Electrical characteristics

Material	Specific electric resistance at 20°C $\mu \Omega \times \text{cm}$	Resistance in Ω/m	
		mm $\varnothing$ 0,20	mm $\varnothing$ 1,38
Cu Ni	49,0	15,60	0,328
So Ni	51,0	16,26	0,341
Ni Cr	72,0	22,90	0,481
Ni	27,0	8,59	0,180
So Pt	12,0	3,82	0,0802
E-Cu	1,7	0,54	0,011
Fe	12,0	3,82	0,08
BPX	12,5	3,98	0,084
Ni Cr Si	98,0	31,20	0,655
Ni Si	34,0	10,80	0,227
So Ni Si	52,0	16,55	0,347

■ Because the thermal electromotive force values are decisive, the indicated specific resistance and meter resistance figures can only be considered as approximate values, tolerances have to be agreed between producer and customer. Limit deviations within the thermoelectric voltage range can only be guaranteed for positive and negative conductors bought together from SAB BRÖCKSKES GmbH & Co. KG.

The standard DIN 43710 was withdrawn in April 1994, but we continue, also to manufacture compensating and extension cables colour coded to DIN 43714.

■ SAB thermocouple code

for thermocouple	EMK at 100 °C in mV	cable type	SAB thermocouple code	
			strands	single wire
Type T	4,28	TX	...58	...88
Type J	5,27	JX	...52	...82
Type K	4,10	KCA	...95	...15
Type K	4,10	KCB	...99	...19
Type K	4,10	KX	...54	...84
Type E	6,32	EX	...53	...83
Type R/S	0,65	R/SCB	...97	...17
Type N	2,77	NC	...91	...11

for thermocouple	EMK at 100 °C in mV	cable type	SAB thermocouple code	
			strands	single wire
Type L	5,37	LX	...92	...12
Type K	4,10	KCA	...94	...14
Type R/S	0,65	R/SCB	...96	...16
Type U	4,25	UX	...98	...18
Type B	0,00	BC-100	...01	...21
Type B	0,033	BC-200	...02	...22

■ Example

Type A 12 D for thermocouple type J acc. to IEC 60584 = item no. 044512 **82**

Type A 9-4 LSY for thermocouple type L acc. to DIN 43713 = item no. 046204 **92**

■ Note

In addition to our standard compensating cables featured on the following pages, we also produce special cables on customer request and according to practically every recognised foreign standard.

For special compensating cables we would request the following information:

Stranded or solid conductor, no. of cores, cross-section, element-type, core insulation and sheath material, screening or armour requirements and the temperature range. Minimum order quantity for special cables is 500 m or 1000 m.

■ You will find further information about the safe application of cables in chapter N

Compensating and extension cables

Selection table

		Cable type																		
		A 1 L twisted A 1 L single	A 16 L	A 9 L A 9-100 L A 9-075 L A 9-050 L A 9-022 L	A 12 L	A 12 D	A 5 L A 5-075 L A 5-050 L A 5-022 L	A 20 L A 20-022 L	A 20 D	A 9-L	A 9-LSY	Hybrid thermocouple cable JX	A 1 LB twisted	A 16 LB	A 15 L A 15-075 L A 15-050 L A 15-022 L	A 3 Ln	A 4 Ln	A 11 Lr A 11-4 Lr	A 11 Dr	A 13 L
Application	Compensating and extension cables for thermocouples	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Extension cables for thermocouples FE-CuNi and NiCr-Ni																			
	Connection cables for resistance thermometers																			
	Fibre-glass braiding																		●	●
	SABtex																		●	●
	Screened							●					●							
	Steel wire armouring											●						●	●	●
Temperature range of isolation fixed laying*	+400 °C																			
	+300 °C																			
	+250 °C												●	●		●	●	●	●	●
	+200 °C												●	●		●	●	●	●	●
	+180 °C												●	●		●	●	●	●	●
	+ 70 °C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	- 25 °C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	- 40 °C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	- 50 °C	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	- 90 °C																			
Standards and approvals	Halogen-free acc. to IEC 60754-1 + VDE 0482-754-1												●	●		●	●	●	●	●
	Fire performance: flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Fire performance: no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 Cat. C resp. D																			
	Fire performance: nach DIN EN 60332-1-2 + IEC 60332-1-2																			
	Corrosiveness of conflagration gases: in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases												●	●		●	●	●	●	●
	Smoke density: low (low smoke emission)																			
Characteristics	Shape: round	●		●			●	●	●	●	●	●	●		●				●	●
	Shape: oval		●		●	●								●			●	●		●
	Conductor construction: strand	●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●
	Conductor construction: wire					●													●	
	Min. bending radius	7,5	7,5	7,5	7,5	12	7,5	7,5	12	7,5	12	12	7,5	7,5	7,5	10	12	10	12	10
	Insulation resistance: > 1MΩ x km	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Very good chemical resistance																			

L
6

 from
 to
 short-time use
 max.

*The temperature range for flexible application is mentioned on the corresponding catalogue page

Compensating and extension cables

Selection table

		Cable type	A 6 L A 6-022 L	A 6 D	A 15 LC A 15-075 LC A 15-050 LC A 15-022 LC	A 15-02	A 15-G 022	A 3 L	A 4 L	A 18 L A 18-022 L	A 19 L A 19-022 L	Th LGS	Th LRS	Th LTS	Th LTV	RTD sensor cable				
Application	Compensating and extension cables for thermocouples																			
	Extension cables for thermocouples FE-CuNi and NiCr-Ni																			
	Connection cables for resistance thermometers																			
	Fibre-glass braiding																			
	SABtex																			
	Screened																			
	Steel wire armouring																			
Temperature range of isolation fixed laying*	+400 °C																			
	+300 °C																			
	+250 °C																			
	+200 °C																			
	+180 °C																			
	+ 70 °C																			
	- 25 °C																			
	- 40 °C																			
	- 50 °C																			
	- 90 °C																			
Standards and approvals	Halogen-free acc. to IEC 60754-1 + VDE 0482-754-1																			
	Fire performance: flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2																			
	Fire performance: no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 Cat. C resp. D																			
	Fire performance: nach DIN EN 60332-1-2 + IEC 60332-1-2																			
	Corrosiveness of conflagration gases: in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases																			
	Smoke density: low (low smoke emission)																			
Characteristics	Shape: round																			
	Shape: oval																			
	Conductor construction: strand																			
	Conductor construction: wire																			
	Min. bending radius																			
	Insulation resistance: > 1MΩ x km																			
	Very good chemical resistance																			

 from
to

 short-time use
 max.

*The temperature range for flexible application is mentioned on the corresponding catalogue page

Compensating and extension cables

PVC insulated cables

A 1 L twisted · A 1 L single · A 16 L



A 1 L twisted



A 1 L single



A 16 L



Also available
with cross-sections
1,0 mm², 0,75 mm²,
0,5 mm² and 0,22 mm²!

Construction:

Insulation:	PVC, TI2 acc. to EN 50363-3 + VDE 0207-363-3
Stranding:	2 cores together 2 cores separately A 16 L: 2 cores parallel positive conductor with coloured stripe
Shape:	round A 16 L: oval
Conductor construction:	strand

Technical data:

Min. bending radius:	7,5 x d
Radiation resistance:	8 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+70 °C flexible application: +5/+70 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 1 L twisted	A 1 L single	A 16 L
Conductor cross section:	1,5 mm ²	1,5 mm ²	0,75 mm ²
Outer diameter:	approx. 4,8 mm	approx. 2,4 mm	approx. 1,9 x 3,8 mm
Weight/100m:	approx. 3,2 kg	approx. 3,2 kg	approx. 1,8 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 1 L twisted item no.	A 1 L single item no.	A 16 L item no.
Type T	4,28	TX	04018958	04028958	04035958
Type J	5,27	JX	04018952	04028952	04035952
Type K	4,10	KCA	04018995	04028995	04035995
Type K	4,10	KCB	04018999	04028999	04035999
Type K	4,10	KX	04018954	04028954	04035954
Type E	6,32	EX	04018953	04028953	04035953
Type R/S	0,65	R/SCB	04018997	04028997	04035997
Type N	2,77	NC	04018991	04028991	04035991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 1 L twisted item no.	A 1 L single item no.	A 16 L item no.
Type L	5,37	LX	04018992	04028992	04035992
Type K	4,10	KCA	04018994	04028994	04035994
Type R/S	0,65	R/SCB	04018996	04028996	04035996
Type U	4,25	UX	04018998	04028998	04035998
Type B*	0,00	BC-100	04018901	04028901	04035901
Type B*	0,033	BC-200	04018902	04028902	04035902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

PVC insulated cables

A 9 L · A 9-100 L · A 9-075 L · A 9-050 L · A 9-022 L

also available as
halogen-free
construction!



A 9 L · A 9-100 L · A 9-075 L · A 9-050 L



A 9-022 L

Construction:

Insulation:	PVC, TI2 acc. to EN 50363-3 + VDE 0207-363-3
Stranding:	2 cores together
Sheath material:	PVC, TM2 acc. to EN 50363-4-1 + VDE 0207-363-4-1
Shape:	round
Conductor construction:	strand

Technical data:

Min. bending radius:	7,5 x d
Radiation resistance:	8 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+70 °C flexible application: +5/+70 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 9 L	A 9-100 L	A 9-075 L	A 9-050 L	A 9-022 L
Conductor cross section:	1,5 mm ²	1,0 mm ²	0,75 mm ²	0,50 mm ²	0,22 mm ²
Outer diameter:	approx. 6,1 mm	approx. 5,1 mm	approx. 4,9 mm	approx. 4,3 mm	approx. 3,3 mm
Weight/100m:	approx. 5,0 kg	approx. 4,4 kg	approx. 3,9 kg	approx. 2,9 kg	approx. 1,6 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 9 L item no.	A 9-100 L item no.	A 9-075 L item no.	A 9-050 L item no.	A 9-022 L item no.
Type T	4,28	TX	04428958	04426958	04425958	04423958	04421958
Type J	5,27	JX	04428952	04426952	04425952	04423952	04421952
Type K	4,10	KCA	04428995	04426995	04425995	04423995	04421995
Type K	4,10	KCB	04428999	04426999	04425999	04423999	04421999
Type K	4,10	KX	04428954	04426954	04425954	04423954	04421954
Type E	6,32	EX	04428953	04426953	04425953	04423953	04421953
Type R/S	0,65	R/SCB	04428997	04426997	04425997	04423997	04421997
Type N	2,77	NC	04428991	04426991	04425991	04423991	04421991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 9 L item no.	A 9-100 L item no.	A 9-075 L item no.	A 9-050 L item no.	A 9-022 L item no.
Type L	5,37	LX	04428992	04426992	04425992	04423992	04421992
Type K	4,10	KCA	04428994	04426994	04425994	04423994	04421994
Type R/S	0,65	R/SCB	04428996	04426996	04425996	04423996	04421996
Type U	4,25	UX	04428993	04426993	04425993	04423993	04421993
Type B*	0,00	BC-100	04428901	04426901	04425901	04423901	04421901
Type B*	0,033	BC-200	04428902	04426902	04425902	04423902	04421902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

PVC insulated cables

A 12 L · A 12 D



A 12 L



A 12 D



A 12 L:
Also available
with cross-sections
1,0 mm², 0,75 mm²,
0,5 mm² and 0,22 mm²!

Construction:

Insulation:	PVC, TI2 acc. to EN 50363-3 + VDE 0207-363-3
Stranding:	2 cores parallel
Sheath material:	PVC, TM2 acc. to EN 50363-4-1 + VDE 0207-363-4-1
Shape:	oval
Conductor construction:	strand resp. wire

Technical data:

Min. bending radius:	A 12 L: 7,5 x d A 12 D: 12 x d
Radiation resistance:	8 x 10 ⁻⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+70 °C flexible application: +5/+70 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 12 L	A 12 D
Conductor cross section:	1,5 mm ²	1,5 mm ²
Outer diameter:	approx. 3,7 x 6,1 mm	approx. 3,2 x 5,3 mm
Weight/100m:	approx. 4,2 kg	approx. 4,3 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 12 L item no.	A 12 D item no.
Type T	4,28	TX	04448958	04458988
Type J	5,27	JX	04448952	04458982
Type K	4,10	KCA	04448995	04458915
Type K	4,10	KCB	04448999	04458919
Type K	4,10	KX	04448954	04458984
Type E	6,32	EX	04448953	04458983
Type R/S	0,65	R/SCB	04448997	04458917
Type N	2,77	NC	04448991	04458911

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 12 L item no.	A 12 D item no.
Type L	5,37	LX	04448992	04458912
Type K	4,10	KCA	04448994	04458914
Type R/S	0,65	R/SCB	04448996	04458916
Type U	4,25	UX	04448998	04458918
Type B*	0,00	BC-100	04448901	04458921
Type B*	0,033	BC-200	04448902	04458922

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.
C = compensating cables · X = extension cables

Compensating and extension cables

PVC insulated cables

A 5 L · A 5-075 L · A 5-050 L · A 5-022 L

also available as
halogen-free
construction!

with overall
copper screen

RoHS



A 5 L · A 5-075 L · A 5-050 L · A 5-022 L



4, 8 or 16 pairs
on request!

Construction:

Insulation:	PVC, TI2 acc. to EN 50363-3 + VDE 0207-363-3
Stranding:	2 cores together
Wrapping:	PETP foil
Screen:	tinned copper braiding
Sheath material:	PVC, TM2 acc. to EN 50363-4-1 + VDE 0207-363-4-1
Shape:	round
Conductor construction:	strand

Technical data:

Min. bending radius:	7,5 x d
Radiation resistance:	8 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+70 °C flexible application: +5/+70 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 5 L	A 5-075 L	A 5-050 L	A 5-022 L
Conductor cross section:	1,5 mm ²	0,75 mm ²	0,50 mm ²	0,22 mm ²
Outer diameter:	approx. 6,6 mm	approx. 5,4 mm	approx. 4,8 mm	approx. 3,8 mm
Weight/100m:	approx. 6,6 kg	approx. 4,3 kg	approx. 3,5 kg	approx. 2,2 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 5 L item no.	A 5-075 L item no.	A 5-050 L item no.	A 5-022 L item no.
Type T	4,28	TX	04568958	04565958	04563958	04561958
Type J	5,27	JX	04568952	04565952	04563952	04561952
Type K	4,10	KCA	04568995	04565995	04563995	04561995
Type K	4,10	KCB	04568999	04565999	04563999	04561999
Type K	4,10	KX	04568954	04565954	04563954	04561954
Type E	6,32	EX	04568953	04565953	04563953	04561953
Type R/S	0,65	R/SCB	04568997	04565997	04563997	04561997
Type N	2,77	NC	04568991	04565991	04563991	04561991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 5 L item no.	A 5-075 L item no.	A 5-050 L item no.	A 5-022 L item no.
Type L	5,37	LX	04568992	04565992	04563992	04561992
Type K	4,10	KCA	04568994	04565994	04563994	04561994
Type R/S	0,65	R/SCB	04568996	04565996	04563996	04561996
Type U	4,25	UX	04568998	04565998	04563998	04561998
Type B*	0,00	BC-100	04568901	04565901	04563901	04561901
Type B*	0,033	BC-200	04568902	04565902	04563902	04561902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

PVC insulated cables

A 20 L · A 20-022 L · A 20 D

with
alu-foil screen



A 20 L · A 20-022 L



A 20 D

Construction:

Insulation:	PVC, TI2 acc. to EN 50363-3 + VDE 0207-363-3
Stranding:	2 cores together
Wrapping:	PETP foil, bare copper earth wire 0,5 mm ø
Screen:	alu foil
Sheath material:	PVC, TM2 acc. to EN 50363-4-1 + VDE 0207-363-4-1
Shape:	round
Conductor construction:	strand resp. wire

Technical data:

Min. bending radius:	A 20 L, A 20-022 L: 7,5 x d A 20 D: 12 x d
Radiation resistance:	8×10^{-7} cJ/kg
Temperature range of insulation:	fixed laying: -40/+70 °C flexible application: +5/+70 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 20 L	A 20-022 L	A 20 D
Conductor cross section:	1,5 mm ²	0,22 mm ²	1,5 mm ²
Outer diameter:	approx. 6,6 mm	approx. 3,9 mm	approx. 6,4 mm
Weight/100m:	approx. 5,5 kg	approx. 1,9 kg	approx. 5,5 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 20 L item no.	A 20-022 L item no.	A 20 D item no.
Type T	4,28	TX	04548958	04541958	04648988
Type J	5,27	JX	04548952	04541952	04648982
Type K	4,10	KCA	04548995	04541995	04648915
Type K	4,10	KCB	04548999	04541999	04648919
Type K	4,10	KX	04548954	04541954	04648984
Type E	6,32	EX	04548953	04541953	04648983
Type R/S	0,65	R/SCB	04548997	04541997	04648917
Type N	2,77	NC	04548991	04541991	04648911

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 20 L item no.	A 20-022 L item no.	A 20 D item no.
Type L	5,37	LX	04548992	04541992	04648912
Type K	4,10	KCA	04548994	04541994	04648914
Type R/S	0,65	R/SCB	04548996	04541996	04648916
Type U	4,25	UX	04548998	04541998	04648918
Type B*	0,00	BC-100	04548901	04541901	04648921
Type B*	0,033	BC-200	04548902	04541902	04648922

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

multi-paired

PVC insulated cables

A 9 - L · A 9 - LSY with steel wire armouring



A 9 - L



A 9 - LSY



Also available
with cross-sections
1,0 mm², 0,75 mm²,
0,5 mm² and 0,22 mm²!

Construction:

Insulation:	PVC, TI2 acc. to EN 50363-3 + VDE 0207-363-3
Colour code:	from 4 cores pair-wise numbered
Stranding:	cores together in layers
Sheath material:	PVC, YM2 acc. to EN 50363-4-1 + VDE 0207-363-4-1
Armouring:	A 9 - LSY: galvanized steel wire armouring
Shape:	round
Conductor construction:	strand

Technical data:

Min. bending radius:	A 9 - L: 7,5 x d A 9 - LSY: 12 x d
Radiation resistance:	8 x 10 ⁻⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+70 °C flexible application: +5/+70 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 9 - L	A 9 - LSY
Conductor cross section:	1,5 mm ²	1,5 mm ²

no. of cores	for thermo-couples	outer ø approx. in mm	weight approx. kg/100 m	cable type	A 9 - L item no.	outer ø approx. in mm	weight approx. kg/100 m	cable type	A 9 - LSY item no.
2	1	6,1	6,4	A 9 L	044289...	8,5	11,3	A 9-2 LSY	046289...
4	2	7,1	9,8	A 9-4 L	044204...	9,5	15,0	A 9-4 LSY	046204...
6	3	8,7	14,1	A 9-6 L	044206...	11,3	21,4	A 9-6 LSY	046206...
12	6	11,9	25,8	A 9-12 L	044212...	14,7	36,0	A 9-12 LSY	046212...
16	8	13,2	33,2	A 9-16 L	044216...	16,4	46,9	A 9-16 LSY	046216...
20	10	15,0	42,2	A 9-20 L	044220...	18,0	57,2	A 9-20 LSY	046220...
24	12	16,7	49,2	A 9-24 L	044224...	19,7	64,0	A 9-24 LSY	046224...
32	16	18,8	65,4	A 9-32 L	044232...	21,4	80,5	A 9-32 LSY	046232...
36	18	19,5	72,6	A 9-36 L	044236...	22,1	88,6	A 9-36 LSY	046236...
40	20	20,9	80,6	A 9-40 L	044240...	24,1	100,1	A 9-40 LSY	046240...

In case of order, please indicate the corresponding thermocouple! (please see SAB thermocouple code page L/5)

Example: Type A 9 - 16 L for thermocouple type R/S acc. to DIN 43713 = item no. 4421696

The type A 9-L can also be manufactured with solid conductors 1,38 mm ø.

The type identification for solid types is: type A 9 - D (item group 0463...).

If no stock material is available, the min. order quantity is 500 m.

The types of multi-paired compensating cables can also be delivered pair-wise twisted and pairs totally twisted for additional charge.

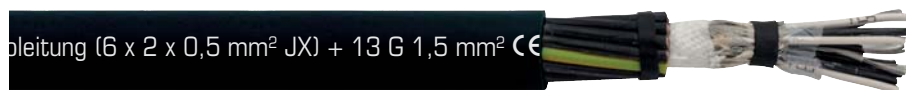
L

13

Compensating and extension cables

Hybrid thermocouple cable JX

connection cable between hot runner control and hot runner system



Marking for Hybrid thermocouple cable JX 04573652:

SAB BRÜCKSKES · D-VIERSEN · Hybrid-Thermoleitung (6 x 2 x 0,5 mm² JX) + 13 G 1,5 mm² CE

Construction:

Conductor:	thermo strands Fe-CuNi for type J bare copper strands acc. to IEC 60228 class 5
Insulation:	PVC
Colour code:	black and white acc. to IEC 60584 type JX black with white numbers 1 to -4, -8, -12, -16 and a green-yellow earth wire (control cores)
Wrapping:	foil
Screen:	twisted JX element braided with tinned copper wires (optical coverage approx. 80%)
Wrapping:	banding
Stranding:	together
Sheath material:	PVC
Sheath colour:	black

Outstanding features:



- high flexibility
- wear resistant
- smallest bending radii

Technical data:

Nominal voltage:	300/500 V control cores - (1,5 mm ²)
Testing voltage:	2000 V - control cores - (1,5 mm ²) / 600 V (0,5 mm ²)
Thermoelectric voltage:	acc. to IEC 60584 - (0,5 mm ²)
Min. bending radius	
fixed laying:	5 x d
flexible application:	12 x d
Temperature range	
fixed laying:	-25/+70°C
flexible application:	+5/+70°C
Oil resistance:	good - acc. to SAB internal standard see chapter N „Technical Data“
Fire performance:	acc. to DIN EN 60332-1-2 and IEC 60332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

item no.	dimensions mm ²	for thermo- couple	outer-ø approx. mm	cable weight ≈ kg/km
04573252	(2 x 2 x 0,5 JX) C + 5 G 1,5	Fe-CuNi	11,4	198
04573452	(4 x 2 x 0,5 JX) C + 9 G 1,5	Fe-CuNi	14,8	337
04573652	(6 x 2 x 0,5 JX) C + 13 G 1,5	Fe-CuNi	15,8	440
04573852	(8 x 2 x 0,5 JX) C + 17 G 1,5	Fe-CuNi	19,3	632

Other dimensions and colours are possible on request.

Possible on request:

- ready-made lengths from 1 m to 15 m
- thermocouples type J
- thermo cable type KX and thermocouples type K



Compensating and extension cables

Besilen® insulated cables

A 1 LB twisted · A 16 LB



A 1 LB twisted



A 16 LB



Also available
with cross-sections
1,0 mm², 0,75 mm²,
0,5 mm² and 0,22 mm²!

Construction:

Insulation:	Besilen® EI2 acc. to EN 50363-1 + VDE 0207-363-1
Stranding:	A 1 LB: 2 cores together A 16 LB: 2 cores parallel
Shape:	A 1 LB: round A 16 LB: oval
Conductor construction:	strand

Technical data:

Min. bending radius:	7,5 x d
Radiation resistance:	2 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Insulation resistance:	> 1 MΩ x km
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 1 LB twisted	A 16 LB
Conductor cross section:	1,5 mm ²	1,5 mm ²
Outer diameter:	approx. 5,0 mm	approx. 2,5 x 5,0 mm
Weight/100m:	approx. 3,3 kg	approx. 3,2 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 1 LB twisted item no.	A 16 LB item no.
Type T	4,28	TX	04048958	04068958
Type J	5,27	JX	04048952	04068952
Type K	4,10	KCA	04048995	04068995
Type K	4,10	KCB	04048999	04068999
Type K	4,10	KX	04048954	04068954
Type E	6,32	EX	04048953	04068953
Type R/S	0,65	R/SCB	04048997	04068997
Type N	2,77	NC	04048991	04068911

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 1 LB twisted item no.	A 16 LB item no.
Type L	5,37	LX	04048992	04068992
Type K	4,10	KCA	04048994	04068994
Type R/S	0,65	R/SCB	04048996	04068996
Type U	4,25	UX	04048998	04068998
Type B*	0,00	BC-100	04048901	04068901
Type B*	0,033	BC-200	04048902	04068902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.
C = compensating cables · X = extension cables

Compensating and extension cables

Besilen® insulated cables

A 15 L · A 15-075 L · A15-050 L · A15-022 L



A 15 L · A 15-075 L · A15-050 L · A15-022 L

Construction:

Insulation:	Besilen® EI2 acc. to EN 50363-1 + VDE 0207-363-1
Stranding:	2 cores together
Sheath material:	Besilen® EM9 acc. to EN 50363-2-1 + VDE 0207-363-2-1
Shape:	round
Conductor construction:	strand

Technical data:

Min. bending radius:	7,5 x d
Radiation resistance:	2 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Insulation resistance:	> 1 MΩ x km
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 15 L	A 15-075 L	A 15-050 L	A 15-022 L
Conductor cross section:	1,5 mm ²	0,75 mm ²	0,50 mm ²	0,22 mm ²
Outer diameter:	approx. 6,2 mm	approx. 5,0 mm	approx. 4,4 mm	approx. 3,8 mm
Weight/100m:	approx. 5,8 kg	approx. 3,6 kg	approx. 2,6 kg	approx. 1,7 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 15 L item no.	A 15-075 L item no.	A 15-050 L item no.	A 15-022 L item no.
Type T	4,28	TX	04268958	04265958	04263958	04261958
Type J	5,27	JX	04268952	04265952	04263952	04261952
Type K	4,10	KCA	04268995	04265995	04263995	04261995
Type K	4,10	KCB	04268999	04265999	04263999	04261999
Type K	4,10	KX	04268954	04265954	04263954	04261954
Type E	6,32	EX	04268953	04265953	04263953	04261953
Type R/S	0,65	R/SCB	04268997	04265997	04263997	04261997
Type N	2,77	NC	04268991	04265991	04263991	04261991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 15 L item no.	A 15-075 L item no.	A 15-050 L item no.	A 15-022 L item no.
Type L	5,37	LX	04268992	04265992	04263992	04261992
Type K	4,10	KCA	04268994	04265994	04263994	04261994
Type R/S	0,65	R/SCB	04268996	04265996	04263996	04261996
Type U	4,25	UX	04268993	04265993	04263993	04261993
Type B*	0,00	BC-100	04268901	04265901	04263901	04261901
Type B*	0,033	BC-200	04268902	04265902	04263902	04261902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

Besilen® insulated cables

A 3 Ln · A 4 Ln with steel wire armouring



A 3 Ln



A 4 Ln



Also available
with cross-sections
1,0 mm², 0,75 mm²,
0,5 mm² and 0,22 mm²!

Construction:

Insulation:	Besilen® EI2 acc. to EN 50363-1 + VDE 0207-363-1
Stranding:	2 cores parallel
Sheath material:	Besilen® EM9 acc. to EN 50363-2-1 + VDE 0207-363-2-1
Armouring:	A 4 Ln: tinned steel wire armouring with tracer
Shape:	oval
Conductor construction:	strand

Technical data:

Min. bending radius:	A 3 Ln: 10 x d A 4 Ln: 12 x d
Radiation resistance:	2 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Insulation resistance:	> 1 MΩ x km
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 3 Ln	A 4 Ln
Conductor cross section:	1,5 mm ²	1,5 mm ²
Outer diameter:	approx. 3,7 x 6,2 mm	approx. 4,5 x 7,0 mm
Weight/100m:	approx. 4,6 kg	approx. 7,5 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 3 Ln item no.	A 4 Ln item no.
Type T	4,28	TX	04138958	04168958
Type J	5,27	JX	04138952	04168952
Type K	4,10	KCA	04138995	04168995
Type K	4,10	KCB	04138999	04168999
Type K	4,10	KX	04138954	04168954
Type E	6,32	EX	04138953	04168953
Type R/S	0,65	R/SCB	04138997	04168997
Type N	2,77	NC	04138991	04168991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 3 Ln item no.	A 4 Ln item no.
Type L	5,37	LX	04138992	04168992
Type K	4,10	KCA	04138994	04168994
Type R/S	0,65	R/SCB	04138996	04168996
Type U	4,25	UX	04138998	04168998
Type B*	0,00	BC-100	04138901	04168901
Type B*	0,033	BC-200	04138902	04168902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.
C = compensating cables · X = extension cables

Compensating and extension cables

Besilen® insulated cables

A 11 Lr · A 11-4 Lr · A 11 Dr with fibre-glass braiding and steel wire armouring



A 11 Lr · A 11-4 Lr

A 11 Dr



Also available
with cross-sections
1,0 mm², 0,75 mm²,
0,5 mm² and 0,22 mm²!

Construction:

Insulation:	Besilen® EI2 acc. to EN 50363-1 + VDE 0207-363-1
Stranding:	2 resp. 4 cores together
Braiding:	fibre-glass with tracer
Armouring:	tinned steel wire armouring with tracer
Shape:	round
Conductor construction:	strand resp. wire

Technical data:

Min. bending radius:	A 11 Lr, A11-4 Lr: 10 x d A 11 Dr: 12 x d
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Insulation resistance:	> 1 MΩ x km
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 11 Lr	A 11-4 Lr	A 11 Dr
Conductor cross section:	1,5 mm ²	1,5 mm ²	1,5 mm ²
Outer diameter:	approx. 6,3 mm	approx. 7,3 mm	approx. 5,5 mm
Weight/100m:	approx. 5,9 kg	approx. 9,6 kg	approx. 6,4 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 11 Lr item no.	A 11- 4 Lr item no.	A 11 Dr item no.
Type T	4,28	TX	04218958	04210458	04238988
Type J	5,27	JX	04218952	04210452	04238982
Type K	4,10	KCA	04218995	04210495	04238915
Type K	4,10	KCB	04218999	04210499	04238919
Type K	4,10	KX	04218954	04210454	04238984
Type E	6,32	EX	04218953	04210453	04238983
Type R/S	0,65	R/SCB	04218997	04210497	04238917
Type N	2,77	NC	04218991	04210491	04238911

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79
and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 11 Lr item no.	A 11- 4 Lr item no.	A 11 Dr item no.
Type L	5,37	LX	04218992	04210492	04238912
Type K	4,10	KCA	04218994	04210494	04238914
Type R/S	0,65	R/SCB	04218996	04210496	04238916
Type U	4,25	UX	04218998	04210498	04238918
Type B*	0,00	BC-100	04218901	04210401	04238921
Type B*	0,033	BC-200	04218902	04210402	04238922

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.
C = compensating cables · X = extension cables

Compensating and extension cables

Besilen® insulated cables

A 13 L with fibre-glass braiding



A 13 L



Also available
with cross-sections
1,0 mm², 0,75 mm²,
0,5 mm² and 0,22 mm²!

Construction:

Insulation:	Besilen® EI2 acc. to EN 50363-1 + VDE 0207-363-1
Stranding:	parallel
Braiding:	fibre-glass with tracer
Shape:	oval
Conductor construction:	strand

Technical data:

Min. bending radius:	10 x d
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Insulation resistance:	> 1 MΩ x km
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 13 L
Conductor cross section:	1,5 mm ²
Outer diameter:	approx. 3,0 x 5,5 mm
Weight/100m:	approx. 3,8 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 13 L item no.
Type T	4,28	TX	04248958
Type J	5,27	JX	04248952
Type K	4,10	KCA	04248995
Type K	4,10	KCB	04248999
Type K	4,10	KX	04248954
Type E	6,32	EX	04248953
Type R/S	0,65	R/SCB	04248997
Type N	2,77	NC	04248991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 13 L item no.
Type L	5,37	LX	04248992
Type K	4,10	KCA	04248994
Type R/S	0,65	R/SCB	04248996
Type U	4,25	UX	04248998
Type B*	0,00	BC-100	04248901
Type B*	0,033	BC-200	04248902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.
C = compensating cables · X = extension cables

Compensating and extension cables

Besilen® insulated cables

A 6 L · A 6-022 L · A 6 D

with
alu-foil screen



A 6 L · A 6-022 L



A 6 D

Construction:

Insulation:	Besilen® EI2 acc. to EN 50363-1 + VDE 0207-363-1
Stranding:	2 cores together
Wrapping:	PETP foil, bare copper earth wire 0,5 mm ø
Screen:	alu foil
Sheath material:	Besilen® EM9 acc. to EN 50363-2-1 + VDE 0207-363-2-1
Shape:	round
Conductor construction:	strand resp. wire

Technical data:

Min. bending radius:	A 6 L, A 6-022 L: 7,5 x d A 6 D: 12 x d
Radiation resistance:	2 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Insulation resistance:	> 1 MΩ x km
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 6 L	A 6-022 L	A 6 D
Conductor cross section:	1,5 mm ²	0,22 mm ²	1,5 mm ²
Outer diameter:	approx. 7,0 mm	approx. 4,4 mm	approx. 6,4 mm
Weight/100m:	approx. 6,1 kg	approx. 2,0 kg	approx. 5,7 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 6 L item no.	A 6-022 L item no.	A 6 D item no.
Type T	4,28	TX	04288958	04281958	04288988
Type J	5,27	JX	04288952	04281952	04288982
Type K	4,10	KCA	04288995	04281995	04288915
Type K	4,10	KCB	04288999	04281999	04288919
Type K	4,10	KX	04288954	04281954	04288984
Type E	6,32	EX	04288953	04281953	04288983
Type R/S	0,65	R/SCB	04288997	04281997	04288917
Type N	2,77	NC	04288991	04281991	04288911

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 6 L item no.	A 6-022 L item no.	A 6 D item no.
Type L	5,37	LX	04288992	04281992	04288912
Type K	4,10	KCA	04288994	04281994	04288914
Type R/S	0,65	R/SCB	04288996	04281996	04288916
Type U	4,25	UX	04288998	04281998	04288918
Type B*	0,00	BC-100	04288901	04281901	04288921
Type B*	0,033	BC-200	04288902	04281902	04288922

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

Besilen® insulated cables

A 15 LC · A 15-075 LC · A 15-050 LC · A 15-022 LC

with overall
copper screen



A 15 LC · A 15-075 LC · A 15-050 LC · A 15-022 LC

Construction:

Insulation:	Besilen® EI2 acc. to EN 50363-1 + VDE 0207-363-1
Stranding:	2 cores together
Wrapping:	PETP foil
Screen:	tinned copper braiding
Sheath material:	Besilen® EM9 acc. to EN 50363-2-1 + VDE 0207-363-2-1
Shape:	round
Conductor construction:	strand

Technical data:

Min. bending radius:	12 x d
Radiation resistance:	2 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Insulation resistance:	> 1 MΩ x km
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 15 LC	A 15-075 LC	A 15-050 LC	A 15-022 LC
Conductor cross section:	1,5 mm ²	0,75 mm ²	0,50 mm ²	0,22 mm ²
Outer diameter:	approx. 6,8 mm	approx. 5,7 mm	approx. 5,2 mm	approx. 4,3 mm
Weight/100m:	approx. 7,0 kg	approx. 4,6 kg	approx. 3,9 kg	approx. 2,5 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 15 LC item no.	A 15-075 LC item no.	A 15-050 LC item no.	A 15-022 LC item no.
Type T	4,28	TX	04308958	04305958	04303958	04301958
Type J	5,27	JX	04308952	04305952	04303952	04301952
Type K	4,10	KCA	04308995	04305995	04303995	04301995
Type K	4,10	KCB	04308999	04305999	04303999	04301999
Type K	4,10	KX	04308954	04305954	04303954	04301954
Type E	6,32	EX	04308953	04305953	04303953	04301953
Type R/S	0,65	R/SCB	04308997	04305997	04303997	04301997
Type N	2,77	NC	04308991	04305991	04303991	04301991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 15 LC item no.	A 15-075 LC item no.	A 15-050 LC item no.	A 15-022 LC item no.
Type L	5,37	LX	04308992	04305992	04303992	04301992
Type K	4,10	KCA	04308994	04305994	04303994	04301994
Type R/S	0,65	R/SCB	04308996	04305996	04303996	04301996
Type U	4,25	UX	04308998	04305998	04303998	04301998
Type B*	0,00	BC-100	04308901	04305901	04303901	04301901
Type B*	0,033	BC-200	04308902	04305902	04303902	04301902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

Fibre-glass insulated cables

A 15-022 · A 15-G 022 with outer fibre-glass braiding



A 15-022



A 15-G 022

Construction:

Insulation:	fibre-glass
Stranding:	2 cores together
Sheath material:	Besilen® EM9 acc. to EN 50363-2-1 + VDE 0207-363-2-1
Braiding:	A15-G 022: fibre-glass with tracer
Shape:	round
Conductor construction:	strand

Technical data:

Min. bending radius:	7,5 x d
Temperature range of insulation:	fixed laying: -40/+180 °C flexible application: -25/+180 °C short-time use: +250 °C
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 15-022	A 15-G 022
Conductor cross section:	0,22 mm ²	0,22 mm ²
Outer diameter:	approx. 2,9 mm	approx. 3,4 mm
Weight/100m:	approx. 1,1 kg	approx. 1,7 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 15-022 item no.	A 15-G 022 item no.
Type T	4,28	TX	04511958	04521958
Type J	5,27	JX	04511952	04521952
Type K	4,10	KCA	04511995	04521995
Type K	4,10	KCB	04511999	04521999
Type K	4,10	KX	04511954	04521954
Type E	6,32	EX	04511953	04521953
Type R/S	0,65	R/SCB	04511997	04521997
Type N	2,77	NC	04511991	04521991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 15-022 item no.	A 15-G 022 item no.
Type L	5,37	LX	04511992	04521992
Type K	4,10	KCA	04511994	04521994
Type R/S	0,65	R/SCB	04511996	04521996
Type U	4,25	UX	04511998	04521998
Type B*	0,00	BC-100	04511901	04521901
Type B*	0,033	BC-200	04511902	04521902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.
C = compensating cables · X = extension cables

Compensating and extension cables

with
SABtex braiding

Fibre-glass insulated cables

A 3 L · A 4 L with steel wire armouring



A 3 L



A 4 L

Construction:

Insulation:	fibre-glass
Stranding:	2 cores parallel
Braiding:	SABtex with tracer
Armouring:	A 4 L: tinned steel wire armouring with tracer
Shape:	oval
Conductor construction:	strand

Technical data:

Min. bending radius:	A 3 L: 10 x d A 4 L: 12 x d
Temperature range of insulation:	fixed laying: -50/+200 °C flexible application: -50/+200 °C short-time use: +300 °C
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 Cat. C resp. D, see chapter N „Technical Data“. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2.
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
Smoke density:	low (low smoke emission)
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type: Conductor cross section: Outer diameter: Weight/100m:	A 3 L 1,5 mm ² approx. 4,6 x 6,8 mm approx. 5,4 kg	A 4 L 1,5 mm ² approx. 4,8 x 7,0 mm approx. 7,4 kg
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IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 3 L item no.	A 4 L item no.
Type T	4,28	TX	04128958	04158958
Type J	5,27	JX	04128952	04158952
Type K	4,10	KCA	04128995	04158995
Type K	4,10	KCB	04128999	04158999
Type K	4,10	KX	04128954	04158954
Type E	6,32	EX	04128953	04158953
Type R/S	0,65	R/SCB	04128997	04158997
Type N	2,77	NC	04128991	04158991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 3 L item no.	A 4 L item no.
Type L	5,37	LX	04128992	04158992
Type K	4,10	KCA	04128994	04158994
Type R/S	0,65	R/SCB	04128996	04158996
Type U	4,25	UX	04128998	04158998
Type B*	0,00	BC-100	04128901	04158901
Type B*	0,033	BC-200	04128902	04158902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.
C = compensating cables · X = extension cables

Compensating and extension cables

FEP insulated cables

A 18 L · A 18-022 L · A 19 L · A 19-022 L with overall copper screen



A 18 L · A 18-022 L



A 19 L · A 19-022 L

Construction:

Insulation:	FEP
Stranding:	2 cores together
Wrapping:	A 18 L, A 18-022 L: PETP foil
Screen:	A 19 L, A 19-022 L: tinned copper braiding
Sheath material:	FEP
Shape:	round
Conductor construction:	strand

Technical data:

Min. bending radius:	12 x d
Radiation resistance:	1 x 10 ⁷ cJ/kg
Temperature range of insulation:	fixed laying: -90/+180 °C flexible application: -55/+180 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 Cat. C resp. D, see chapter N „Technical Data“. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2.
Chem. resistance:	very good against fats, oils, salts and acids
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	A 18 L	A 18-022 L	A 19 L	A 19-022 L
Conductor cross section:	1,5 mm ²	0,22 mm ²	1,5 mm ²	0,22 mm ²
Outer diameter:	approx. 4,8 mm	approx. 2,5 mm	approx. 5,5 mm	approx. 3,0 mm
Weight/100m:	approx. 4,2 kg	approx. 1,0 kg	approx. 5,9 kg	approx. 1,9 kg

IEC 60584

for thermocouple	EMK at 100 °C in mV	cable type	A 18 L item no.	A 18-022 L item no.	A 19 L item no.	A 19-022 L item no.
Type T	4,28	TX	04338958	04331958	04358958	04351958
Type J	5,27	JX	04338952	04331952	04358952	04351952
Type K	4,10	KCA	04338995	04331995	04358995	04351995
Type K	4,10	KCB	04338999	04331999	04358999	04351999
Type K	4,10	KX	04338954	04331954	04358954	04351954
Type E	6,32	EX	04338953	04331953	04358953	04351953
Type R/S	0,65	R/SCB	04338997	04331997	04358997	04351997
Type N	2,77	NC	04338991	04331991	04358991	04351991

We also manufacture compensating and extension cables colour coded to VDE 43714 – 06/79 and the basic values laid down in VDE 43710 which was withdrawn in April 1994.

DIN 43710 / 43714 (not valid for type B*)

for thermocouple	EMK at 100 °C in mV	cable type	A 18 L item no.	A 18-022 L item no.	A 19 L item no.	A 19-022 L item no.
Type L	5,37	LX	04338992	04331992	04358992	04351992
Type K	4,10	KCA	04338994	04331994	04358994	04351994
Type R/S	0,65	R/SCB	04338996	04331996	04358996	04351996
Type U	4,25	UX	04338998	04331998	04358998	04351998
Type B*	0,00	BC-100	04338901	04331901	04358901	04351901
Type B*	0,033	BC-200	04338902	04331902	04358902	04351902

* Not standardized compensating cable for thermocouples type B with application temperatures up to 100 °C resp. 200 °C.

C = compensating cables · X = extension cables

Compensating and extension cables

Fibre-glass insulated extension cables for thermocouples

Th LGS with fibre-glass braiding and steel wire armouring
Th LRS with special fibre-glass braiding and steel wire armouring



Th LGS · Th LRS

Construction:

Insulation:	Th LGS: fibre-glass Th LRS: special fibre-glass
Stranding:	cores together
Braiding:	Th LGS: fibre-glass Th LRS: special fibre-glass
Armouring:	galvanized steel wire armouring with tracer
Shape:	round

Technical data:

Min. bending radius:	12 x d
Temperature range of insulation:	Th LGS: max. 250 °C Th LRS: max. 400 °C
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 Cat. C resp. D, see chapter N „Technical Data“. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2.
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	Th LGS	Th LRS
Conductor construction:	0,22 mm ² = 7 x 0,20 mm ø 0,50 mm ² = 16 x 0,20 mm ø 1,00 mm ² = 32 x 0,20 mm ø	0,22 mm ² = 7 x 0,20 mm ø 0,50 mm ² = 16 x 0,20 mm ø 1,00 mm ² = 32 x 0,20 mm ø

Th LGS

item no.	type	no. of cores x cross section n x mm ²	for thermo- couple	approx. outer-ø mm	approx. cable weight kg/100 m
047110...*	Th 20 LGS	2 x 0,22	Fe-CuNi	3,1	2,0
047111...*	Th 50 LGS	2 x 0,50	Fe-CuNi	3,7	3,9
047112...*	Th 100 LGS	2 x 1,00	Fe-CuNi	4,5	4,3
047113...*	Th 20-4 LGS	4 x 0,22	Fe-CuNi	3,5	2,9
047114...*	Th 50-4 LGS	4 x 0,50	Fe-CuNi	4,2	4,3
047115...*	Th 100-4 LGS	4 x 1,00	Fe-CuNi	5,4	7,0
047110...*	Th 20 LGS	2 x 0,22	NiCr-Ni	3,1	2,0
047111...*	Th 50 LGS	2 x 0,50	NiCr-Ni	3,7	3,2
047112...*	Th 100 LGS	2 x 1,00	NiCr-Ni	4,5	4,3
047113...*	Th 20-4 LGS	4 x 0,22	NiCr-Ni	3,5	2,9
047114...*	Th 50-4 LGS	4 x 0,50	NiCr-Ni	4,2	4,3
047115...*	Th 100-4 LGS	4 x 1,00	NiCr-Ni	5,4	7,0

Th LRS

item no.	type	no. of cores x cross section n x mm ²	for thermo- couple	approx. outer-ø mm	approx. cable weight kg/100 m
047210...*	Th 20 LRS	2 x 0,22	Fe-CuNi	3,1	1,9
047211...*	Th 50 LRS	2 x 0,50	Fe-CuNi	3,7	3,9
047212...*	Th 100 LRS	2 x 1,00	Fe-CuNi	4,5	5,2
047213...*	Th 20 -4 LRS	4 x 0,22	Fe-CuNi	3,5	2,9
047214...*	Th 50 -4 LRS	4 x 0,50	Fe-CuNi	4,2	5,1
047215...*	Th 100-4 LRS	4 x 1,00	Fe-CuNi	5,4	7,5
047210...*	Th 20 LRS	2 x 0,22	NiCr-Ni	3,1	1,9
047211...*	Th 50 LRS	2 x 0,50	NiCr-Ni	3,7	3,9
047212...*	Th 100 LRS	2 x 1,00	NiCr-Ni	4,5	5,2
047213...*	Th 20 -4 LRS	4 x 0,22	NiCr-Ni	3,5	2,9
047214...*	Th 50 -4 LRS	4 x 0,50	NiCr-Ni	4,2	5,1
047215...*	Th 100-4 LRS	4 x 1,00	NiCr-Ni	5,4	7,5

*Thermocouple code see page L/5

Compensating and extension cables

PFA insulated extension cables for thermocouples

Th LTS with steel wire armouring · Th LTV stainless steel wire armouring



Th LTS



Th LTV

Construction:

Insulation:	PFA
Stranding:	cores together
Braiding:	fibre-glass
Armouring:	Th LTS: galvanized steel wire armouring with tracer Th LTV: stainless steel wire armouring (VA) with tracer
Shape:	round

Technical data:

Min. bending radius:	12 x d
Temperature range of insulation:	
flexible application:	max. + 250 °C
fixed laying:	max. + 250 °C
limited time of use:	+ 260 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 Cat. C resp. D, see chapter N „Technical Data“. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

Type:	Th LTS	Th LTV
Conductor	0,22 mm ² = 7 x 0,20 mm ø	0,22 mm ² = 7 x 0,20 mm ø
construction:	0,50 mm ² = 16 x 0,20 mm ø	0,50 mm ² = 16 x 0,20 mm ø
	1,00 mm ² = 32 x 0,20 mm ø	1,00 mm ² = 32 x 0,20 mm ø

Th LTS

item no.	type	no. of cores x cross section n x mm ²	for thermo- couple	approx. outer-ø mm	approx. cable weight kg/100 m
047310...*	Th 20 LTS	2 x 0,22	Fe-CuNi	3,3	2,1
047311...*	Th 50 LTS	2 x 0,50	Fe-CuNi	4,1	3,9
047312...*	Th 100 LTS	2 x 1,00	Fe-CuNi	4,9	5,2
047313...*	Th 20-4 LTS	4 x 0,22	Fe-CuNi	3,7	3,2
047314...*	Th 50-4 LTS	4 x 0,50	Fe-CuNi	4,7	5,1
047315...*	Th 100-4 LTS	4 x 1,00	Fe-CuNi	5,6	7,5
047310...*	Th 20 LTS	2 x 0,22	NiCr-Ni	3,3	2,1
047311...*	Th 50 LTS	2 x 0,50	NiCr-Ni	4,1	3,9
047312...*	Th 100 LTS	2 x 1,00	NiCr-Ni	4,9	5,2
047313...*	Th 20-4 LTS	4 x 0,22	NiCr-Ni	3,7	3,2
047314...*	Th 50-4 LTS	4 x 0,50	NiCr-Ni	4,7	5,1
047315...*	Th 100-4 LTS	4 x 1,00	NiCr-Ni	5,6	7,5

Th LTV

item no.	type	no. of cores x cross section n x mm ²	for thermo- couple	approx. outer-ø mm	approx. cable weight kg/100 m
047350...*	Th 20 LTV	2 x 0,22	Fe-CuNi	3,2	1,9
047351...*	Th 50 LTV	2 x 0,5	Fe-CuNi	4,1	3,9
047352...*	Th 100 LTV	2 x 1,0	Fe-CuNi	4,9	5,2
047353...*	Th 20 -4 LTV	4 x 0,22	Fe-CuNi	3,6	2,9
047354...*	Th 50 -4 LTV	4 x 0,5	Fe-CuNi	4,7	5,1
047355...*	Th 100-4 LTV	4 x 1,0	Fe-CuNi	5,6	7,5
047350...*	Th 20 LTV	2 x 0,22	NiCr-Ni	3,2	1,9
047351...*	Th 50 LTV	2 x 0,5	NiCr-Ni	4,1	3,9
047352...*	Th 100 LTV	2 x 1,0	NiCr-Ni	4,9	5,2
047353...*	Th 20 -4 LTV	4 x 0,22	NiCr-Ni	3,6	2,9
047354...*	Th 50 -4 LTV	4 x 0,5	NiCr-Ni	4,7	5,1
047355...*	Th 100-4 LTV	4 x 1,0	NiCr-Ni	5,6	7,5

*Thermocouple code see page L/5

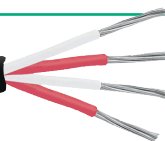
Compensating and extension cables

RTD sensor cable

connection cables for RTD



CKSKES · D-VIERSEN · RTD sensor cable 180 TW 4x26/7 AWG 3820-0043



Marking for RTD sensor cable 180 TW 3820-0043:

SAB BRÜCKSKES · D-VIERSEN · RTD sensor cable 180 TW 4x26/7 AWG 3820-0043

Technical data:

Peak operating voltage:	48 V		
Testing voltage:	core/core 600 V core/screen 600 V		
Min. bending radius			
fixed laying:	5 x d		
flexible application:	10 x d		
Temperature range	180 flex 180 C flex 180 highflex 180 C highflex	180 TW 180 C TW	250 TW 250 C TW
fixed laying:	-40/+180 °C	-90/+180 °C	-90/+250 °C
flexible application:	-25/+180 °C	-55/+180 °C	-55/+250 °C
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“		



Outstanding features:

- high temperature resistant
- small diameter

type item no.	no. of cores x cross section	conductor	insulation	colour code	screen	sheath material	sheath colour	outer-ø approx. mm	copper figure kg/km	cable weight ≈ kg/km
RTD sensor cable 180 TW										
38200023	2 x 26/7 AWG	tinned copper	FEP	● ○		FEP		1,9	2,8	6,1
38200033	3 x 26/7 AWG	tinned copper	FEP	● ● ○		FEP		2,0	4,2	8,0
38200043	4 x 26/7 AWG	tinned copper	FEP	● ● ● ○		FEP		2,2	5,6	10,1
RTD sensor cable 180 C TW										
38201023	2 x 26/7 AWG	tinned copper	FEP	● ○	tinned copper	FEP		2,5	9,8	12,7
38201033	3 x 26/7 AWG	tinned copper	FEP	● ● ○	tinned copper	FEP		2,6	11,3	14,7
38201043	4 x 26/7 AWG	tinned copper	FEP	● ● ● ○	tinned copper	FEP		2,8	15,9	19,0
RTD sensor cable 180 flex										
38202023	2 x 26/7 AWG	tinned copper	FEP	● ○		Besilen®		2,5	2,8	8,7
38202033	3 x 26/7 AWG	tinned copper	FEP	● ● ○		Besilen®		2,6	4,2	10,5
38202043	4 x 26/7 AWG	tinned copper	FEP	● ● ● ○		Besilen®		2,8	5,6	12,7
RTD sensor cable 180 C flex										
38203023	2 x 26/7 AWG	tinned copper	FEP	● ○	tinned copper	Besilen®		3,0	9,8	14,1
38203033	3 x 26/7 AWG	tinned copper	FEP	● ● ○	tinned copper	Besilen®		3,1	11,3	16,1
38203043	4 x 26/7 AWG	tinned copper	FEP	● ● ● ○	tinned copper	Besilen®		3,3	15,9	20,4
RTD sensor cable 250 TW										
38204023	2 x 26/7 AWG	nickel-plated copper	PFA	● ○		PFA		1,9	2,8	6,1
38204033	3 x 26/7 AWG	nickel-plated copper	PFA	● ● ○		PFA		2,0	4,2	8,0
38204043	4 x 26/7 AWG	nickel-plated copper	PFA	● ● ● ○		PFA		2,2	5,6	10,1
RTD sensor cable 250 C TW										
38205023	2 x 26/7 AWG	nickel-plated copper	PFA	● ○	tinned copper	PFA		2,5	9,8	12,9
38205033	3 x 26/7 AWG	nickel-plated copper	PFA	● ● ○	tinned copper	PFA		2,6	11,3	14,9
38205043	4 x 26/7 AWG	nickel-plated copper	PFA	● ● ● ○	tinned copper	PFA		2,8	15,9	19,3
RTD sensor cable 180 highflex										
38206023	2 x 26/7 AWG	tinned copper	Besilen®	● ○		Besilen®		3,2	2,8	12,1
38206033	3 x 26/7 AWG	tinned copper	Besilen®	● ● ○		Besilen®		3,3	4,2	14,0
38206043	4 x 26/7 AWG	tinned copper	Besilen®	● ● ● ○		Besilen®		3,6	5,6	16,8
RTD sensor cable 180 C highflex										
38207023	2 x 26/7 AWG	tinned copper	Besilen®	● ○	tinned copper	Besilen®		3,6	13,1	19,2
38207033	3 x 26/7 AWG	tinned copper	Besilen®	● ● ○	tinned copper	Besilen®		3,8	14,6	21,4
38207043	4 x 26/7 AWG	tinned copper	Besilen®	● ● ● ○	tinned copper	Besilen®		4,1	19,4	27,0

Other dimensions and colours are possible on request.

Compensating and extension cables

PFA insulated extension cables for resistance thermometers

TGV with fibre-glass braiding
and stainless steel wire armouring



TGV

Construction:

Conductor:	nickel-plated copper strands
Insulation:	PFA
Braiding:	fibre-glass
Stranding:	cores together
Armouring:	stainless steel wire armouring (VA) with tracer
Shape:	round

Technical data:

Min. bending radius:	12 x d
Temperature range of insulation:	
flexible application:	max. + 250 °C
fixed laying:	max. + 250 °C
limited time of use:	+ 260 °C
Insulation resistance:	> 1 MΩ x km
Fire performance:	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 Cat. C resp. D, see chapter N „Technical Data“. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Absence of harmful substances:	acc. to RoHS directive of the European Union see chapter N „Technical Data“

TGV

item no.	no. of cores x cross section n x mm ²	construction of strands n x wire ø	approx. outer-ø mm	approx. cable weight kg/km
04700218	2 x 0,18	10 x 0,15	3,4	2,1
04700318	3 x 0,18	10 x 0,15	3,6	2,3
04700418	4 x 0,18	10 x 0,15	4,0	2,7
04700618	6 x 0,18	10 x 0,15	4,8	3,8

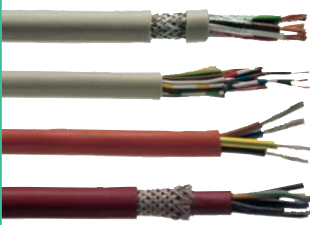
SAB colour code:

2-cores red-white
3-cores red-red-white
4-cores red-red-white-white
6-cores red-red-white-white-black-black

Compensating and extension cables

RU possible!

Connection cables for resistance thermometers, special and hybrid cables

SAB identification	Figure	Insulation	Cross section	Outer diameter	Temperature range of insulation
Connection cables for resistance thermometers					
TTL		PFA	0,12 - 0,18 mm ²	2,3 - 2,5 mm	fixed laying: max. +250°C limited time of use: max. +260°C
Th LTS Th LTV		fibre-glass/ fibre-glass	0,18 mm ²	2,9 mm	fixed laying: max. +250°C
LiYY LiYCY BiHF-J BiHF/Cu/Bi-J		PVC Besilen®	0,14 - 1,5 mm ²	3,1 - 8,4 mm 3,6 - 9,3 mm (braid) 4,3 - 18,6 mm 6,4 - 17,0 mm (braid)	fixed laying: -30°C up to +70°C fixed laying: -40°C up to +180°C
TGV		PFA fibre-glass (braid)	0,18 mm ²	3,4 - 4,8 mm	fixed laying: +250°C
Special and hybrid cables					
SAB Type	Figure	Insulation	Cross section	Outer diameter	Temperature range of insulation
Type J ***		Core: PVC Sheath: PUR	3 x 2 x 0,5 mm ² JX + 8 x 6 mm ²	18,8 mm	fixed laying: -25°C up to +70°C
Type K Type J Type L ***	  particularly appropriate for helix cables	Core: TPE Sheath: PUR	0,22 mm ²	3,0 mm	flexible application: -40°C up to +90°C
Type K Type J Type L ***		PI-foil PI-foil	0,20 mm ²	0,9 x 0,5 mm	fixed laying: -40°C up to +250°C

*** Type T, E, R/S, N on request!



For all cables possible on request:

- heat resistant PVC up to +105°C
- notch resistant Besilen® sheath (EWKF)

Compensating and extension cables

Compensating and Extension Cables for the automotive industry

SAB item no.	Picture	Cable type	T/C type	Insu- lation	Section	Cond.	Form	Outer-Ø	Temp.-range of insulation	thermoelectric voltage
fibre-glass insulated thermo-cables (wire)										
0489-9002		thermo cable	type K	GL/GL	2 x 0,2 mm	wire	oval	approx. 0,8 x 1,3 mm	flexible application: -25°C up to +200°C fixed laying: -25°C up to +200°C	IEC 60584 class 1 tolerance ± 1,5°C
0489-2144		thermocouple- cable	type K	GL/GL	2 x 0,5 mm	wire	oval	approx. 1,9 x 1,1 mm	flexible application: -40°C up to +250°C fixed laying: -40°C up to +250°C	IEC 60584 class 1
0489-9003		thermo- cable	type K	GL/GL	2 x 0,8 mm	wire	oval	approx. 2,5 x 1,4 mm	flexible application: -25°C up to +200°C flexible application: -25°C up to +200°C	IEC 60584 class 1
0490-9016		thermo- couple- cable	type K	GL/GL	2 x 0,5 mm	wire	oval	approx. 2,0 x 1,2 mm	flexible application: max. +400°C fixed laying: max. +400°C	IEC 60584 class 1
polyimide insulated thermo-cables (wire)										
0433-9138		thermo- couple- cable	type K	KN- polyimide KP-bare/ polyimide	2 x 0,2 mm	wire	oval	approx. 0,9 x 0,5 mm	flexible application: -40°C up to +250°C fixed laying: -40°C up to +250°C	IEC 60584 class 1 tolerance ± 1,5°C
0433-9186		thermo- couple- cable	type K	KN- polyimide KP-bare/ polyimide	2 x 0,2 mm	wire	oval	approx. 0,7 x 0,5 mm	flexible application: -40°C up to +250°C fixed laying: -40°C up to +250°C	IEC 60584 class 1 tolerance ± 1,5°C
0433-9149		thermo- couple- cable	type K	polyimide + PTFE/ polyimide	2 x 0,3 mm	wire	oval	approx. 0,9 x 1,7 mm	flexible application: -40°C up to +250°C fixed laying: -40°C up to +250°C	IEC 60584 class 1 tolerance ± 1,5°C
0433-9168		thermo- couple- cable	type K	KN- polyimide KP-PTFE/ polyimide	2 x 0,2 mm	wire	oval	approx. 1,0 x 0,8 mm	flexible application: -40°C up to +250°C fixed laying: -40°C up to +250°C	IEC 60584 class 1
polyimide/PFA insulated thermo-cables (wire)										
0433-9196		thermo- couple- cable	type K	KN- polyimide KP-bare/ polyimide/ PFA	2 x 0,2 mm	wire	round	max. 1,0 mm	flexible application: -40°C up to +250°C fixed laying: -40°C up to +250°C	IEC 60584 class 1
FEP insulated thermo-cables (wire)										
0433-9152		thermo- couple- cable	type K	FEP/FEP	2 x 0,2 mm	wire	oval	approx. 1,7 x 1,1 mm	flexible application: -40°C up to +180°C fixed laying: -40°C up to +180°C	IEC 60584 class 1
TPE insulated thermo-cable (strands)										
0433-9177		thermo- couple- cable	type K	TPE/TPE	2 x 0,2 mm²	strands	round	approx. 3,0 mm	flexible application: -40°C up to +90°C fixed laying: -40°C up to +90°C	IEC 60584 class 1
FEP/Besilen® insulated thermo-cables (strands)										
0433-9193		thermo- cable	type K	FEP/FEP/ Bi	2 x 0,2 mm²	strands	round	approx. 3,8 mm	flexible application: -25°C up to +180°C fixed laying: -40°C up to +180°C	IEC 60584 class 2

Compensating and extension cables

Compensating and Extension Cables for the automotive industry

SAB item no.	Picture	Cable type	T/C type	Insu- lation	Section	Cond.	Form	Outer-Ø	Temp.-range of insulation	thermoelectric voltage
FEP/Besilen® connection cables for resistance thermometers (strands)										
0470-9224		connection cable	tinned copper strands copper figure: 2,7 kg/km	FEP/Bi	2 x 0,14 mm ²	strands	round	approx. 2,8 mm	flexible application: -25°C up to +180°C fixed laying: -40°C up to +180°C	
0470-0423		connection cable	tinned copper strands copper figure: 8,4 kg/km	FEP/Bi	4 x 0,22 mm ²	strands	round	approx. 3,9 mm	flexible application: -25°C up to +180°C fixed laying: -40°C up to +180°C	
3833-9132		connection cable	tinned copper strands copper figure: 19,3 kg/km	FEP/C/ FEP	4 x 0,22 mm ²	strands	round	approx. 3,0 mm	flexible application: -55°C up to +180°C fixed laying: -90°C up to +180°C	
FEP insulated thermo-cables (strands)										
0433-9157		thermo- cable	type K	FEP/FEP	2 x 0,22 mm ²	strands	oval	approx. 2,5 x 1,5 mm	flexible application: -25°C up to +180°C fixed laying: -25°C up to +180°C	IEC 60584 tolerance ± 1°C
0433-9137		thermo- cable	type K	FEP/FEP	2 x 0,22 mm ²	strands	round	approx. 2,0 mm	flexible application: -25°C up to +180°C fixed laying: -25°C up to +180°C	IEC 60584 tolerance ± 1°C
0433-9154		thermo- cable	type K	FEP/FEP	8 x 2 x 0,22 mm ²	strands	round	approx. 6,4 mm	flexible application: -25°C up to +180°C fixed laying: -25°C up to +180°C	IEC 60584 class 2
0433-9135		thermo- cable	type K	FEP/FEP	16 x 2 x 0,22 mm ² twisted pairs	strands	round	approx. 7,7 mm	flexible application: -25°C up to +180°C fixed laying: -25°C up to +180°C	IEC 60584 class 2
0435-9085		thermo- couple- cable	type K	FEP-F-ZF- D(B)- FEP/F-C (B)-FEP	8 x (2 x 0,5 mm)D	strands	round	approx. 11,0 mm	flexible application: -55°C up to +180°C fixed laying: -90°C up to +180°C	IEC 60584 class 1
FEP insulated thermo-cables with screening (strands)										
0435-9037		thermo- cable	type K	FEP/C/ FEP	2 x 0,22 mm ²	strands	round	approx. 2,6 mm	flexible application: -25°C up to +180°C fixed laying: -25°C up to +180°C	IEC 60584 tolerance ± 1,5°C
Besilen® insulated thermo-cables (strands)										
0451-9019		thermo- cable	type K	GL/ Silicone	2 x 0,22 mm ²	strands	round	approx. 3,2 mm	flexible application: -25°C up to +200°C fixed laying: -25°C up to +200°C	IEC 60584 class 1

Compensating and extension cables

Colour code and temperature range for compensating and extension cables

THERMOCOUPLE						
Code	Material ⊕ ⊖	Identification THL AGL	Identification THL AGL	Identification THL AGL	Identification THL AGL	Identification THL AGL
T	Cu - Cu Ni	 TX -25° to +100°C		 0° to +100°C	 0° to +100°C	 -25° to +200°C
U	Cu - Cu Ni		 UX 0° to +200°C			
J	Fe - Cu Ni	 JX -25° to +200°C		 0° to +200°C	 0° to +200°C	 -25° to +200°C
L	Fe - Cu Ni		 LX 0° to +200°C			
E	Ni Cr - Cu Ni	 EX -25° to +200°C		 0° to +200°C	 0° to +200°C	 -25° to +200°C
K	Ni Cr - Ni	 KX -25° to +200°C		 0° to +200°C	 0° to +200°C	 -25° to +200°C
K	Ni Cr - Ni	 KCA 0° to +150°C				 0° to +150°C
K	Ni Cr - Ni	 KCB 0° to +100°C			 0° to +100°C	 0° to +100°C
N	Ni Cr Si - Ni Si	 NX -25° to +200°C	 NC 0° to +150°C			
R	Pt Rh 13 - Pt	 RCB/ SCB 0° to +200°C		 0° to +200°C	 0° to +200°C	 0° to +200°C
S	Pt Rh 10 - Pt					
B	Pt Rh 30 - Pt Rh 6			 0° to +100°C		 0° to +100°C

The application temperature range of the cable is limited by the highest application temperature of the insulating material or the application temperature range of the conductor material. In all cases the respective lower figure is valid. The compensating cable for the thermocouple type B can also be manufactured, deviating from the corresponding standards, for a temperature range from 0 to +200°C (SAB-Type BC-200). Variant colour codes can be manufactured for a minimum order quantity.

* The standard 43710 was withdrawn in April 1994.
Therefore, the element types "U" and "L" are not standardized anymore.

THL = extension cable · AGL = compensating cable