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# Thermocouples for equipment and systems tested to DIN 34 40

- for indirect heating systems to DIN 47 54
- for temperatures up to 1500°C
- as single or twin thermocouple
- for operation in water, oil or air
- for tested control and limiter instruments

The thermocouples listed in this data sheet may be used in indirect heating systems to DIN 47 54, in conjunction with temperature control and limitation equipment tested to DIN 34 40 (see table on page 4/4).

Thermocouples are preferably used for measuring temperatures in liquids and gases. Applications include heating installations, ovens, furnaces and equipment engineering.

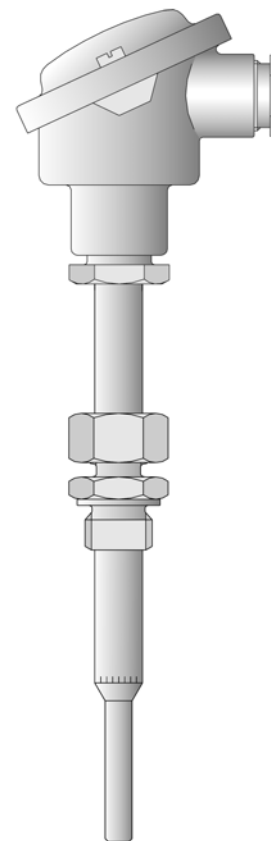
The terminal head Form B is suitable for ambient temperatures up to 100°C.

Protection tubes in different materials protect the measuring insert from chemical influences and mechanical damage. The choice of the appropriate protection tube material depends on the conditions prevailing on site.

The measuring insert is fitted with thermocouples to EN 60 584, Class 2 and DIN 43 710.

**Modifications to the versions described below require a fresh type approval.**

**Note:** when ordering please specify the Sales No. as shown in Price Sheet 90.1006



## Screw-in thermocouples with screwed pipe joint and terminal head to DIN 43 729, Form B M 24 x 1.5

Fitting length EL in mm	Nom. length NL in mm	Thread G in inch	Temperature in °C	Type 1 thermocpl.	Type 2 thermocouples
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Protection tube stainless steel X 6 CrNiMoTi 17 12 2, Material Ref. 1.4571

**Thermocouple NiCr-Ni K**

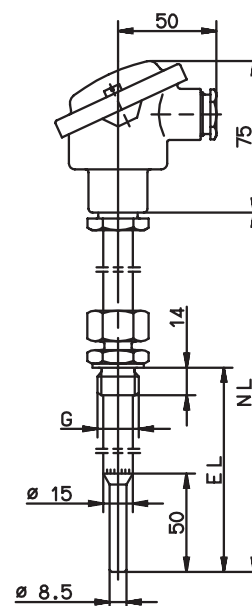
65 – 670	710	1/2"	550	90.020-F03	-
65 – 670	710	1/2"	550	-	90.020-F02

**Thermocouple Fe-Con L**

65 – 670	710	1/2"	550	90.020-F13	-
65 – 670	710	1/2"	550	-	90.020-F12

Operating medium: water, oil  
Operating pressure: 27bar max. up to 100°C, 20bar up to 400°C, no pressure above 400°C.

● available from stock



Item 1

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**Screw-in thermocouples with weld-in pocket and terminal head to DIN 43 729, Form B M 24 x 1.5**

Fitting length <sup>1</sup> EL in mm	Length L in mm	Temperature in °C	Type 1 thermocpl.	Type 2 thermocouples
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**Welding shoulder steel 15 Mo 3, Material Ref. 1.5415**  
**Protection tube steel St 35.8, Material Ref. 1.0305**

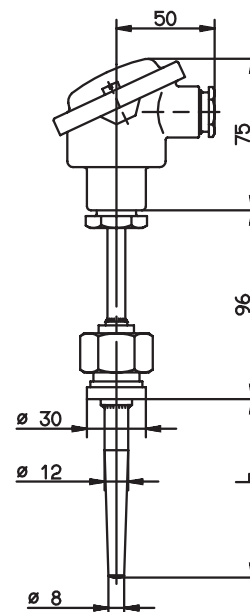
**Thermocouple Fe-Con L**

220	200	480	90.111-F01 ●	90.111-F02
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Operating medium: water, oil  
Operating pressure: 103bar max. up to 100°C, 30bar up to 480°C.

● available from stock.

1. Fitting length of thermocouple



Item 2

**Push-in thermocouples with sliding stop flange and terminal head to DIN 43 729, Form B M 24 x 1.5**

Fitting length EL in mm	Nom. length NL in mm	Temperature in °C	Type 2 thermocouples
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**Protection tube stainless steel X 6 CrNiMoTi 17 12 2, Material Ref. 1.4571**

**Thermocouple NiCr-Ni K**

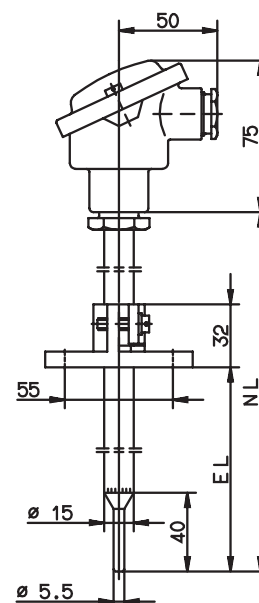
50 – 460	500	800	90.019-F01 ●
50 – 670	710	800	90.020-F01
50 – 960	1000	800	90.021-F01

**Thermocouple Fe-Con L**

50 – 460	500	700	90.019-F11
50 – 670	710	700	90.020-F11
50 – 960	1000	700	90.021-F11

Operating medium: air

● available from stock



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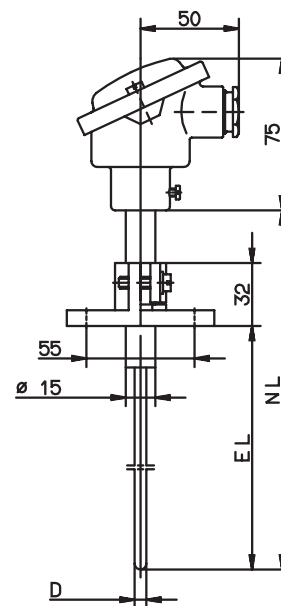
**Push-in thermocouples with sliding stop flange and terminal head to DIN 43 729, Form B 15**

Fitting length EL in mm	Nom. length NL in mm	Diameter D in mm	Temperature in °C	Type 2 thermocouples
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**Protection tube ceramic KER 710**

**Thermocouple NiCr-Ni K**

420 – 475	500	6	1000	90.023-F01 ●
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Operating medium: air

● available from stock

Item 4

**Push-in thermocouples with sliding stop flange and terminal head to DIN 43 729, Form B 15**

Fitting length EL in mm	Nom. length NL in mm	Diameter D in mm	Temperature in °C	Type 1 thermocpl.	Type 2 thermocouples
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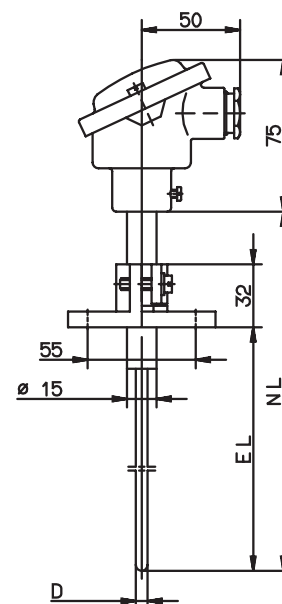
**Protection tube ceramic KER 710**

**Thermocouple Pt10Rh-Pt S**

420 – 215	250	6	1300	90.021	90 D 021
275 – 320	355	6	1300	90.022	90 D 022
420 – 465	500	6	1300	90.023	90 D 023

**Thermocouple Pt30Rh-Pt6Rh B**

170 – 215	250	6	1500	90.027	90 D 027
275 – 320	355	6	1500	90.028	90 D 028
420 – 465	500	6	1500	90.029	90 D 029



Operating medium: air

● available from stock

Item 5

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**Universal process controller (TR), temperature limiter (TB), temperature monitor (TW), safety temperature limiter (STB) and safety temperature monitor (STW) with approved temperature probes, tested to DIN 34 40**

Thermo-couple	Transducer	Max. temp. °C	Weld-in pocket	Water/oil	Air/gas	TB/TW/STB/STW t70.1130 <sup>1</sup>	TB/TW t70.1140 <sup>1</sup>	TR t70.3570 <sup>1</sup>	TR t70.3580 <sup>1</sup>
90.020-F02	2x NiCr-Ni K	550	-	X	-	X	X	X	X
90.020-F03	1x NiCr-Ni K	550	-	X	-	X	X	X	X
90.020-F12	2x Fe-Con L	550	-	X	-	X	X	X	X
90.020-F13	1x Fe-Con L	550	-	X	-	X	X	X	X
90.111-F01	1x Fe-Con L	480	X	X	-	X	X	X	X
90.111-F02	2x Fe-Con L	480	X	X	-	X	X	X	X
90.019-F01	2x NiCr-Ni K	800	-	-	X	X	X	X	X
90.020-F01	2x NiCr-Ni K	800	-	-	X	X	X	X	X
90.021-F01	2x NiCr-Ni K	800	-	-	X	X	X	X	X
90.019-F11	2x Fe-Con L	700	-	-	X	X	X	X	X
90.020-F11	2x Fe-Con L	700	-	-	X	X	X	X	X
90.021-F11	2x Fe-Con L	700	-	-	X	X	X	X	X
90.023-F01	2x NiCr-Ni K	1000	-	-	X	X	X	X	X
90.021	1x Pt10Rh-Pt S	1300	-	-	X	-	X	X	X
90.022	1x Pt10Rh-Pt S	1300	-	-	X	-	X	X	X
90.023	1x Pt10Rh-Pt S	1300	-	-	X	X	X	X	X
90 D 021	2x Pt10Rh-Pt S	1300	-	-	X	-	X	X	X
90 D 022	2x Pt10Rh-Pt S	1300	-	-	X	-	X	X	X
90 D 023	2x Pt10Rh-Pt S	1300	-	-	X	X	X	X	X
90.027	1x Pt30Rh-Pt6Rh B	1500	-	-	X	-	X	X	X
90.028	1x Pt30Rh-Pt6Rh B	1500	-	-	X	-	X	X	X
90.029	1x Pt30Rh-Pt6Rh B	1500	-	-	X	X	X	X	X
90 D 027	2x Pt30Rh-Pt6Rh B	1500	-	-	X	-	X	X	X
90 D 028	2x Pt30Rh-Pt6Rh B	1500	-	-	X	-	X	X	X
90 D 029	2x Pt30Rh-Pt6Rh B	1500	-	-	X	X	X	X	X

X = approved      - = not approved      1. t70. ... = data sheet 70. ... see Sectional catalog "Controllers, power units and system technology"