

## Resistance thermometers approved to DIN 34 40

- for indirect heating installations to DIN 47 54
- for temperatures up to 700°C
- as single, twin or triple resistance thermometer
- for operation in water, oil or air
- for approved control and limiter instruments

The resistance thermometers cited in this Data Sheet are suitable for approved temperature control and limitation equipment to DIN 47 54 (see table on page 4/4).

Resistance thermometers are preferably used for measuring temperatures in liquids and gases. Applications include HVAC and refrigeration, as well as heating installations, ovens, furnaces and plant engineering.

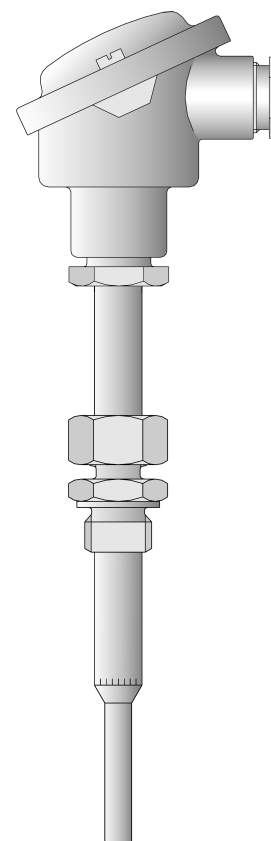
The terminal head Form B is suitable for ambient temperatures up to 100°C.

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 normally fitted with a Pt100 temperature sensor to EN 60 751, Class B in 2-wire circuit.

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

**Note:** when ordering please specify Sales No. as shown in Price Sheet 90.2006



### Screw-in resistance thermometers 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 1x Pt100	Type 2x Pt100
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Protection tube stainless steel X 6 CrNiMoTi 17 12 2, Material Ref. 1.4571

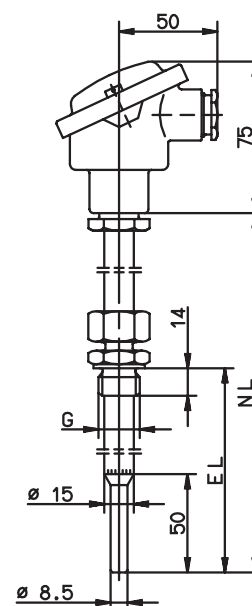
65 – 670	710	1/2"	550	90.272-F03	-
65 – 670	710	1/2"	550	-	90.272-F02

**Note:** please note the internal conductor resistance due to the operating temperature; for resistance values see page 4/4.

Operating medium: water, oil

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

● available from stock



Item 1

## Screw-in resistance thermometers to DIN 43 765, Form B and terminal head to DIN 43 729, Form B M 24 x 1.5

Fitting length EL in mm	Thread G in inch	Temperature in °C	Type 1x Pt100	Type 2x Pt100
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### Protection tube steel St 35.8, Material Ref. 1.0305

250	1/2"	480	90.239 ●	90 D 239
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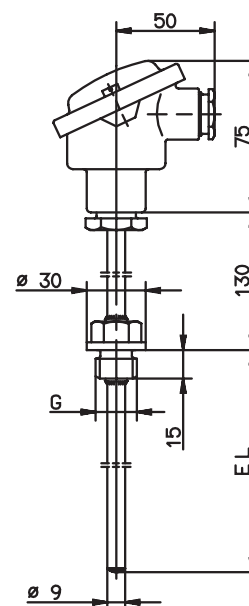
### Protection tube stainless steel X 6 CrNiMoTi 17 12 2, Material Ref. 1.4571

100	1/2"	400	902006/10-402-1003	-
100	1/2"	400	-	902006/10-402-2003

Operating medium: water, oil

Operating pressure: 38bar max. up to 250°C, 27bar up to 350°C, no pressure above 350°C.

● available from stock



Item 2

## Screw-in resistance thermometers 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 1x Pt100	Type 2x Pt100	Type 3x Pt100
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### Welding shoulder steel 15 Mo 3, Material Ref. 1.5415

### Protection tube steel St 35.8, Material Ref. 1.0305

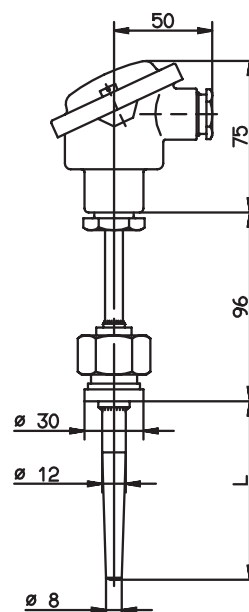
100	80	480	90.239-F01	-	-
160	140	480	90.239-F11	-	-
190	170	400	90.239-F03	-	-
220	200	480	90.239-F21 ●	-	-
100	80	480	-	90.239-F02 ●	-
160	140	480	-	90.239-F12	-
190	170	400	-	90 D 239-F03	-
220	200	480	-	90.239-F22 ●	-
100	80	400	-	-	90.239-F07
160	140	400	-	-	90.239-F17
220	200	400	-	-	90.239-F27

Operating medium: water, oil

Operating pressure: 103bar max. up to 100°C, 30bar up to 480°C.

● available from stock.

1. Fitting length of resistance thermometer



Item 3

## Screw-in resistance thermometers with weld-in pocket and 0.35 mm<sup>2</sup> connecting cable with stainless steel braiding and cable protector

Fitting length <sup>1</sup> EL in mm	Length L in mm	Temperature in °C	Type 1x Pt100
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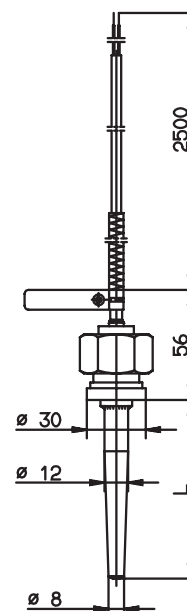
Welding shoulder steel 15 Mo 3, Material Ref. 1.5415  
Protection tube steel St 35.8, Material Ref. 1.0305

100	80	480	90.280-F32
160	140	480	90.280-F31 ●
220	200	480	90.280-F30

Operating medium: water, oil  
Operating pressure: 103bar max. up to 100°C, 30bar up to 480°C.

● available from stock

1. Fitting length of resistance thermometer



Item 4

## Push-in resistance thermometers with sliding stop flange and terminal head to DIN 43 729, Form B 15

Fitting length EL in mm	Nominal length NL in mm	Temperature in °C	Type 2x Pt100
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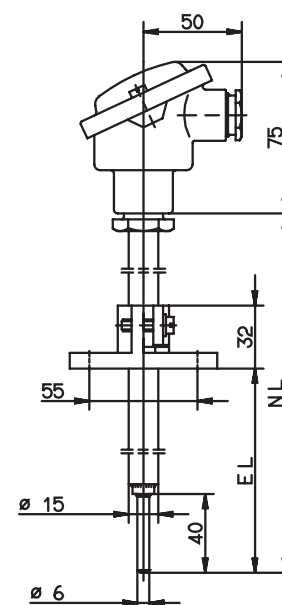
Protection tube stainless steel X 6 CrNiMoTi 17 12 2, Material Ref. 1.4571

50 – 460	500	700	90.271-F01 ●
50 – 670	710	700	90.272-F01
50 – 960	1000	700	90.273-F01

**Note:** Please note the internal conductor resistance due to the operating temperature; for resistance values see page 4/4.

Operating medium: air

● available from stock



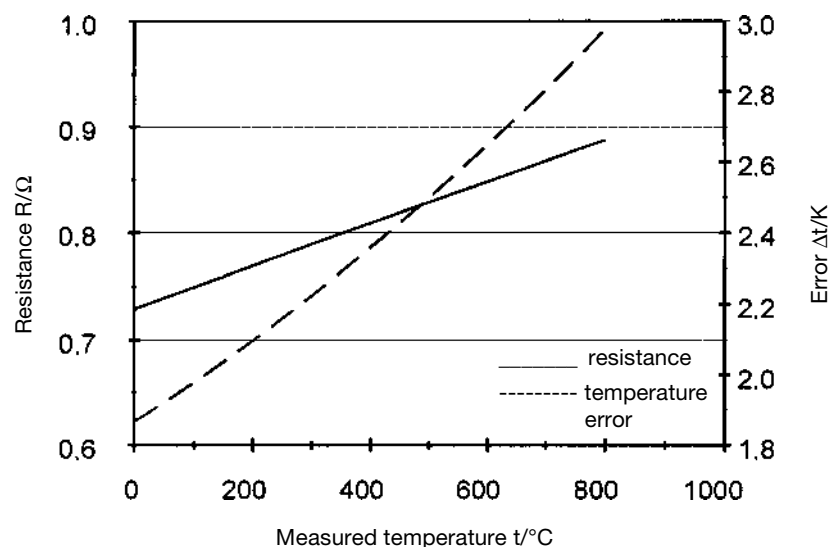
Item 5

**Universal process controllers (DICON 500), temperature limiters (TB), temperature monitors (TW), safety temperature limiters (STB) and safety temperature monitors (STW) together with the approved temperature probes to DIN 34 40**

Resistance thermometer	Transducer	Max. temp. in °C	Weld-in pocket	Water/oil	Air/gas	DICON 500 T 70.3570 <sup>1</sup>	TB/TW T 70.1130 <sup>1</sup>	STB/STW T 70.1130 <sup>1</sup>
90.272-F03	1x Pt100	550	-	X	-	X	X	X
90.272-F02	2x Pt100	550	-	X	-	X	X	X
90.239	1x Pt100	480	-	X	-	X	X	X
90 D 239	2x Pt100	480	-	X	-	X	X	X
902006/10-402-1003	1x Pt100	400	-	X	-	X	X	X
902006/10-402-2003	2x Pt100	400	-	X	-	X	X	X
90.239-F01	1x Pt100	480	X	X	-	X	X	X
90.239-F11	1x Pt100	480	X	X	-	X	X	X
90.239-F03	1x Pt100	400	X	X	-	X	X	X
90.239-F21	1x Pt100	480	X	X	-	X	X	X
90.239-F02	2x Pt100	480	X	X	-	X	X	X
90.239-F12	2x Pt100	480	X	X	-	X	X	X
90 D 239-F03	2x Pt100	400	X	X	-	X	X	X
90.239-F22	2x Pt100	480	X	X	-	X	X	X
90.239-F07	3x Pt100	400	X	X	-	X	X	X
90.239-F17	3x Pt100	400	X	X	-	X	X	X
90.239-F27	3x Pt100	400	X	X	-	X	X	X
90.280-F32	1x Pt100	480	X	X	-	X	X	X
90.280-F31	1x Pt100	480	X	X	-	X	X	X
90.280-F30	1x Pt100	480	X	X	-	X	X	X
90.271-F01	2x Pt100	700	-	-	X	X	X	X
90.272-F01	2x Pt100	700	-	-	X	X	X	X
90.273-F01	2x Pt100	700	-	-	X	X	X	X

X = approved    - = not approved    1. T 70. ... = Data Sheet 70. ... see Section Catalog "Controllers, actuators and system engineering"

## Temperature error



The versions 90.272-F03, 90.272-F02, 90.271-F01, 90.272-F01 and 90.273-F01 are subject to a systematic error due to the internal conductor. This depends both on the nominal length NL and on the measured temperature. The table shows the error **per 100 mm fitting length EL** for different measured temperatures.

t/°C	R/Ω	Δt/K
0	0.73	1.87
100	0.75	1.98
200	0.77	2.09
300	0.79	2.22
400	0.81	2.35
500	0.83	2.49
600	0.85	2.64
700	0.87	2.80
800	0.89	2.98

Resistance of a 0.5 mm NiCr wire **per 100 mm fitting length EL** (2 lengths of wire).

The details are provided as a rough guide only.