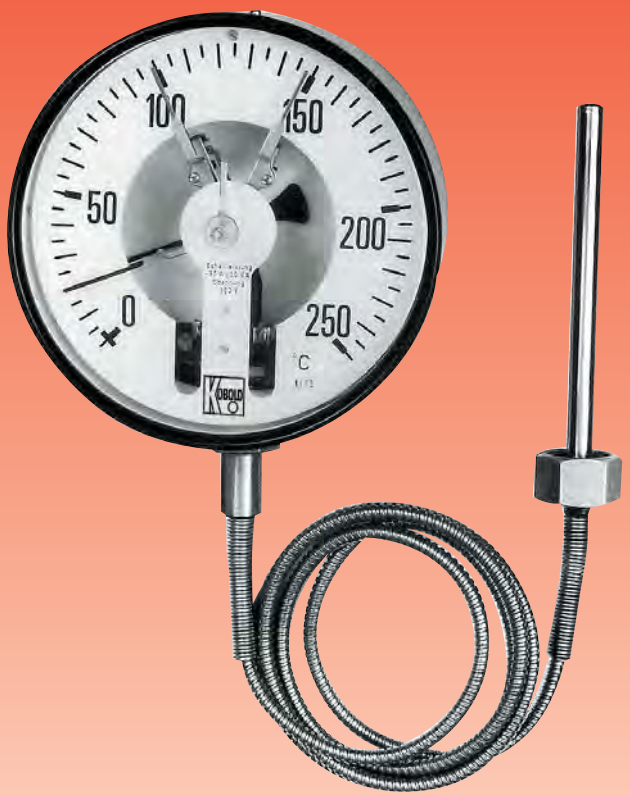
TNF
CAPILLARY THERMOMETERS

Flow
Pressure
Level
Temperature
measurement
monitoring
control

T2



- **Gas Filled Capillary Thermometer**
- **Dial Sizes: 2.5”, 3”, 4”, 6” and 10”**
- **All Stainless Steel Construction**
- **Ranges: -40 to 100˚F Through 32˚ to 1100˚F**
- **Available w/ Up to Four Switches**

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Model:
TNF

The KOBOLD TNF capillary thermometers are highly versatile and rugged gas filled thermometers for industrial applications. The capillary design allows for mounting of the indicator remote from the sensing probe. The TNF is available as a simple temperature indicating device or as a controller with up to four adjustable setpoints. The thermometer operates on the nitrogen gas principle. The sensing bulb is filled with inert nitrogen gas. Any temperature change at the bulb will result in a change in nitrogen pressure. This pressure is sensed in the indicating mechanism and displayed as a change in temperature.

Capillaries are available in stainless steel and stainless steel with flexible stainless steel armor sheath. A variety of indicator housings are available with wall mounting brackets or panel mount flanges. The TNF is available with glycerin filling for applications in which vibration is present. The TNF is also available with dial sizes ranging from 2.5 to 10 inches. A variety of fittings are available to suit almost any application.

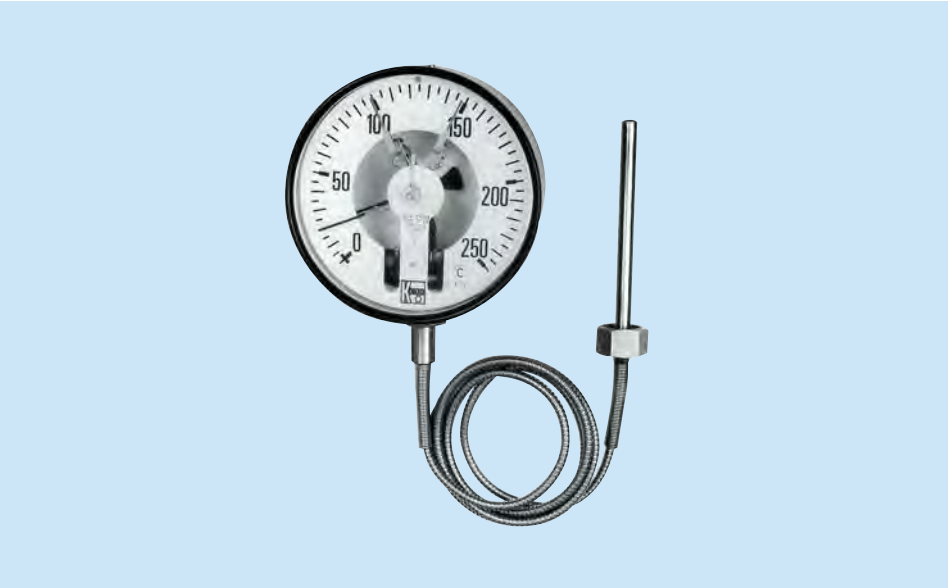
Specifications

Available Ranges
- **Celsius:** -20 to +40˚C through 0 to +600˚C
- **Fahrenheit:** -40 to +100˚F through 32 to +1100˚F

Over-range Limit: 1.3X Full Scale
Maximum Pressure: 350 PSIG
Available Dial Sizes: 2.5”, 3”, 4”, 6”, 10”
Accuracy:
- **2.5” and 3”:** ±1.6% of full scale @ 70˚F ambient
- **4”, 6” and 10”:** ±1% of full scale @ 70˚F ambient

Materials of Construction
Measuring Probe
- **2.5”, 3” and 10” Dial:** 304 stainless steel
- **4” and 6” Dial:** 316-Ti stainless steel
- **Capillaries:** 316-Ti stainless steel or 316-Ti stainless steel with 304 stainless steel armor

Indicator Housing
3” and 10” Dial: Black painted steel or stainless steel depending on model code



TNF Series Capillary Thermometers

- **4” and 6” Dial:** Aluminum or stainless steel depending on model code
- **Indicator Movement:** 304 and 316-Ti stainless steel
- **Dial & Pointer:** Aluminum

Protection
- **Aluminum & SS Housing:** NEMA 4X/IP 65
- **Steel Housing:** NEMA 3R/IP 54

Switch Specifications (optional)
- **Available Switch Types:** Sliding contact, magnetic spring contact, inductive
- **Sliding Contact Ratings:** 250 VAC/VDC, 10 watts, 0.6 amps Max
- **Magnetic Spring Contact Ratings:** 250 VAC/VDC, 30 watts, 0.6 amps. Max
- **Inductive Contact Ratings:** NAMUR according to DIN 19234

Note: Switches available for 4” and 6” housings only

TNF Model Code Key

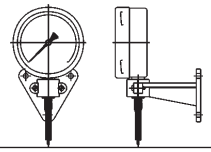
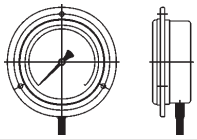
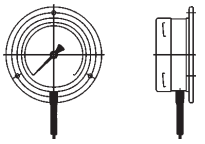
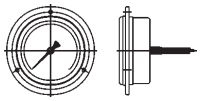
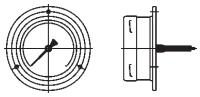
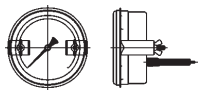
TNF - 0 - F - 2 - 24 E - 1A D - M11 L=XXX

- Model
- Diameter
- Case material
- Range
- Capillary
- Probe/Connection
- Options
- Switch
- Measuring Probe Length

Use Table 1 through 6 on the following pages to completely specify your model number.

TNF Capillary Thermometer Ordering information

Table 1: Housing Style

	Housing Diameter				
Style	2.5” (63mm)	3” (80 mm)	4” (100 mm)	6” (160 mm)	10” (250 mm)
	**TNF-0D...**	**TNF-0E...**	**TNF-0F...**	**TNF-0G...**	**TNF-0I...**
	**TNF-1D...**	**TNF-1E...**	**TNF-1F...**	**TNF-1G...**	**TNF-1I...**
	**TNF-2D...**	**TNF-2E...**	**TNF-2F...**	**TNF-2G...**	**TNF-2I...**
	**TNF-5D...**	**TNF-5E...**	**TNF-5F...**	**TNF-5G...**	**TNF-5I...**
	**TNF-6D...**	**TNF-6E...**	**TNF-6F... (*)**	**TNF-6G... (*)**	
	**TNF-8D...**	**TNF-8E...**	**TNF-8F...**	**TNF-8G...**	**TNF-8I...**

* For 100 mm and 160 mm housings, this style available only in aluminum.

TNF Capillary Thermometer
Ordering information

Table 2: Housing Material

1... = Black Painted Steel (for 3” and 10” housings only)	**A... =** Aluminum (for 4” and 6” housing only)
2... = Stainless Steel	

Table 3: Measuring Ranges

41... = -40 to +100˚F	**28...** = -20 to +85˚F	**31...** = 32 to 140˚F	**21...** = 32 to 210˚F
32... = 32 to 250˚F	**33...** = 32 to 320˚F	**23...** = 32 to 390˚F	**34...** = 32 to 480˚F
57... = 32 to 570˚F	**37...** = 32 to 750˚F	**39...** = 32 to 925˚F	**11...** = 32 to 1100˚F
24... = -20 to +40˚C	**26...** = -20 to +60˚C	**35...** = -30 to +50˚C	**44...** = -40 to +40˚C
46... = -40 to +60˚C	**06...** = 0 to 60˚C	**08...** = 0 to 80˚C	**10...** = 0 to 100˚C
12... = 0 to 120˚C	**16...** = 0 to 160˚C	**20...** = 0 to 200˚C	**25...** = 0 to 250˚C
30... = 0 to 300˚C	**40...** = 0 to 400˚C	**50...** = 0 to 500˚C	**60...** = 0 to 600˚C
E... = Special Scale (low end to high end of range must be >140˚F)			

Table 4: Capillaries
(Specify capillary length when ordering)

Description	Order Code
316-Ti Stainless Steel Capillary	....E
316-Ti Stainless Steel Capillary with Flexible 304 Stainless Steel Armor	...F

Table 5: Probe/Fitting Style
(Specify probe length "L" when ordering)

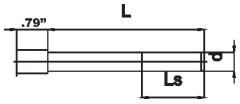
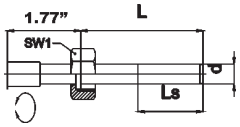
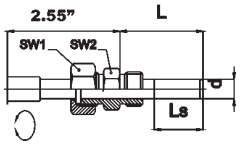
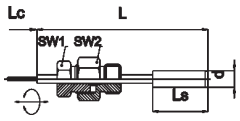
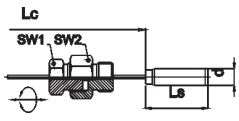
	Description	Thread	Order Code
	Smooth bore probe 12 mm diameter standard (9 or 10 mm optional)	none	**...AO**
	Union nut, for insertion into TSH series thermowell. Allows indicator to rotate	1/2" BSP 3/4" BSP 1" BSP	**...B1** **...B2** **...B3**
	Union nut and shoulder nipple, allows indicator to rotate when thermowell not used	1/2" NPT 3/4" NPT 1" NPT	**...1A** **...1B** **...1C**
	Bore through compression nut on sensing bulb, allows indicator rotation and adjustment of probe insertion depth	1/2" NPT 3/4" NPT 1" NPT	**...9A** **...9B** **...9C**
	Bore through compression nut on capillary, allows indicator rotation and adjustment of probe insertion depth	1/2" NPT 3/4" NPT 1" NPT	**...8A** **...8B** **...8C**

Table 6: Options

Option Code	Description
...D	Glycerine (or Paraffin w/Switch) Filled Indicator Housing (SS Housings Only)
...K	Max. Temperature Pointer (4" & 6" Housings Without Filling or Switches Only)
...R	Adjustable Temperature Pointer (4" & 6" Housings Without Filling Only)

Table 7: Switches

Switching Options			
Functional Description		**Contact Type**	
		Sliding	**Magnetic**
Sliding and Magnetic Contacts with 2 Switches			
	Both contacts closed when temperature above setpoint	S11	M11
	First contact closed when temperature above setpoint Second contact open when temperature above setpoint	S12	M12
	First contact open when temperature above setpoint Second contact closed when temperature above setpoint	S21	M21
	First contact open when temperature above setpoint Second contact open when temperature above setpoint	S22	M22
Sliding and Magnetic Contacts with 3 and 4 Switches			
	First contact open when temperature above setpoint Second contact open when temperature above setpoint Third contact closed when temperature above setpoint	S221	M221
	First contact closed when temperature above setpoint Second contact open when value above setpoint Third contact closed when temperature above setpoint Fourth contact open when temperature above setpoint	S1212	M1212
Inductive Contacts with 2 Switches			
	Both contacts conducting when temperature above setpoint	I11	
	First contact conducting when temperature above setpoint Second contact non-conducting when temperature above setpoint	I12	
	First contact non-conducting when temperature above setpoint Second contact conducting when temperature above setpoint	I21	
	Both contacts non-conducting when temperature above setpoint	I22	