

Vapor- and Gas-Actuated Thermometers



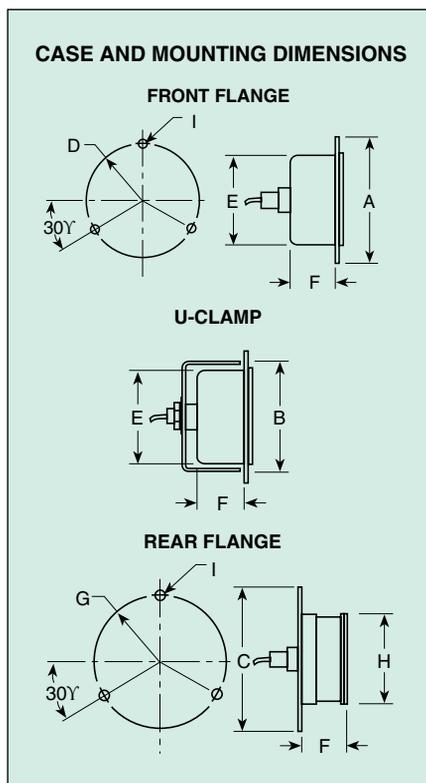
- ✓ Accuracy ± 1 Scale Division or 1% Scale for Gas
- ✓ Brass Movement with Precision Gearing
- ✓ White Dial with Black Graduations
- ✓ Phosphor Bronze Bourdon Tube



OMEGA® remote vapor- and gas-actuated thermometers are manufactured to the highest standards for a wide range of uses and can be fitted into almost any temperature-indicating application. These instruments are ideal for remote reading, such as panel installations, with capillary lengths of 1 to 100'. Vapor, or more precisely *vaporized liquid*, thermometers will give excellent readings, provided the temperature being measured is above or below ambient temperature. Vapor instruments also have progressive graduations and are best read in the upper $\frac{2}{3}$ of the dial range. Many ranges are available between -40 to 232°C (-40 to 450°F), and care should be taken to select a range that will locate the operating temperatures within the upper $\frac{2}{3}$ of the dial range.

OMEGA® gas-actuated thermometers combine advanced gas coil technology with a state-of-the-art gas absorbent (Class IV) thermal system, producing a superior temperature measurement instrument that can be fitted to a wide variety of applications. Gas-actuated thermometers have an advantage over vapor-actuated thermometers in that they are more accurate over the full range. They also operate at higher and lower ranges than vapor-actuated thermometers.

The linear dial on all OMEGA® gas thermometers provides a consistent 1% accuracy across the full span of each range. This, combined with over 20 Fahrenheit and dual ranges, from -196 to 649°C (-320 to 1200°F), provides complete coverage of all normal temperature requirements.



Specifications

Dial Sizes: 2, 2½, 3½, 4½"

Dial: Aluminum with white finish and black markings

Pointer: Furnished standard adjustable

Movement: Brass with precision gearing

Bourdon Tube: Vapor-phosphor bronze

Gas: Nitrogen in nispan coil

Accuracy:

Vapor: ± 1 scale division

Gas: $\pm 1\%$ of scale

Process Connection: Plain bulb, $\frac{1}{2}$ NPT union; or thermowell

Note: thermowells must be used whenever the bulb would be exposed to pressure, fluid velocity, or corrosive media

Window: Polycarbonate STD; glass available on all models

Bulb: Stainless steel or copper; bulb OD $\frac{3}{8}$ " on plain bulbs, $\frac{1}{2}$ " with threads. Bulb lengths from 2½ to 7½" depending on capillary length

Capillary: Copper, copper with bronze braid armor; stainless steel with stainless steel armor; capillary lengths 1 to 100' (standard length, 5')

Dial Size	A	B	C	D	E	F	G	H	I
2"	2.94	2.25	—	1.28R	2.05	0.98	—	—	0.14
2½"	3.69	2.81	—	1.56R	2.56	1.0	—	—	0.17
3½"	4.75	3.97	4.75	2.16R	3.59	1.41RF 0.75 UC, FF	2.16R	3.69	0.16
4½"	5.88	—	5.88	2.69R	4.59FF 4.87RF	1.41RF 0.75 UC, FF	2.69R	4.69	0.22

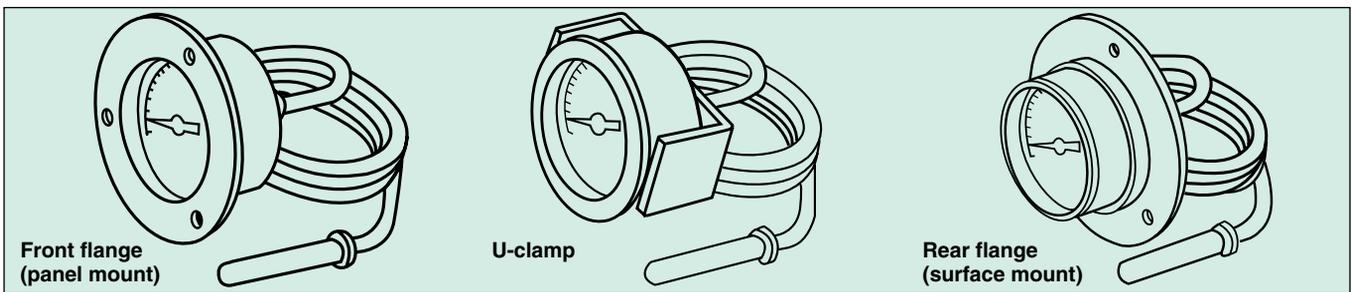


Table 1: Case Style

Front Flange (Panel Mount)				
Code	Dial	Case	Lens*	Connection Location
20FR	2"	Stainless steel	Polycarbonate*	Rear
25FR	2½"	Stainless steel	Polycarbonate*	Rear
35FR	3½"	Stainless steel	Polycarbonate*	Rear
45FR	4½"	Stainless steel	Polycarbonate*	Rear
45FL	4½"	Black aluminum (hinge ring type)	Polycarbonate*	Lower rear
U-Clamp (Panel Mount)				
20UR	2"	Stainless steel	Polycarbonate*	Rear
25UR	2½"	Stainless steel	Polycarbonate*	Rear
35UR	3½"	Stainless steel	Polycarbonate	Rear
Rear flange (Surface Mount)				
20RR	2"	Stainless steel	Polycarbonate*	Rear
35RR	3½"	Stainless steel	Polycarbonate*	Rear
35RB	3½"	Stainless steel	Polycarbonate*	Bottom
45RR	4½"	Stainless steel	Polycarbonate*	Rear
45RB	4½"	Stainless steel	Polycarbonate*	Bottom
45TB	4½"	Phenolic	Glass**	Bottom (turret)

* Glass lens available; specify "Glass" lens, for an additional cost. ** Polycarbonate lens available; specify "Poly" lens, for an additional cost.

**Table 2: Temperature Ranges††
For Vapor (Model No. Starts with "VA")**

°F Ranges		°F and °C Ranges	
Code	°F Range	Code	°F (°C) Range
-20	-40 to 60°F	-21	-40 to 60 (-40 to 15)
-30	-40 to 110°F	-31	-40 to 110 (-40 to 40)
-32	-20 to 120°F	-33	-20 to 120 (-30 to 50)
-72	0 to 180°F	-73	0 to 180 (-20 to 80)
-49	0 to 150°F	-79	0 to 150 (-15 to 65)
-80	20 to 220°F	-81	20 to 220 (0 to 105)
-50	40 to 240°F	-51	40 to 240 (0 to 115)
-56	0 to 250°F	-57	0 to 250 (-20 to 120)
-60	30 to 300°F	-61	30 to 300 (0 to 150)
-68†	100 to 350°F	-66†	100 to 350 (40 to 175)

Table 2A for Gas (Model No. Starts with "GA")

Code	°F Ranges	Div	Code	°F and (°C) Ranges	Div
-FB	-320 to 100°F	5°	-DB	-320 to 100 (-200 to 40)	5°/2°
-FE	-120 to 120°F	2°	-DE	-120 to 120 (-85 to 50)	2°/1°
-FG	-40 to 180°F	2°	-DG	-40 to 180 (-40 to 80)	2°/2°
-FH	0 to 120°F	1°	-DH	0 to 120 (-15 to 50)	1°/1°
-FJ	60 to 120°F	1°	-DJ	60 to 120 (15 to 50)	1°/½°
-FL	20 to 240°F	2°	-DL	20 to 240 (-5 to 110)	2°/1°
-FN	0 to 300°F	5°	-DN	0 to 300 (-10 to 150)	5°/1°
-FP	50 to 550°F	5°	-DP	50 to 550 (10 to 29)	5°/5°
-FR	50 to 750°F	5°	-DR	50 to 750 (0 to 400)	5°/5°
-FT	400 to 1200°F	10°	-DT	400 to 1200 (200 to 650)	10°/5°
-70†,†††	200 to 450°F	—	-71†,†††	200 to 450 (100 to 230)	—

Table 3: Capillary and Bulbs

Code††	Capillary and Bulb Material	Capillary Protection
-A	Copper	None
-C	Copper	Bronze braid
-D†	316 SS	None
-E†	316 SS	SS armor

Note: Capillary lengths over 5' effect bulb length. See Dimensions Table.

Table 4: Process Connection

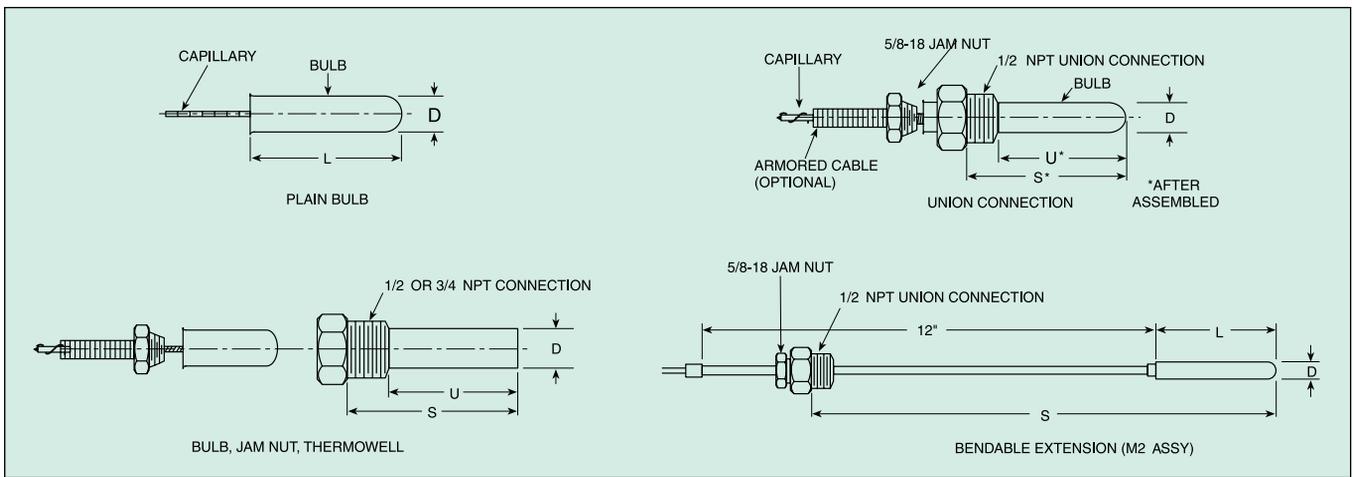
Code	Connection Type	Material
-J1	None (plain bulb)	—
-K2	½ NPT union	Brass
-L2†	½ NPT union	316 SS
-M2†	½ NPT sliding union, jam nut and bendable extension	316 SS

Code	Connection Type	Material
-J2	Jam nut only (required with thermowell)	Brass
-J3	Jam nut only (required with thermowell)	316 SS

† Higher temp ranges are available with "-D" or "-E" and "-L2" or "-M2". M2 only available with 316 SS capillary.

†† Ranges 300°F or above for vapor-actuate and all gas-actuated models only offered with stainless steel systems.

††† Stainless steel only.



Dimensions: inch

Capillary Length	Plain Bulb		Union Connection			Thermowell			Bendable Ext		
	L	D	U	S	D	U	S	D	L	S	D
1 to 5' (bulb #1)	2½	¾	1¾	2¾	7/16	1¹⁵/₁₆	2½	9/16	2½	3-13	¾
6 to 10' (bulb #1)	3¾	¾	1¾	2¾	7/16	1¹⁵/₁₆	2½	9/16	3¾	4-14	¾
11 to 25' (bulb #2)	3¾	¾	2½	3¼	7/16	2⁵/₈	3¾	9/16	3¾	4-14	¾
26 to 50' (bulb #3)	4¾	¾	4½	5¼	7/16	4⁵/₈	5¾	9/16	4¾	5-15	¾
51 to 75' (bulb #4)	7¾	¾	6½	7¼	7/16	6⁵/₈	7¾	9/16	7¾	8-18	¾
76 to 100' (bulb #5)	10¾	¾	8½	9¼	7/16	8⁵/₈	9¾	9/16	10¾	11-21	¾

Thermowells for Vapor- and Gas-Actuated Bulbs (except M2)

½ NPT		¾ NPT	
Model No.	Description	Model No.	Description
1/2-445S-U1 15/16-316SS-CB 1/2-445S-U1 15/16-316SS-SB 1/2-445S-U1 15/16-BRASS-CB 1/2-445S-U1 15/16-BRASS-SB	1 to 10' Capillary (bulb #1)	3/4-445S-U1 15/16-316SS-CB 3/4-445S-U1 15/16-316SS-SB 3/4-445S-U1 15/16-BRASS-CB 3/4-445S-U1 15/16-BRASS-SB	1 to 10' Capillary (bulb #1)
1/2-445S-U2 5/8-316SS-CB 1/2-445S-U2 5/8-316SS-SB 1/2-445S-U2 5/8-BRASS-CB 1/2-445S-U2 5/8-BRASS-SB	11 to 25' Capillary (bulb #2)	3/4-445S-U2 5/8-316SS-CB 3/4-445S-U2 5/8-316SS-SB 3/4-445S-U2 5/8-BRASS-CB 3/4-445S-U2 5/8-BRASS-SB	11 to 25' Capillary (bulb #2)
1/2-445S-U4 5/8-316SS-CB 1/2-445S-U4 5/8-316SS-SB 1/2-445S-U4 5/8-BRASS-CB 1/2-445S-U4 5/8-BRASS-SB	26 to 50' Capillary (bulb #3)	3/4-445S-U4 5/8-316SS-CB 3/4-445S-U4 5/8-316SS-SB 3/4-445S-U4 5/8-BRASS-CB 3/4-445S-U4 5/8-BRASS-SB	26 to 50' Capillary (bulb #3)
1/2-445S-U6 5/8-316SS-CB 1/2-445S-U6 5/8-316SS-SB 1/2-445S-U6 5/8-BRASS-CB 1/2-445S-U6 5/8-BRASS-SB	51 to 75' Capillary (bulb #4)	3/4-445S-U6 5/8-316SS-CB 3/4-445S-U6 5/8-316SS-SB 3/4-445S-U6 5/8-BRASS-CB 3/4-445S-U6 5/8-BRASS-SB	51 to 75' Capillary (bulb #4)
1/2-445S-U8 5/8-316SS-CB 1/2-445S-U8 5/8-316SS-SB 1/2-445S-U8 5/8-BRASS-CB 1/2-445S-U8 5/8-BRASS-SB	76 to 100' Capillary (bulb #5)	3/4-445S-U8 5/8-316SS-CB 3/4-445S-U8 5/8-316SS-SB 3/4-445S-U8 5/8-BRASS-CB 3/4-445S-U8 5/8-BRASS-SB	76 to 100' Capillary (bulb #5)

**To Order Visit omega.com/va_ga_gas_thermom for Pricing and Details
Construct a Model Number as Follows - See 3 Examples Below:**

Model No.	Table 1	Table 2 or 2A	Table 3	Table 4	Table 5	Table 6
VA or GA	Case Style and Size	Temperature Range	Capillary and Bulb	Capillary Length (feet)	Process Connection	Thermowell (Optional)
1) VA	25FR	32	D	05	J1	
2) GA	45FL	DH	E	12	L2	
3) VA	25FRGlass	32	D	10	J3	1/2-445S-U1 15/16-316SS-SB