Machine glass thermometer
V shape
Model 32

Approvals, see page 4

Applications

- Universal application
- Machine building
- Vessel construction
- Central and large heating systems
- Plant construction

Special features

- Insensitive to vibrations
- Non-toxic thermometric liquid
- Measuring ranges from -30 ... +200 °C [-22 ... +392 °F]

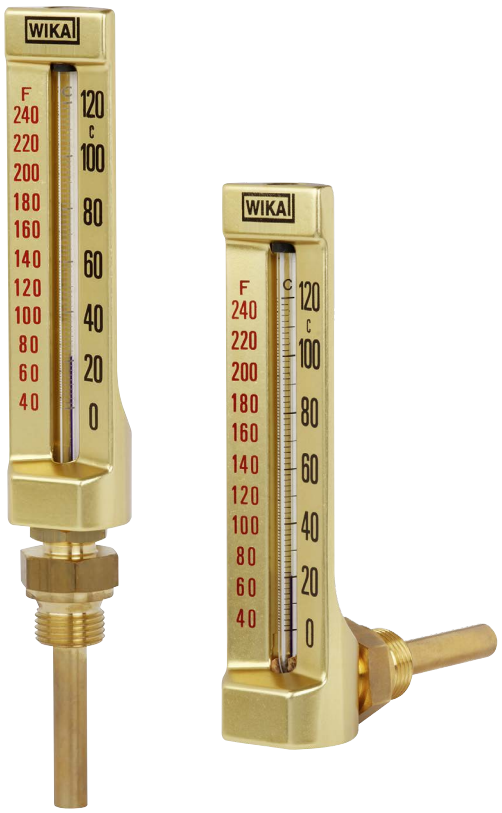

Fig. left: straight design
Fig. right: 90° angle design

Description

The model 32 machine glass thermometer is mainly used in industrial applications such as machine building and also in the field of heating, air-conditioning and refrigeration technology. It features a high accuracy and a very long service life, since no mechanical wear.

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Specifications

Overview of versions			
Nominal size in mm [in]	**Model**	**Design**	**DIN**
110 [4.33]	G 3200	Straight	DIN 16181
	W 3201	90° angle	DIN 16182
150 [5.91]	G 3210	Straight	DIN 16185
	W 3211	90° angle	DIN 16186
200 [7.87]	G 3220	Straight	DIN 16189
	W 3221	90° angle	DIN 16190

Basic information	
Nominal size	■ 110 mm [4.33 in] ■ 150 mm [5.91 in] ■ 200 mm [7.87 in]
Case	Aluminium, brass-coloured, anodised
Material (wetted)	Copper alloy
Thermometer glass insert	Rod shape, prismatic capillary
Error limit	DIN 16195
Measurement principle	Liquid expansion
Thermometric liquid	Blue, wetting
Permissible operating pressure at the stem	Max. 6 bar [87.02 psi]
Stem	
Diameter	■ 10 mm [0.39 in] ■ 6.5 mm [0.26 in] with NS 200 x 36 with union nut M24 x 1.5
Scaling	Printed with special ink, protected by anodised finish
Unit	■ °C ■ °C/°F (dual scale)

Connection designs	
Design E	Stud end
Design 3	Union nut

Nominal size 110 x 30 mm [4.33 x 1.18 in]	
Insertion length	l_1 = 30, 40, 63, 100, 160, 250 mm [1.18, 1.57, 2.48, 3.94, 6.30, 9.84 in] copper alloy
Straight design per DIN 16181	
Stud end	■ G ½ B, M20 x 1.5 (form B per DIN) ■ G ⅜ B, M16 x 1.5 (form B1 per DIN)
	Screwed into the case
90° angle version per DIN 16182	
Stud end	■ G ½ B, M20 x 1.5 (form S per DIN) ■ G ⅜ B, M16 x 1.5 (form S1 per DIN)
	Inserted into the case, removable

Nominal size 150 x 36 mm [5.91 x 1.42 in]	
Insertion length	l_1 = 63, 100, 160, 250 mm [2.48, 3.94, 6.30, 9.84 in] copper alloy
Straight design per DIN 16185	
Stud end	■ G ½ B, M20 x 1.5 (form B per DIN) ■ G ¾ B, M27 x 2
	Screwed into the case
90° angle design per DIN 16186	
Stud end	■ G ½ B, M20 x 1.5 (form S per DIN) ■ G ¾ B, M27 x 2
	Inserted into the case, removable

Nominal size 200 x 36 mm [7.87 x 1.42 in]	
Insertion length	
Stud end	l_1 = 63, 100, 160, 250 mm [2.48, 3.94, 6.30, 9.84 in] copper alloy
Union nut	■ Form C1: l1 = 89, 126, 186, 276, 426 mm [3.50, 4.96, 7.32, 10.87, 16.77 in] ■ Form C: l1 = 93, 130, 190, 280, 430 mm [3.66, 5.12, 7.48, 11.02, 16.93 in] ■ Form F: l1 = 155, 215, 275, 295, 355, 415 mm [6.10, 8.46, 10.83, 11.61, 13.98, 16.34 in]
Straight design per DIN 16189	
Stud end	■ G ½ B, M20 x 1.5 (form B1 per DIN) ■ G ¾ B, M27 x 2 (form B per DIN)
	Screwed into the case
Union nut	■ G ½, M20 x 1.5 (form C1 per DIN) ■ G ¾, M27 x 2 (form C per DIN) ■ M24 x 1.5 (form F per DIN)
	■ Connector screwed into the case, removable ■ Union nut and copper alloy connector, pipe: steel 1.0345
90° angle design per DIN 16190	
Stud end	■ G ½ B, M20 x 1.5 (form S1 per DIN) ■ G ¾ B, M27 x 2 (form S per DIN)
	Inserted into the case, removable
Union nut	■ G ½, M20 x 1.5 (form C1 per DIN) ■ G ¾, M27 x 2 (form C per DIN) ■ M24 x 1.5 (form F per DIN)
	■ Connector inserted into the case, removable ■ Union nut and copper alloy connector, pipe: steel 1.0345

Scale range			
Nominal size in mm [in]	**Scale range in °C**	**Scale interval in °C**	**Error limit in °C**
110 [4.33]	-30 ... +50	1	2
	0 ... 60	1	1.5
	0 ... 100	2	2
	0 ... 120	2	2
	0 ... 160	4	4
	0 ... 200	5	5
150 [5.91]	-30 ... +50	1	2
	0 ... 60	1	1.5
	0 ... 100	2	2
	0 ... 120	2	2
	0 ... 160	2	4
	0 ... 200	2	4
200 [7.87]	-30 ... +50	1	2
	0 ... 60	1	1.5
	0 ... 100	1	2
	0 ... 120	1	2
	0 ... 160	2	4
	0 ... 200	2	4

Approvals

Logo	Description	Region
	DNV [1)] Ships, shipbuilding (e.g. offshore)	Germany
-	**CRN** Safety (e.g. electr. safety, overpressure, ...)	Canada

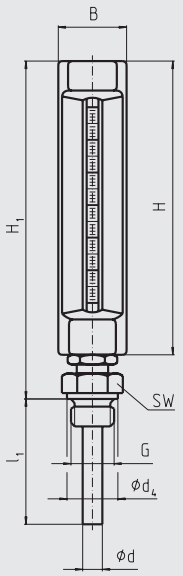
1) For straight and 90° angle design

→ For approvals and certificates, see website

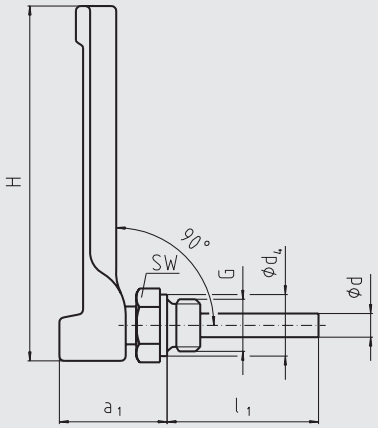
Dimensions in mm [in]

Connection design E, stud end

Straight



90° angle



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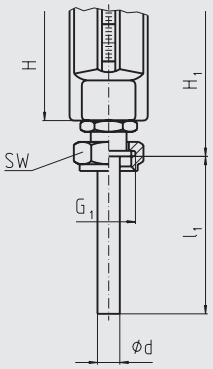
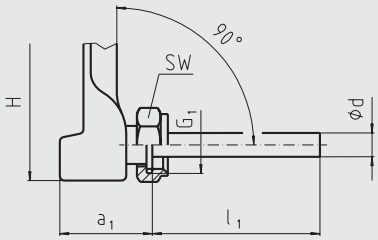
Connection design 3, union nut (only with NS 200)

Straight



90° angle



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NS	Dimensions in mm [in]										Weight in kg [lb]
	a_1	a_2	B	Ø d	Ø d_1	G	G_1	H	H_1	SW	
110 [4.33]	44 [1.73]	20 [0.79]	30 [1.18]	10 [0.39]	22 [0.87]	G ⅜ B	-	110 [4.33]	130 [5.12]	22 [0.87]	0.25 [0.6]
	44 [1.73]	20 [0.79]	30 [1.18]	10 [0.39]	21 [0.83]	M16 x 1.5	-	110 [4.33]	130 [5.12]	22 [0.87]	0.25 [0.6]
	44 [1.73]	20 [0.79]	30 [1.18]	10 [0.39]	26 [1.02]	G ½ B	-	110 [4.33]	130 [5.12]	27 [1.06]	0.25 [0.6]
	44 [1.73]	20 [0.79]	30 [1.18]	10 [0.39]	25 [0.98]	M20 x 1.5	-	110 [4.33]	130 [5.12]	27 [1.06]	0.25 [0.6]
150 [5.91]	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	26 [1.02]	G ½ B	-	150 [5.91]	170 [6.69]	27 [1.06]	0.30 [0.7]
	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	25 [0.98]	M20 x 1.5	-	150 [5.91]	170 [6.69]	27 [1.06]	0.30 [0.7]
	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	32 [1.26]	G ¾ B	-	150 [5.91]	170 [6.69]	32 [1.26]	0.30 [0.7]
	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	32 [1.26]	M27 x 2	-	150 [5.91]	170 [6.69]	32 [1.26]	0.30 [0.7]
200 [7.87]	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	26 [1.02]	G ½ B	G ½	200 [7.87]	220 [8.66]	27 [1.06]	0.35 [0.8]
	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	25 [0.98]	M20 x 1.5	M20 x 1.5	200 [7.87]	220 [8.66]	27 [1.06]	0.35 [0.8]
	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	32 [1.26]	G ¾ B	G ¾	200 [7.87]	220 [8.66]	32 [1.26]	0.35 [0.8]
	46 [1.81]	21 [0.83]	36 [1.42]	10 [0.39]	32 [1.26]	M27 x 2	M27 x 2	200 [7.87]	220 [8.66]	32 [1.26]	0.35 [0.8]
	46 [1.81]	21 [0.83]	36 [1.42]	6.5 [0.26]	-	-	M24 x 1.5	200 [7.87]	220 [8.66]	32 [1.26]	0.35 [0.8]

Ordering information

Model / Nominal size / Scale range / Connection design / Length l_1 / Options

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