

## APPLICATION

Universal applications in engines, industrial and naval systems, piping and heating installations, and so on. They resist extreme hard conditions: vibrations, humidity, temperature...



How to order: C 01 01 + chosen options

## 1. DESCRIPTION

Liquid expansion thermometers for temperatures from -60°C to 650°C. These instruments are very tough, easy to install and reliable.

## 2. CONSTRUCTION / DESIGN

2.1. Design	x	DIN 16181 for model A-110 straight DIN 16182 for model A-110 angle 90 DIN 16185 for model A-150 straight DIN 16186 for model A-150 angle 90 DIN 16189 for model A-200 straight DIN 16190 for model A-200 angle 90 Model A-110 angle 135 Model A-150 angle 135 DIN 16191 for model A-200 angle 135
2.2. Structure		Glass rod is fixed and protected with an aluminium case. Numerals of the scale of temperature are printed on the right side of the case. The metallic stem is fixed to the pipe by means of threaded connections male, female or by connection bolts

## 3. MATERIALS AND DIMENSIONS

3.1. Case		
3.1.1. Dimensions	x	110x30mm, 150x36mm or 200x36mm
3.1.2. Materials	x	Aluminium, silver or gold coloured anodized
3.2. Execution	x	Straight, Angle 90° or Angle 135°
3.3. Glass rods		
3.2.1. Material		Prismatic glass white strip backed for temperatures up to 450°C. Round shaped glass with yellow strip for temperatures up to 500°C or 600°C
3.2.1 Thermometric liquids	x	Blue or red alcohol for temperatures up to 200°C. Mercury for higher temperatures
3.4. Connection to the facility		
3.4.1. Structure	x	The metallic stem is fixed to the pipe by means of threaded connections male, female or by connection bolts
3.4.2. Thread	x	Standard threads: 3/8" BSP 1/2" BSP 1/2" NPT M20x150
3.4.3. Material	x	Thread and stem in brass, carbon steel or stainless steel AISI 304 or AISI 316 (See data sheet C 03 02 )
3.4.4. Stem length	x	40, 50, 63, 100, 160 or 200mm
3.4.5. Diameter of the stem	x	Ø10mm Option Ø8mm

## 4. TEMPERATURE

4.1. Range (°C)	x	-10+50 -30+50 0+60 0+100 0+120 0+160 0+200 0+300 0+400 0+500 0+600
4.2. Scales	x	In °C printed on the right side of the case. Double scale in °C and °F
4.3. Subdivision		According to DIN 16195 (see table 1)
4.4. Precision / Class		According to DIN 16195 (see table 1)

## 5. OPTIONS

5.1. Logotypes		Customized (minimum quantity required)
5.2. Other threaded connections		3/4" BSP, Turning female thread 1/2", 1/2" BSPT...
5.3. Protection tubes		See data sheet C 03 01

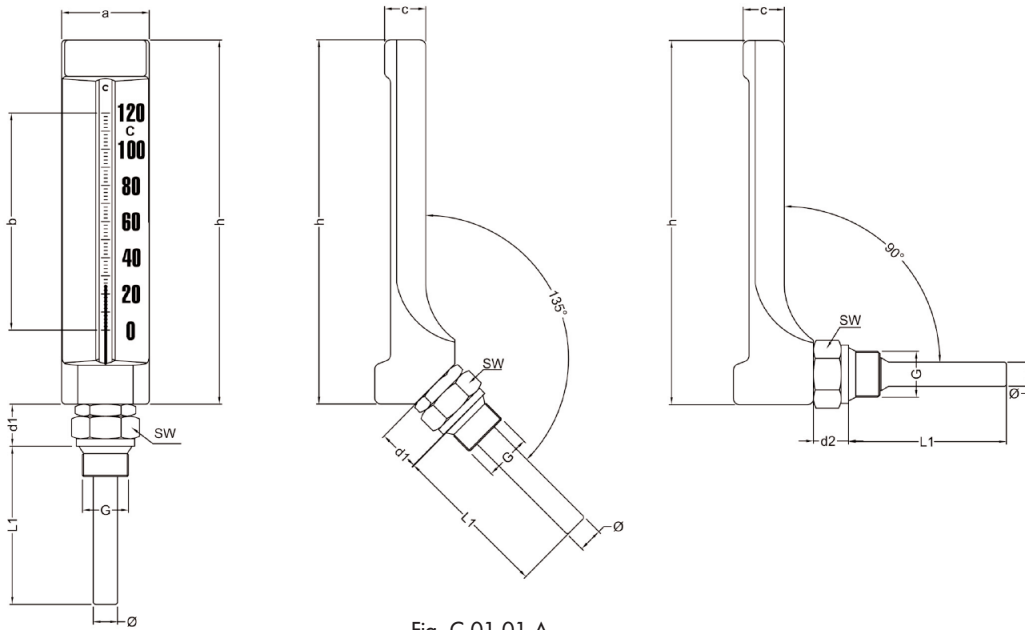


Fig. C 01 01 A

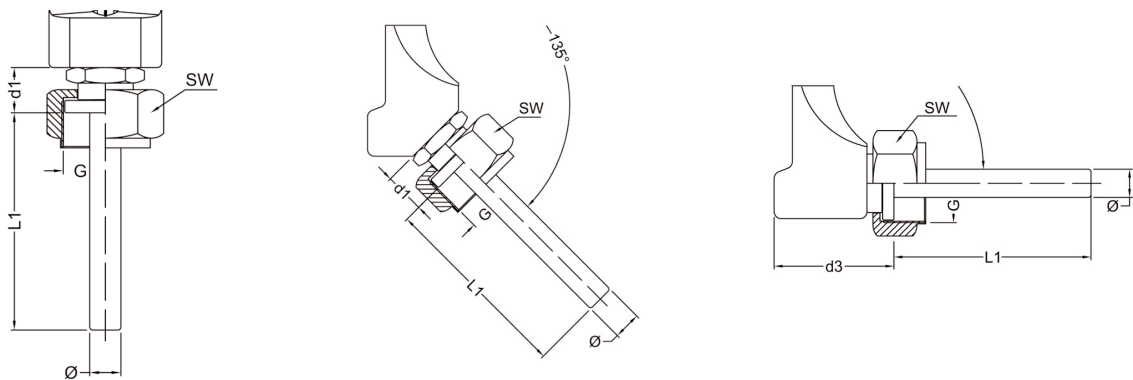


Fig. C 01 01 B

STANDARD DIMENSIONS (mm)										
Thermometer	Execucion	h	a	b	c	d1	d2	d3	Ø	Weight (g) (stem 63mm).
A-110	Straight	110	30	60	17	20	-	-	10	230
	Angle 90°	110	30	60	17	-	48	44	10	230
	Angle 135°	110	30	60	17	20	-	-	10	230
A-150	Straight	150	36	90	17,5	20	-	-	10	285
	Angle 90°	150	36	90	17,5	-	48	46	10	275
	Angle 135°	150	36	90	17,5	20	-	-	10	270
A-200	Straight	200	36	130 (115 for temp > 500°C)	17,5	20	-	-	10	320
	Angle 90°	200	36	130 (115 for temp > 500°C)	17,5	-	48	46	10	310
	Angle 135°	200	36	130 (115 for temp > 500°C)	17,5	20	-	-	10	310

TABLE 1. Scales and precision according to DIN 16195				
Thermometer	Temperature °C	°C/line	Maximum error °C	Fluid
A-110	-60+40	2	2	Alcohol
A-150		1		
A-200		1		
A-110	-30+50	1	2	Alcohol or Mercury
A-150			2	
A-200			1	
A-110	0+60	1	2	
A-150			2	
A-200			1	
A-110	0+100 0+120	2	2	
A-150		1	2	
A-200		1	1	
A-110	0+160 0+200	2	2	
A-150				
A-200				
A-150 A-200	0+300	2	2	Mercury
	0+400	5	5	
	0+500	10	5	
	0+600	10	5	