

M. K. Juchheim GmbH & Co

36035 Fulda Phone (06 61) 60 03-0
Germany Telex 6619726
Fax (06 61) 60 03-6 07

For United Kingdom: Jumo Instrument Co. Ltd.

Temple Bank
Riverway, Harlow,
Essex CM20 2TT
Phone (02 79) 63 55 33
Fax (02 79) 63 52 62

For USA: Jumo Process Control Inc.

735 Fox Chase
Coatesville, PA 19320
Phone 215-380-8002,
800-554 JUMO
Fax 215-380-8009



MEASUREMENT AND CONTROL

Data Sheet 20.2108 (21.100), Sheet 1

Industrial glass thermometers to DIN 16 181-94 in case with vee body

- protected against breakage
- shockproof
- easily read
- simple installation
- strong case
- rapid indication
- guaranteed indication accuracy to DIN
- simple replacement of glass insert
- standard styles on quick delivery

Description

Industrial glass thermometers in vee case are manufactured to DIN specification and are reliable temperature measurement devices for equipment and machines, for industrial measurement and heating, as well as for many other applications. The practical form and strong construction of these thermometers ensure good installation conditions for most applications. The body can be rotated for optimum viewing.

Technical description

Case Body

Aluminium die-casting, vee-shaped, gold anodised, nominal sizes 110, 150 and 200 mm. For dimensions see drawings.

Stem

brass, from +500°C top of scale steel with rust protection;
at extra charge in stainless steel protected against rust and acids, in plastic etc. Please specify the material when ordering.

Dimensions

up to 280 mm length	10 dia. x 1 mm
up to 630 mm length	12 dia. x 1.5 mm
with Code D	8 dia. x 0.8 mm
with Code E	6 mm dia. without metal tube

For standard stem lengths (from 63 to 630 mm) and immersion depths see Price List.

Fixings

normally in brass or steel to suit stem, or in the material specified in the order.

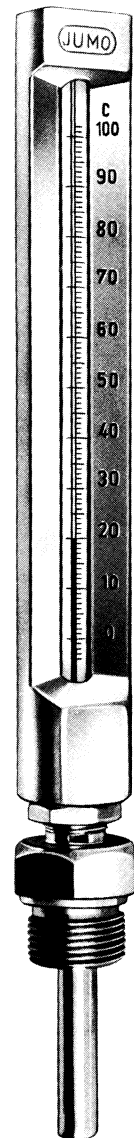
Extra Codes

- A push-in version with plain stem
 - B fixed hexagon with 3/4" pipe male thread (M 27x2) on size 200, or 1/2" pipe male thread (M 20x1.5) on sizes 150 and 110**
 - B1 fixed hexagon with 3/8" pipe male thread (M 16x1.5), only available on size 110
 - C union nut with 3/4" pipe thread (M 27x 2) on size 200, or 1/2" pipe thread (M 20x1.5) on sizes 150 and 110**
 - D* union nut with M 24x1.5 thread
 - E* union nut with M 24x1.5 thread, without metal tube, glass stem exposed
- * specially for pockets to DIN 43 763,
D for 9 mm bore and
E for 7 mm bore
- ** other threads to special order

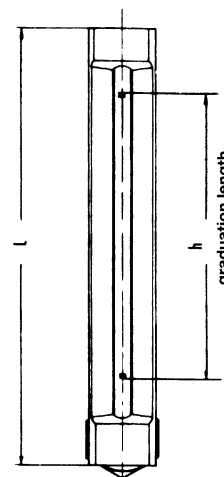
Ordering example

- Quantity 50
- Description straight industrial thermometers in vee fitting DIN 16 189B 0 +100°C
- Range 200 x 30 mm
- Body 160 mm long including 3/4" male pipe thread, brass
- Stem

- or
- Quantity 10
 - Description Spare inserts DIN 16 193B for DIN 16 189B 0+100°C
 - Range 214 mm long
 - Stem



DIN 16.189 B



DIN 16.190 B
DIN 16.186 B
DIN 16.182 B

Thermometer inserts

Dimensions
see drawings

Material
up to +100°C top of scale:
Jena Normal glass, white backed

up to +400°C top of scale:
Jena Normal glass, yellow backed

up to +600°C top of scale:
Jena Supremax glass

Scale
graduations etched into glass capillary,
figures engraved on case body,
both filled black

Ranges
available from -60 to +600°C, for standard
ranges see Price List

Accuracy
for error tolerances see Price List

Thermometer liquid
from -60 to +40°C
from -30 to +100°C
coloured toluene
wetting liquid,
coloured blue
mercury

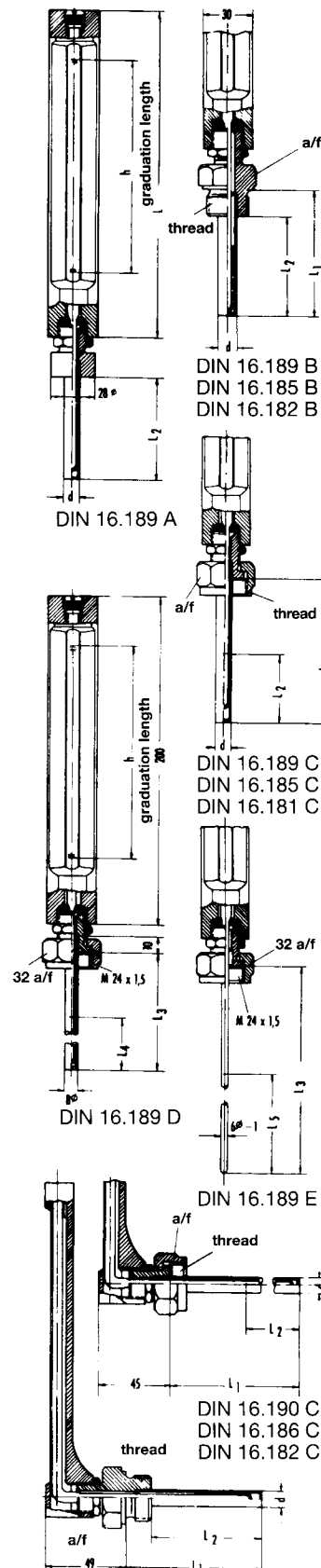
L	h ± 3 to		a/flats	pipe thread G	M	d to	
	+400°C	+600°C				I ₁ 430	I ₁ 630
200	130	115	32	3/4	27x2.0	10x1	12x1.5
150	90	-	27	1/2	20x1.5	10x1	
110	60	-	27	1/2	20x1.5	10x1	

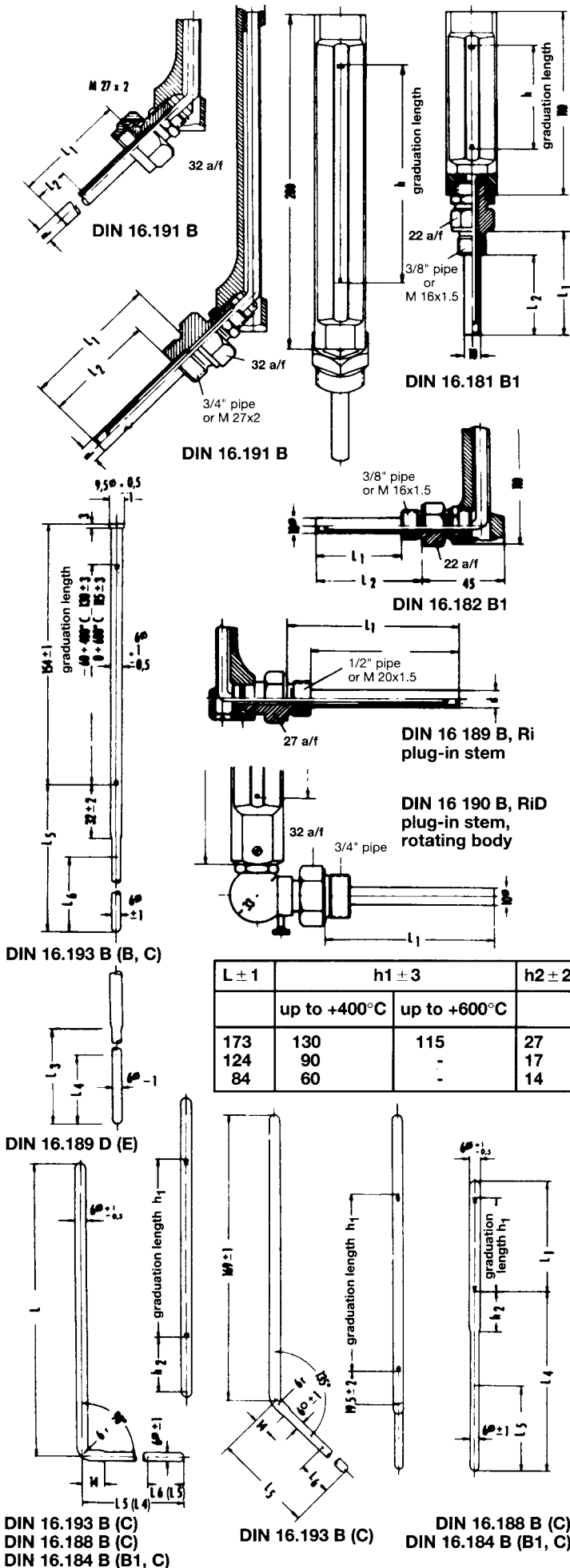
For sizes I₁, I₂, I₃, I₄ and I₅ see Price List

Summary of models

Nom. size	DIN	Description	Ranges °C		Fixing style	Stem lengths mm see Price List	
			from	to		min.	max.
Industrial glass thermometers in vee fitting							
200	16 189	straight thermometer	-60	+600	A, B C D E	63 93 320 295	630 430 560 555
		90° angle thermometer	-60	+600	B C	63 93	400 430
		135° angle thermometer	-60	+600	B C	63 93	400 430
150	16 185	small straight thermometer	-60	+200	B C	63 89	160 186
		small 90° angle thermometer	-60	+200	B C	63 89	160 186
110	16 181	small straight thermometer	-60	+100	B B1 C	63 63 89	160 63 186
		small 90° angle thermometer	-60	+100	B B1 C	63 63 89	160 63 186
Thermometer inserts for industrial thermometers in vee fitting							
200	16 193	inserts for DIN 16 189	-60	+600	A B C D E	121 117 143 372 352	688 684 480 612 612
		90° inserts for DIN 16 190	-60	+600	B C	94 120	431 457
		135° inserts for DIN 16 191	-60	+600	B C	94 120	431 457
150	16 188	inserts for DIN 16 185	-60	+200	B C	106 130	203 227
		90° inserts for DIN 16 186	-60	+200	B C	88 112	185 209
110	16 184	inserts for DIN 16 181	-60	+100	B B1 C	103 103 127	200 103 224
		90° inserts for DIN 16 182	-60	+100	B B1	88 88	185 88
			C			112	209

The fixing style must be included in the type designation, e.g. DIN 16 189B





Note

All angle thermometers Style B and stem length up to 160 mm are available with:

- Code Ri with grooved boss, push-in version, no extra charge
- Code RiD with grooved boss, push-in version and additionally rotating (with ball) extra charge on application

These thermometers are not based on a standard but correspond to the dimensions of the DIN thermometers in the case of Code Ri. DIN inserts fit into this model. The stem of both models can be screwed in without rotating the body. It is fitted to the body by its peg and is secured by a grub screw. On version RiD the additional ball permits altering the viewing direction by rotating the body. Spare inserts for this model have special dimensions.

Immersion depths for inserts

Stem lengths for version (DIN 16 181-82, 16 185-86, 16 189-91)		Immersion depths for		
		DIN 16 193	DIN 16 188 DIN 16 184	
A, B, B1	C	A	B, C	B, B1, C
l_1	l_1	l_6	l_6	l_5
63	93 (89)	55	40	42
100	130 (126)	90	75	80
160	190 (186)	150	135	140
250	280	240	225	
400	430	390	375	
630		620	605	

Dimensions l_1, l_2, l_3, l_4 and l_5 see Price List

$L \pm 1$	$h1 \pm 3$		$h2 \pm 2$
	up to +400°C	up to +600°C	
173	130	115	27
124	90	-	17
84	60	-	14

Range	$h1$	$L \pm 1$	$h1 \pm 3$	$h2 \pm 2$
up to +400°C	130	108	90	22
up to +600°C	115	71	60	19

inch	mm
0.8	0.03
1	0.04
1.5	0.06
3	0.12
6	0.24
6 ⁺¹ _{-0.5}	0.24 ^{+0.04} _{-0.02}
6±1	0.24±0.04
7	0.28
8	0.31
9	0.35
9.5+0.5	0.37+0.02
10	0.39
12	0.47
14	0.55
17	0.67
19	0.75
22	0.87
27	1.06
32±2	1.26±0.08
33	1.30
40	1.57
42	1.65
49	1.93
55	2.17
60	2.36
63	2.48
71	2.80
75	2.95
80	3.15
88	3.46
89	3.50
90	3.54
93	3.66
94	3.70
100	3.94
103	4.06
106	4.17
108	4.25
112	4.41
115	4.53
115±3	4.53±0.12
117	4.61
120	4.72
121	4.76
126	4.96
127	5.00
130	5.12
130±3	5.12±0.12
135	5.31
140	5.51
143	5.63
150	5.91
154±1	6.06±0.04
160	6.30
185	7.28
186	7.32
190	7.48
200	7.87
203	7.99
209	8.23
224	8.82
225	8.86
227	8.94
240	9.45
250	9.84
280	11.02
295	11.61
320	12.60
352	13.86
372	14.65
375	14.76
390	15.35
400	15.75
430	16.93
431	16.97
457	17.99
480	18.90
555	21.85
560	22.05
605	23.82
612	24.09
620	24.41
630	24.80
684	26.93
688	27.09