



ST SERIES

Expansion thermometers

- ◆ inert gas filling;
- ◆ sensitive bulb rigidly connected to the casing (local thermometers) or by capillary (distance reading thermometers);
- ◆ NS 100 and 150 watertight casing;
- ◆ indication ranges included between -80 and +600 °C.



made in
ITALY



ATEX 2014/34/EU



TECHNICAL FEATURES

- **Nominal sizes**
 - 100 and 150.
- **Casing**
 - case and ring in AISI 304 stainless steel (AISI 316 on request - option V61) with bayonet bezel.
- **Protection degree (according to EN 60529)**
 - IP 55 for dry execution;
 - IP 67 (option V66 and V72).
- **Window**
 - glass for dry execution;
 - laminated safety glass for liquid filled execution or on request (option V17).
- **Thermometric element**
 - Cr Mo steel spiral tube.
- **Movement**
 - stainless steel.
- **Ranges (according to EN 13190)**
 - **Graduation:**
 - 0 ÷ 60; 0 ÷ 100; 0 ÷ 120; 0 ÷ 160; 0 ÷ 200; 0 ÷ 250; 0 ÷ 300; 0 ÷ 400; 0 ÷ 500; 0 ÷ 600; -40 ÷ +60; -20 ÷ +40; -20 ÷ +100;
 - (divisions as per table C2 at page P04)
 - other graduations not normalized for single or double range (on request).
 - **Unit of temperature:**
 - °C (Celsius) and °F (Fahrenheit) for single or double range.
 - **Scale angle:**
 - 270 °.
- **Working temperature (referred to full scale value)**
 - from 1/10 to 9/10.
- **Over-temperature (occasionally allowed)**
 - 115% of full scale value for all ranges except 0 ÷ 600 °C.
- **Pointer**
 - aluminium with micrometer adjustment also for execution with electric contacts.
- **Dial**
 - white aluminium with black figures (for dial modification see available options).
- **Accuracy (according to EN 13190)**
 - class 1;
 - class 0,6 (on request - option V36).
 - note:** accuracy indicated on the thermometer does not consider the interference of an eventually applied electric contact.
- **Capillary**
 - AISI 316 stainless steel, plain; **(identification KZ)**
 - dAISI 316 stainless steel with flexible AISI 304 stainless steel armour. **(identification KY)**
 - note:** distance reading thermometers can be identified with the picture number, adding the relating reference of the capillary (K identification), to its material and its armouring (Z or Y identification), followed by the number indicating the length in meters of the same capillary.
- **Capillary length**
 - standard: 1, 2, 3 and 4 meters;
 - special: on request;
 - maximum: 25 meters.
- **Sensitive bulb (see pages ST05 and ST06)**
 - 12 mm standard cylindrical diameter;
 - 8 mm standard cylindrical diameter.
- **Thermowell (see at pages PZ01 and PZ02)**
 - built-up from pipe - P2 and P4 type;
 - drilled from solid bar stock - P3 and P5 type (dimensions and materials are decided by the customer).
- **Thermal drift**
 - with reference to the ambient temperature of 20 °C and due to the length of the capillary, thermal drift affects the instrument accuracy as ± 0,15% per meter every 10 °C of variations.



APPLICATIONS

Electric contact (see CE series)

the instrument can be identified by the number of the

chosen model, adding the reference of the switching action as shown in tables of CE series.

(identification CE...)

OPTIONS

• Maximum pointer

indicating the maximum value reached:

- zero setting on the window;
(identification V11)
- zero setting from outside the casing (with electric contacts).
(identification V12)

• Window

different from standard:

- laminated safety glass.
(identification V17)

• Accuracy class 0,6

(identification V36)

• Changes to the dial

- serial number; **(identification V50)**
- specific dial; **(identification V51)**
- writings; **(identification V53)**
- TAG number; **(identification V54)**
- dial without logo; **(identification V56)**
- double logo (Fantinnelli + customer);
(identification V57)
- customer's logo. **(identification V58)**

• AISI 316 stainless steel case and ring

as alternative to AISI 304 stainless steel.
(identification V61)

• Liquid filling

silicone fluid filled casing with laminated safety glass window.

(identification V66)

• Compensation

of ambient temperature by a bimetal link on the movement.

(identification V69)

• IP 67 casing

not fillable.

(identification V72)

• Sensitive bulb diameter

not standard.

(identification V75)

• Indication ranges lower than -40 °C

(identification V76)

• Support

for model ST 379 fixing in AISI 304 stainless steel.

(identification V81)

• Metal tag plate

AISI 316 stainless steel for tag number.

(identification V82)

DOCUMENTATION

• Fantinnelli calibration certificate

rising temperature:

- class 0,6;
- class 1. **(identification V92)**

• Complementary documents

o certificate of compliance with the order EN 10204-2.2.

o technical documentation including:

- drawings and technical informations;
- installation and maintenance instructions.

o inspection and test certificate EN10204-3.1.

o material certificates.

o ATEX declaration (II 2 G/D).

TECHNICAL INFORMATIONS

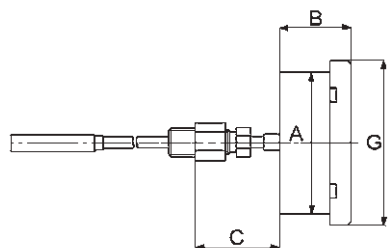
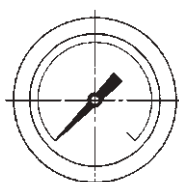


Table ST 374

DN	A	B	C	D	E	F	G	H	I	L	M	N	Ø fori 120°	PESO ~ kg
100	103	50	60				118							0,56
150	150	50	60				166							0,80

Thermometer for direct horizontal mounting.

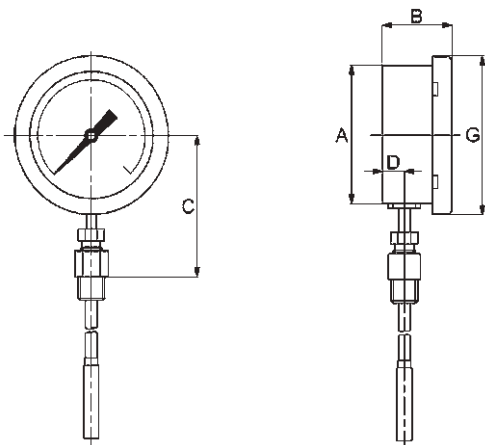


Table ST 375

DN	A	B	C	D	E	F	G	H	I	L	M	N	Ø fori 120°	PESO ~ kg
100	103	50	110	16,5			118							0,56
150	150	50	134	16,5			166							0,80

Thermometer for direct vertical mounting.

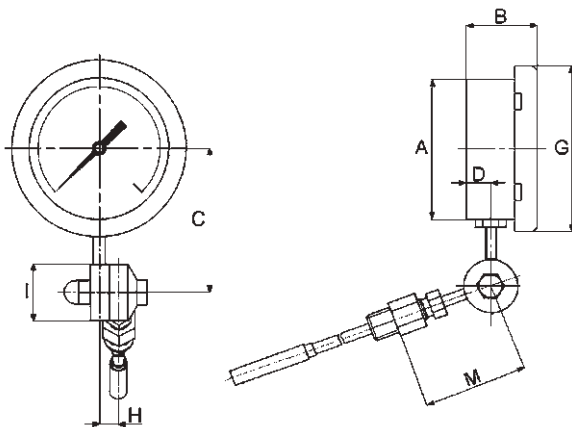


Table ST 378

DN	A	B	C	D	E	F	G	H	I	L	M	N	Ø fori 120°	PESO ~ kg
100	103	50	110	16,5			118	13	40		65			0,70
150	150	50	134	16,5			166	13	40		65			0,94

Every angle thermometer for direct vertical mounting.

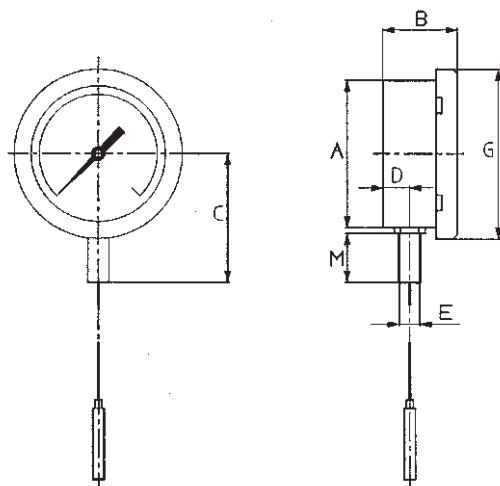


Table ST 379

DN	A	B	C	D	E	F	G	H	I	L	M	N	Ø fori 120°	PESO ~ kg
100	103	50	100	16,5	14,5		118				35			0,52
150	150	50	124	16,5	14,5		166				35			0,76

Distance reading thermometer for surface mounting with support fixing.

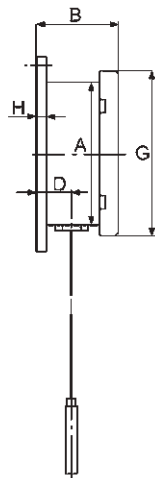
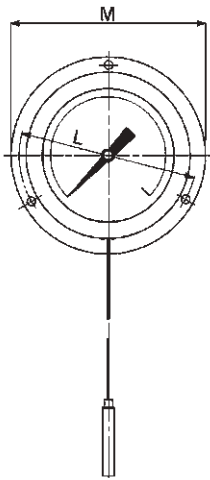


Table ST 380

DN	A	B	C	D	E	F	G	H	I	L	M	N	∅ fori 120°	PESO ~ kg
100	103	57		23,5			118	7		126	140		5	0,82
150	150	57		23,5			166	7		178	192		5	1,18

Distance reading thermometer for surface mounting with 3 fixing holes.

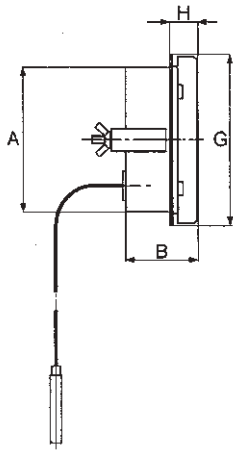
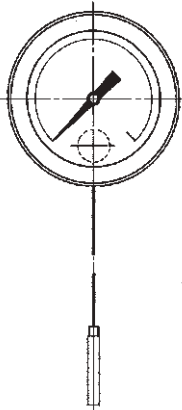


Table ST 381

DN	A	B	C	D	E	F	G	H	I	L	M	N	∅ fori 120°	PESO ~ kg
100	103	50					121	20						0,73
150	150	50					168	20						0,98

Distance reading thermometer for flush mounting with clamp fixing.

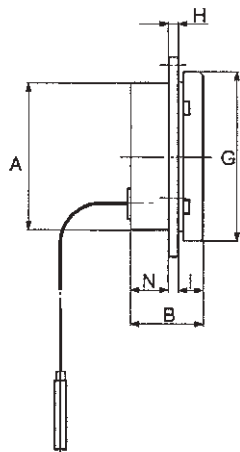
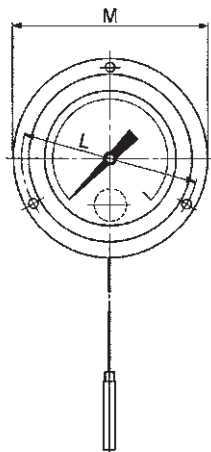


Table ST 383

DN	A	B	C	D	E	F	G	H	I	L	M	N	∅ fori 120°	PESO ~ kg
100	103	50					118	7	19	126	140	24	5	0,82
150	150	50					166	7	19	178	192	24	5	1,18

Distance reading thermometer for flush mounting with 3 fixing holes.


Table ST 1
 Sensitive bulbs' and thermowells' length

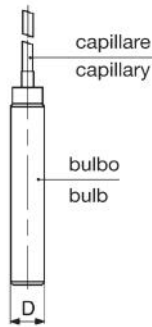
Range °C	Length L sensitive bulbs (thread included)				Immersion U thermowell (thread escluded) for bulbs D 12 mm			
	D 8 mm		D 12 mm		min	standard	max	special
	min	standard	min	standard	mm	mm	mm	mm
-40 ÷ +60	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
-20 ÷ +40	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
-20 ÷ +100	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 60	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 100	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 120	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 160	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 200	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 250	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 300	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 400	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 500	170	200 – 250 300 – 400	85	100 – 150 200 – 250 300 – 400	70	100 – 150 200 – 250 300 – 400	1000	to be agreed
0 ÷ 600	---	---	120	150 200 – 250 300 – 400	105	150 200 – 250 300 – 400	1000	to be agreed

note: on request, sensitive bulbs with diameters (9,6 - 11,5 - others) and lengths different from those above indicate can be realized.



SENSITIVE BULBS AND CONNECTIONS

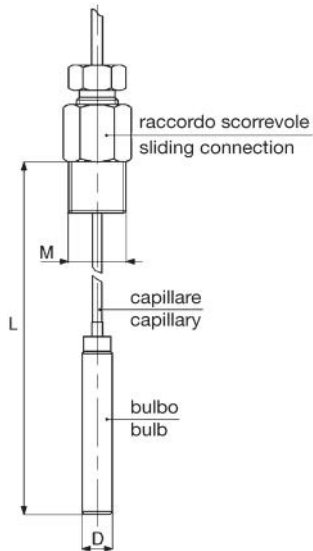
C1



Cylindrical plain sensitive bulb

- o AISI 316L stainless steel;
- o diameter D 12 or D 8 mm ;
- o connected to the thermometer by a capillary;
- o without process connection (suitable for free immersion).

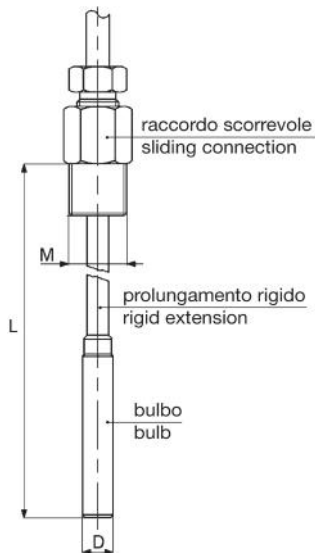
C6



Cylindrical plain sensitive bulb

- o AISI 316L stainless steel;
- o diameter D 12 or D 8 mm;
- o connected to the thermometer by a capillary;
- o AISI 316L st. st. male threaded process connection M sliding on the capillary:
 - G 1/2 B (1/2 Gas or BSP) or 1/2-14 NPT EXT (1/2 NPT) process connection;
 - 1/2-14 NPT EXT (1/2 NPT) connection to an eventual thermowell.

C7



Cylindrical plain sensitive bulb

- o AISI 316L stainless steel;
- o diameter D 12 or D 8 mm;
- o connected to the thermometer by an AISI 316L stainless steel rigid extension diameter 8 mm;
- o AISI 316L st. st. male threaded process connection M sliding on the extension :
 - G 1/2 B (1/2 Gas or BSP) or 1/2-14 NPT EXT (1/2 NPT) process connection;
 - 1/2-14 NPT EXT (1/2 NPT) connection to an eventual thermowell.