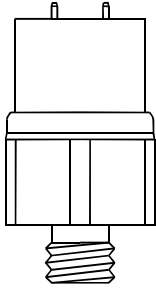
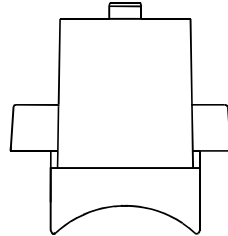


**CONTACT TEMPERATURE PROBES
TYPE ST03 - ST04 - ST04A**



ST03



ST04 / ST04A

• APPLICATION

These temperature probes are suitable to equip temperature adjustment systems installed in hot water generators for heating and domestic use, such as:

- Wall hung boilers
- Floor standing boilers
- Water heaters
- Instantaneous water heaters

They are called "contact probes", as they are just placed in contact with the pipe or the container of the fluid to be controlled.

In particular, the probe type ST04 is characterized by a reaction time which can compare with the one of immersion probes, a remarkable easiness of installation and, above all, a reduction in costs, as this probe can be fixed without any particular working on the pipe.

Given its particular conformation probe ST04 maintains excellent performance even when installed on pipes that are not smooth.

• FEATURES

| | | |
|-----------------------|---|-----------------------|
| Operating temperature | | |
| ST03, ST04 | | -20°C ÷ +105°C |
| ST04A | | -20°C ÷ +120°C |
| Sensor | | NTC thermistor |
| ST03 ST04 | β Coefficient (25°C-80°C) (*) | 3530K ±2% |
| | Resistance value at 80°C (R ₈₀) | 1650Ω ± 3% |
| | Option H | |
| | β Coefficient (25°C-85°C) (*) | 3960K ±1% |
| | Resistance value at 25°C (R ₂₅) | 10kΩ ± 1% |
| ST04A | β Coefficient (25°C-80°C) (*) | 3435K ±1% |
| | Resistance value at 25°C (R ₂₅) | 10KΩ ± 1% |
| | Option Z | |
| | β Coefficient (25°C-80°C) (*) | 3977K ±1% |
| | Resistance value at 25°C (R ₂₅) | 10KΩ ± 1% |
| Isolation voltage | | |
| ST03, ST04 | | 3750 Vac for 1 second |
| ST04A | | 1250 Vac for 1 second |

(*) Possible versions with different NTC upon request.

• FORMULAS

The following formulas enable to calculate the resistance value of the NTC sensor at a T temperature expressed in Kelvin degrees:

➤ NTC β (25°C-80°C) 3435K ±1%

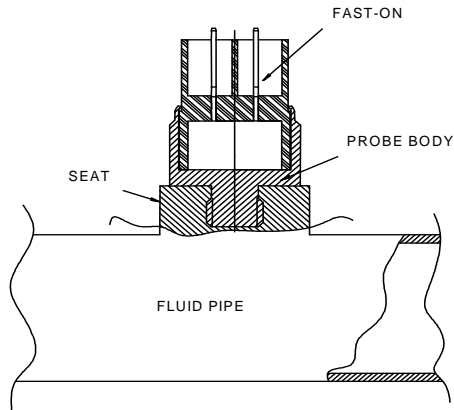
$$R_T = R_{25} \exp\left[\beta\left(\frac{1}{T} - \frac{1}{T_{25}}\right)\right]$$

Example: calculation of the probe resistance value at a temperature of 60°C:

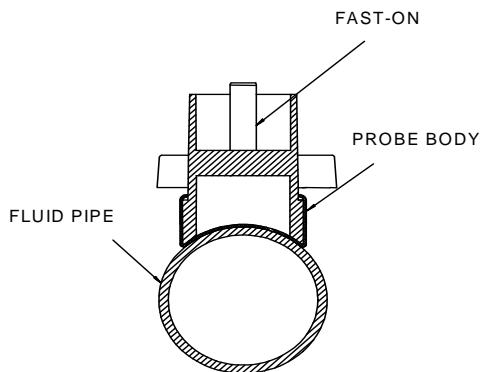
$$R_{60} = 10k \exp\left[3435\left(\frac{1}{(60+273.15)} - \frac{1}{(25+273.15)}\right)\right] = 2981\Omega$$

CONSTRUCTION

These probes consist of a body (brass for ST03 and copper for ST04) to be placed in direct contact with the pipe as shown in Fig.1; the thermistor is perfectly fixed to the metal body by means of epoxy resin with high thermal conductivity. ST04A has instead of resin a conductive paste which significantly reduces the response time. Thanks to two 2,8x0,5 mm fast-on terminals, protected by a thermoplastic cylindrical body, it is possible to obtain a resistance value which is inversely proportioned to the measured temperature.



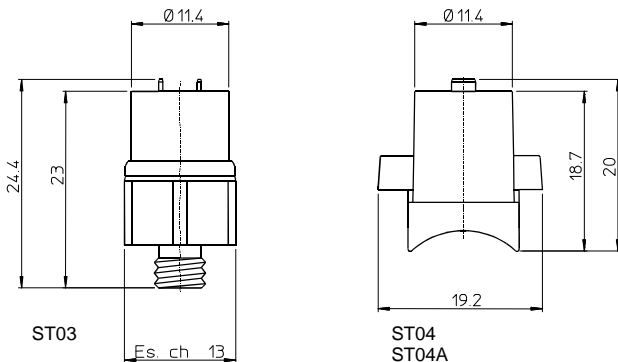
ST03 (Fig. 1)



ST04 / ST04A (Fig. 2)

OVERALL DIMENSIONS

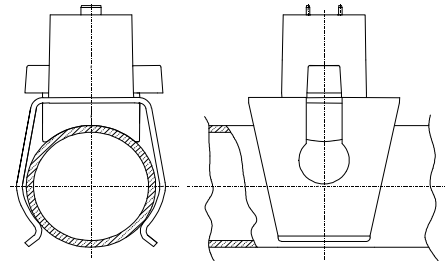
Fig. 3 shows the overall dimensions of these probes.



(Fig. 3)

ASSEMBLY

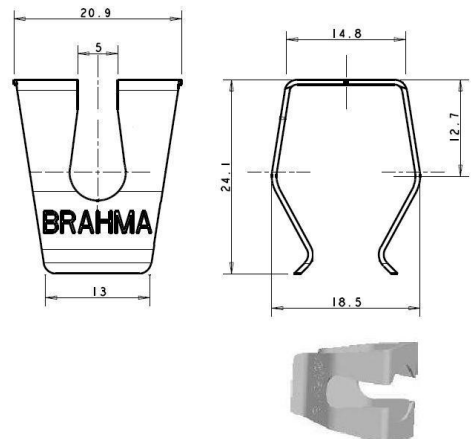
The ST03 probe is to be screwed on a brass nut with M6 thread and soldered to the fluid pipe or container. The ST04 and ST04A probes can be fixed to pipes with diameter 12/14mm (ST04/12) or 16/18mm (ST04/18) by means of clips as shown in Fig.4. To achieve a better thermal contact between the probe and the pipe, a conductive paste can be used.



(Fig. 4)

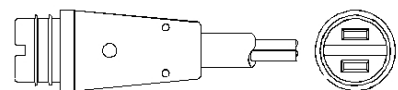
ACCESSORIES

- Fixing clip.



(Fig. 5)

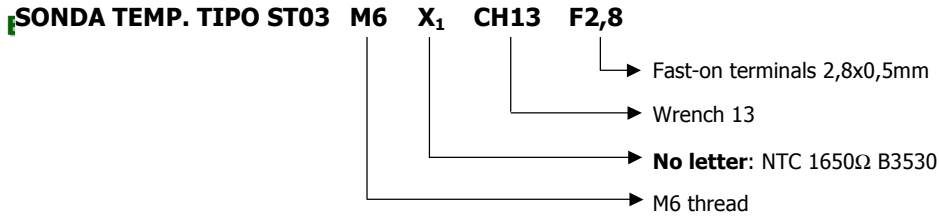
- Connection cable with standard length 850 mm, suitable to guarantee an IP54 protection degree and available with blue or black plug to distinguish the probes measuring water temperature for domestic use from the ones measuring water temperature for heating use.



(Fig. 6)

Note: all dimension are in mm

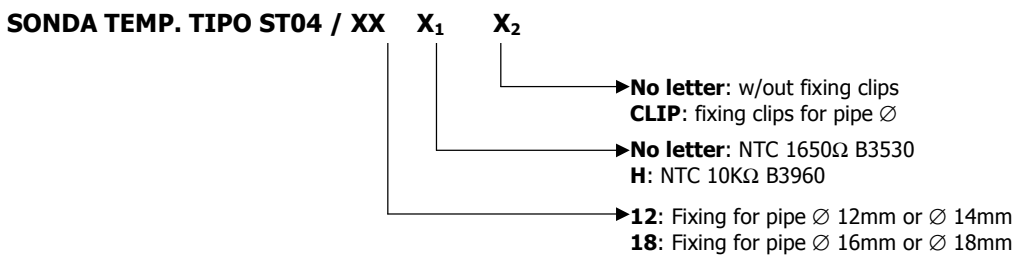
• **PART REFERENCES**



Example:

- **SONDA TEMP.ST03 M6 CH13 F2,8**

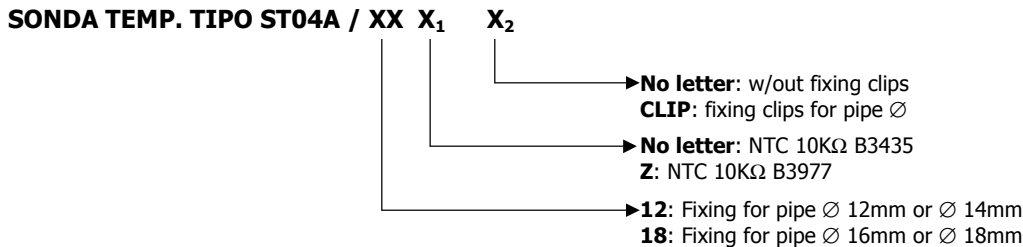
| | |
|------------------------|-------------------------------------|
| SONDA TEMP.ST03 | Temperature probe type ST03 |
| M6 | M6 thread |
| CH13 | With 1650Ω NTC having B3530 |
| F2,8 | Wrench 13 |
| | with fast-on terminals 2,8 x 0,5 mm |



Example:

- **SONDA TEMP.ST04/12 H CLIP**

| | |
|------------------------|-----------------------------|
| SONDA TEMP.ST04 | Temperature probe type ST04 |
| /12 | For pipe diam. 12-14 mm |
| H | With 10k NTC having B3960 |
| CLIP | With fixing Clip for pipe |



Example:

- **SONDA TEMP.ST04A/18 Z CLIP**

| | |
|-------------------------|------------------------------|
| SONDA TEMP.ST04A | Temperature probe type ST04A |
| /18 | For pipe diam. 16-18 mm |
| Z | With 10k NTC having B3977 |
| CLIP | With fixing Clip for pipe |

ATTENTION --> Company Brahma S.p.A. takes no responsibility for any damage resulting from Customer's tampering with the device.

BRAHMA S.p.A.
 Via del Pontiere, 31
 37045 Legnago (VR) - ITALY
 Tel. +39 0442 635211 - Fax +39 0442 25683
<http://www.brahma.it>
 E-mail: brahma@brahma.it

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