Technical Support
Bulletin Nr. 1 - Inputs

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New applications for Pt100 probes at very low temperature

With the Pt100 probes, significantly wide ranges of measurement are achieved depending on the characteristics of the sensor and cable used.

Codes are available for applications at very low temperature that, when used with IC (LX) instruments, can give interesting results as far as the process temperature is concerned:

- recording of temperatures using Televis (Compact, Net) system also below –100°C
- alarm management using Televis (high and low temperature alarms, faulty sensor alarms or alarms linked to digital input)
- management of above alarms also by specially configured relay
- switching between two set points, i.e. during pre-cooling and for two different types of storage

These characteristics and others, such as display configuration (unit of measurement and decimal point), password protection and keyboard lock offer new opportunities for laboratories, research and industrial processes.

Remember that IC instruments must be requested with the special input code Pt100 or Pt100-TcJ-TcK

The probe codes are:

SN206016 Pt100, **-100 to 200 °C**, silicone cable
SN206017 Pt100, **-200 to 0 °C**, silicone cable

Displaying temperature

With the new IC and ID instruments, displaying several inputs is easier (using menus Pb1-2-3) as well as selecting the value to be shown at main level (on certain models).

The unit of measurement options are user accessible (the same applies to displaying the **decimal point** on almost all the models/inputs) thus reducing the need for numerous items in order to meet the different requirements.

The same high configurability also reduces the types of input to three:

- NTC-PTC (**ID, IC**)
- Pt100-TcJ-TcK (**IC**)
- voltage and current (**IC**, see next point)

The factory settings for one of the above inputs for a specific code can be subsequently modified by the user by selecting one of the other options belonging to the same type.

New opportunities with voltage/current inputs

The IC range offers user configurability of the input as:

- voltage (0-1, 0-5, 0-10 V)
- current (0-20, 4-20 mA)

this, together with the configuration of start and full scale values on a large scale, means that different applications are possible with the same item.

The full scale value can be 1000 (100.0) and for some articles 1999 (199.9), so that special units of measurement can be used (i.e. the different units used for pressure: bar, psi, atm, Pa); a neutral front keypad is available for this purpose (universal for different applications).
Alternatively, models preset for humidity and pressure applications that use the probes in our range are also available.

Protection rating of NTC – PTC probes for refrigeration applications

A typical requirement in commercial refrigeration is high **protection against water** as well as dust especially for sensors; consider use on the evaporator (end of defrosting probe and fan control) where mechanical fatigue (for freezing of surrounding water, thermal expansion, low temperature brittleness...)

In addition to the silicone cable option that is particularly suitable because of mechanical stress, NTC-PTC probes are available with **IP68 protection rating**

The IP68 rating as defined by the IEC IP529 standard represents the maximum obtainable value and refers to:

- dust (in this case: 6 = "Full protection against accidental contact... Protection against dust... The entry of dust does not have a damaging effect on operating...")
- water, very important for the probe's service life **(in this case: 8 = "Water cannot enter for an undefined period of time if immersion at a specific depth "** – also defined as **submersion** occurs).

In many applications that come into contact with water, there is no need to use wells.

These probes consist of a TPE (Santoprene™ or polypropylene blend) thermoplastic rubber cable; this is highly resistive to bending, the effects of ozone and UVs. The cable is 1.5 m long and can be easily extended (see below).

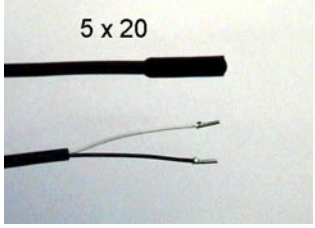
The tip can be selected in AISI 304 steel (6x50, 6x40 mm) or the same TPE material as the cable (5x20mm).

The sensors are those that are normally used (e.g. KTY81.121, for the PTC) and guarantee maximum compatibility with our instruments.

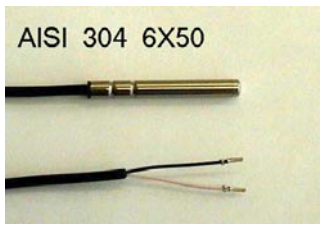
Data, photographs and some of available codes.

- Cable operating range: -50°C +110°C
- Protection rating: IP 68

SN7T6H1502 PTC IP68 TPE polymer tip 5x20
SN7T6N1502 PTC IP68 AISI 304 steel tube 6x50
SN8T6H1502 NTC IP68 TPE polymer tip 5x20
SN8T6N1502 NTC IP68 AISI 304 steel tube 6x50





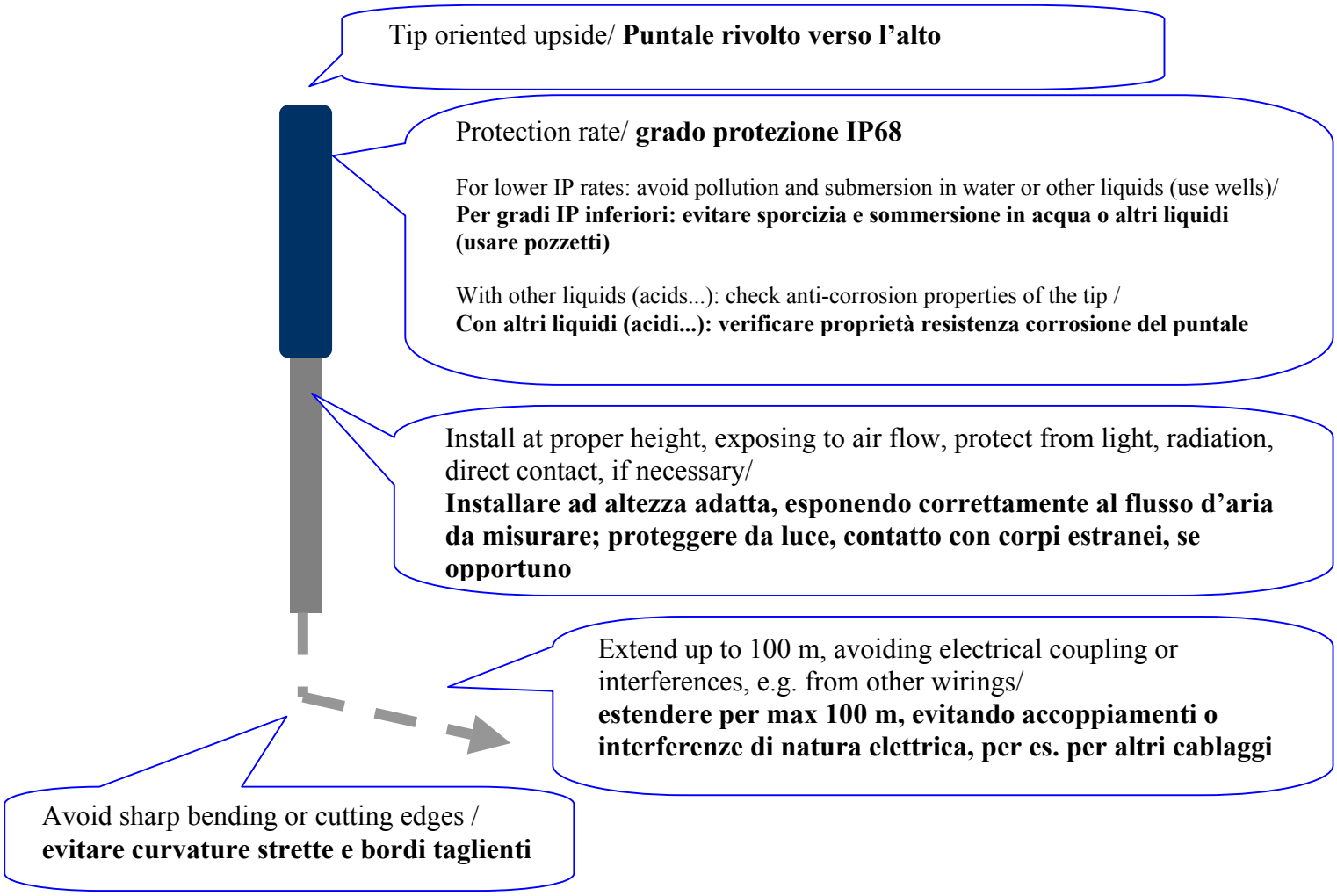


Installation of probe in refrigeration applications

Correct installation is linked to:

- **position** (therefore check: exposure to air flow, height for space or cold room applications, highly critical areas during defrosting)
- **contact** (necessary for measurement performed on pipes or wells, not necessary for foreign matter especially if it has high inertia)
- **presence of critical areas on evaporator (defrosting is too slow or backwater causes subsequent defrosting)**

Also consider the following points provided for illustrative purposes:



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