

Thermocouple Data Logger: Typical Applications

The Tinytag Ultra 2 Thermocouple data logger supports four of the most popular thermocouple types - K, T, J and N, providing monitoring for temperature ranges from -270°C to $+1370^{\circ}\text{C}$, depending on the type being used. These sensors have different characteristics and are suited to different applications.

The following examples of applications are typical, but not exclusive to each type of thermocouple.

Note: the temperature ranges stated in this section are the ranges supported by the Tinytag Ultra 2 thermocouple logger. Thermocouple sensors from different suppliers may have a narrower range for a given type than the figures quoted below.



Type K (-270 to $+1370^{\circ}\text{C}$ / -454 to $+2498^{\circ}\text{F}$)

The Type K is a 'general purpose' thermocouple with a wide temperature range. With a variety of probe types available, it is suitable for use across many industries and processes.

- Testing temperatures associated with process plants e.g. chemical production and petroleum refineries
- Testing of heating appliance safety

Type J (-210 to $+1200^{\circ}\text{C}$ / -346 to $+2192^{\circ}\text{F}$)

The Type J is a popular thermocouple that is commonly used to monitor temperatures of inert materials and in vacuum applications. This thermocouple is susceptible to oxidation so is not recommended for damp conditions or low temperature monitoring. (Note the accuracy of this sensor may be permanently impaired if used above 760°C .)

- Monitoring in a vacuum and for inert metals
- Hot processes including plastics and resin manufacture

Type T (-270 to $+400^{\circ}\text{C}$ / -454 to $+752^{\circ}\text{F}$)

The Type T is used widely in the food industry, mainly due to the high level of accuracy it provides and because it performs well in the presence of moisture without oxidising. If in general a lower range temperature measurement is required, the Type T is popular choice.

- Monitoring in food processing and production to identify potential food safety hazards and comply with HACCP regulations
- Suitable for low temperature and cryogenic applications

Type N (-270 to $+1300^{\circ}\text{C}$ / -454 to $+2372^{\circ}\text{F}$)

The Type N also has a wide temperature range, but is better suited to high temperature monitoring than the Type K because it is more stable and resists oxidation.

- Temperature profiling in ovens, furnaces and kilns
- Temperature measurement of gas turbine and engine exhausts
- Monitoring of temperatures throughout the production and smelting process in the steel, iron and aluminium industry