

COMPARISON THERMOCOUPLES / RESISTANCE THERMOMETERS

resistance thermometers

- ▶ Platinum resistance thermometers are the most accurate sensors and have the best long-time stability.
due to the chemical resistance of Platinum, the risk of impurity by oxidation and other chemical influences is reduced.
- ▶ high consistency.

thermocouples

- ▶ larger temperature range than resistance thermometers.
- ▶ small hot junction enables short response time.
- ▶ more robust and resistant against mechanical stress.
- ▶ cheaper.

▶ General

A reliable temperature measurement requires a most exact adaptation to the corresponding process. This statement is valid for thermocouples as well as for resistance thermometers.

characteristics	resistance thermometer	thermocouples
▶ dimensions	comparatively large sensor surface	small sensor surface possible
▶ response time	relatively long	short
▶ connection cables	copper cables	thermo compensating cable
▶ accuracy	very good	good
▶ consistency	very good	satisfactory
▶ surface temperature measurement	not possible	possible
▶ hot junction	over the whole length of the RTD	punctual
▶ robustness	good	very good
▶ spontaneous heating	has to be considered	does not occur
▶ temperature range	up to +600°C	higher temperature possible
▶ cold junction	not necessary	necessary
▶ circuit supply	yes	no
▶ vibration resistance	relatively sensitive	very rugged