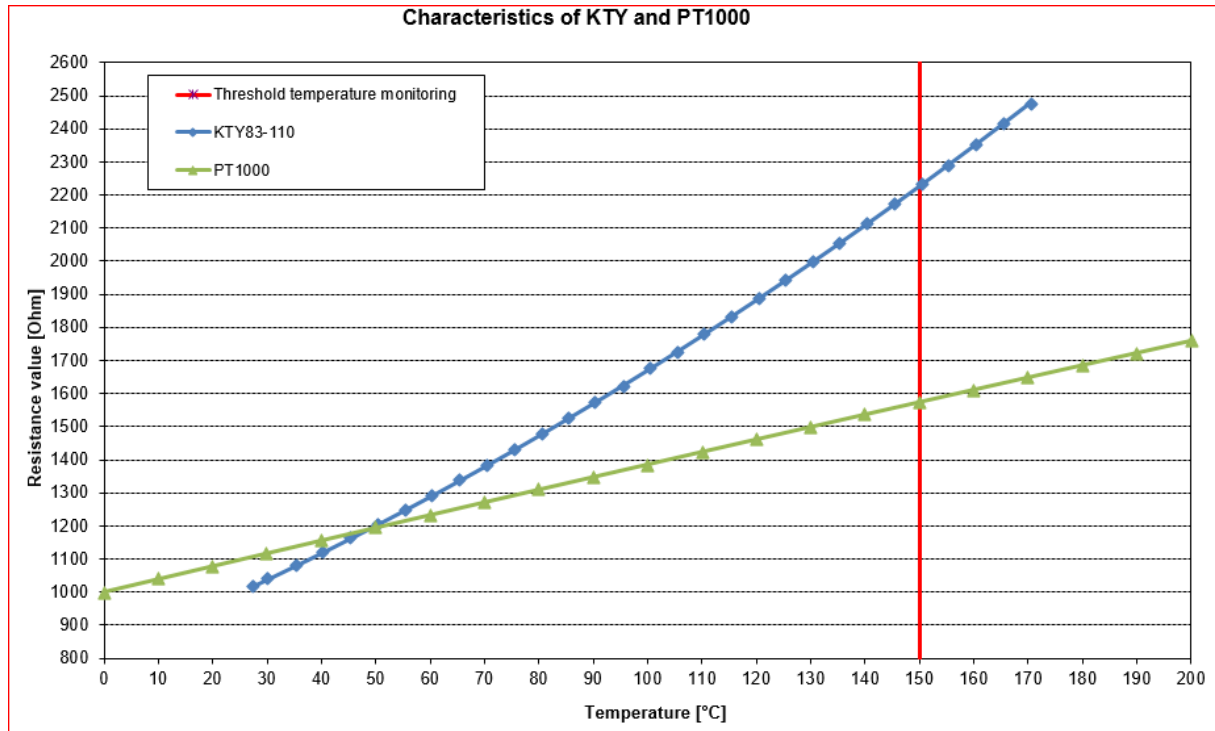


## PT1000 as replacement for KTY: Required servo inverter settings

The PT1000 is a platinum temperature sensor with a linear characteristic that, after a successive conversion, will, in the future, be used as a temperature sensor in the Lenze motors; sometimes also in series with 2x PTC.

The characteristics are very different from the characteristics of the KTY type used so far.



### Effects of non-adapted temperature sensor settings

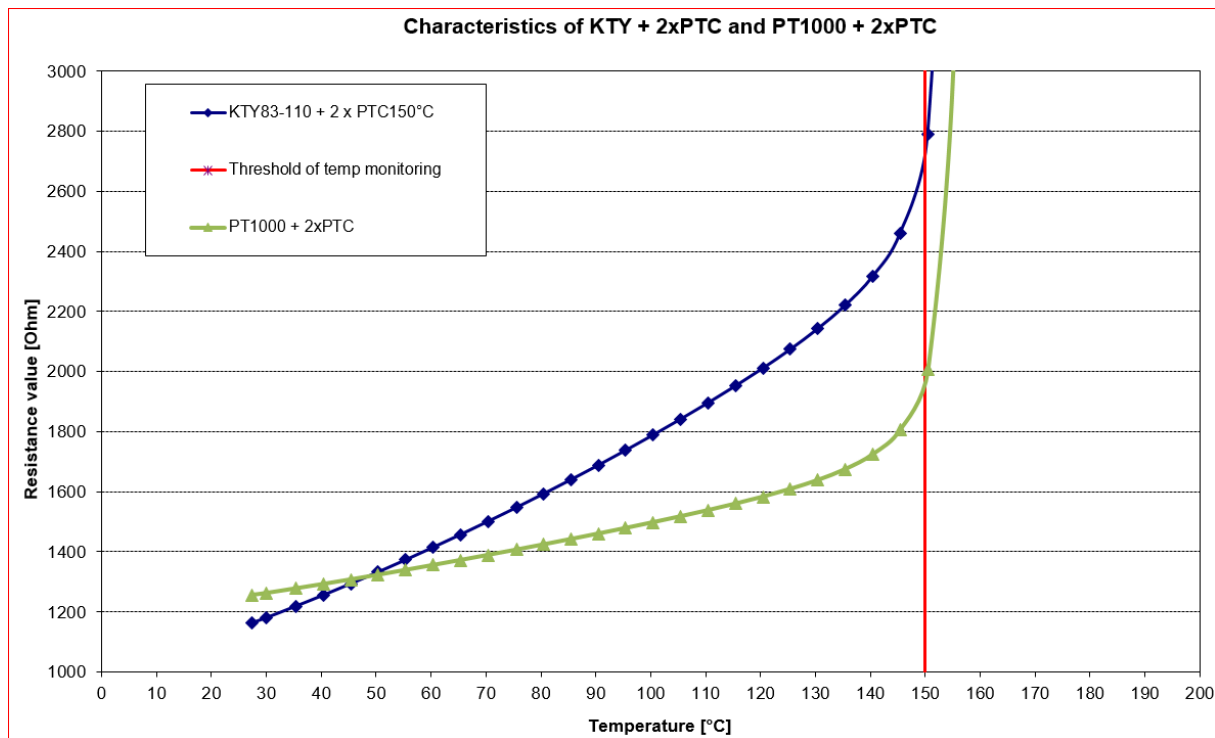
Use case 'Existing parameter set -> new motor'

- ⇒ If a KTY is parameterised in the inverter, but a PT1000 is installed in the motor, at temperatures from 50 °C, the temperature evaluation in the inverter will be increasingly too low and **a disconnection at 150 °C is not ensured; the motor may overheat!**

Use case 'Parameter set adapted to PT1000 -> old motor from warehouse'

- ⇒ If a PT1000 is parameterised in the inverter, but a KTY is installed in the motor, **the temperature monitoring in the inverter will trigger too early**; at approx. 90 °C and not, as expected, at 150 °C. I.e. the availability of the machine is not ensured.

In torque-setting applications, the temperature error is 1:1 reflected in the controlled torque.



### Effects of non-adapted temperature sensor settings

Use case 'Existing parameter set -> new motor'

- ⇒ If a KTY + 2xPTC is parameterised in the inverter, but a PT1000 + 2xPTC is installed in the motor, at temperatures from 50 °C, the temperature evaluation in the inverter will be increasingly too low and, in the event of a motor overload, the temperature monitoring in the inverter will trigger with a slight delay at approx. 155 °C instead of, as expected, at 150 °C.

Use case 'Parameter set has been adapted to PT1000 + 2xPTC -> old motor from warehouse'

- ⇒ If a PT1000 + 2xPTC is parameterised in the inverter, but a combination of KTY + 2xPTC is installed in the motor, the temperature monitoring in the inverter will trigger too early; at approx. 120 °C and not, as expected, at 150 °C. I.e. the availability of the machine is not ensured.

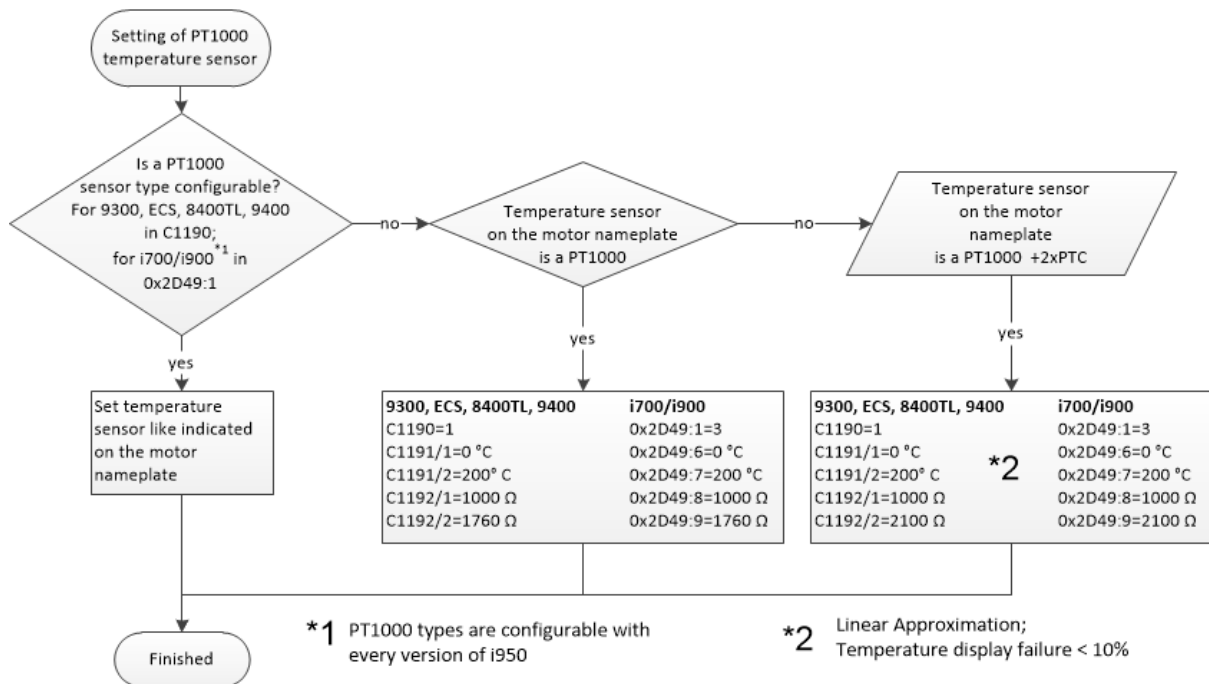
In torque-setting applications, the temperature error is 1:1 reflected in the controlled torque.

Applications with high torque-accuracy requirements using motors with a PT1000 + 2xPTC combination (MCS09 ... 19 and m850) as temperature sensors should no longer be used together with servo inverters that do not support this temperature sensor combination. If necessary, the firmware has to be updated by a Lenze engineer.

### Conclusion:

**The above shows very clearly that it is absolutely necessary to parameterise the PT1000 temperature feedback appropriately in the inverter!**

## Setting procedure for a PT1000 temperature sensor



On the motor nameplate, you will find the sensor installed in the motor. During the transitional period, motors equipped with a PT1000 are furthermore provided with a corresponding sticker. In the current servo inverter versions of the 8400TopLine, 9400 HighLine, and the 9400 ServoPLC, the temperature sensor has to be selected as PT1000 or PT1000 + 2xPTC combination in the parameter C1190.

In the i700, the temperature sensor is set in the index 0x2D49:1. Here, the PT1000 is supported from V01.10.12 or rather V02.10.12.

The i950 supports the PT1000 in all versions.

For the ECS, the 9300, and all above-mentioned servo inverters with older firmware versions, you cannot directly select a PT1000; here, use the special characteristic to simulate the sensor characteristic.

The combination of PT1000 + 2xPTC used in MCS09 ... 19 and m850 cannot be fully appropriately simulated by a linear approximation.

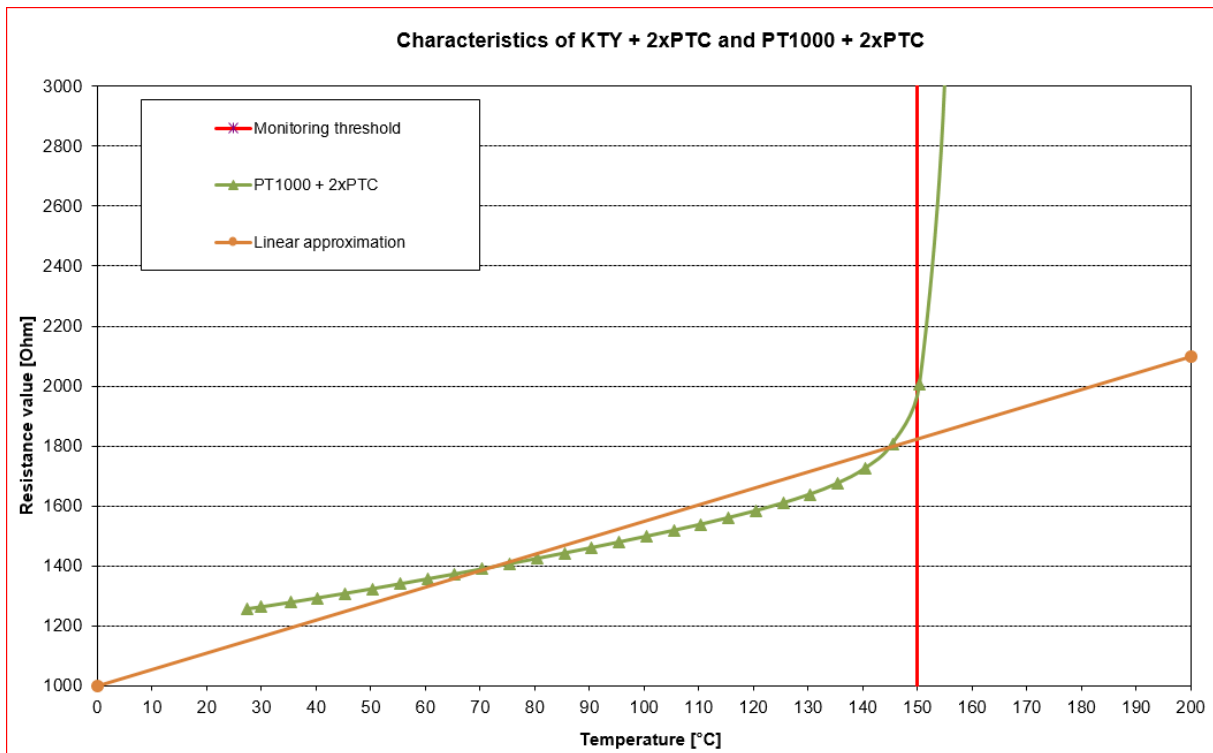
We propose to select a 'Linear approximation' as a compromise that will, on the one hand, ensure an overtemperature shutdown at >145 °C and, on the other hand, a temperature display error < 10% in the inverter in the typical operating range of the motor:

Temperature grid point 1 = 0 °C

Resistance grid point 1 = 1000 Ω

Temperature grid point 2 = 200 °C

Resistance grid point 2 = 2100 Ω



### Overview of servo inverters with PT1000 support

Servo inverter type	PT1000 temperature sensor support
9300	no
ECS	no
8400 TopLine	from V17.00.00
9400 HighLine	from V14.06.00
9400 ServoPLC	from V08.06.00
i700	from V01.10.12
i700	from V02.10.12
i950	from V01.00.05