

Technical data:

Measuring range: -40.0 ... +150,0 °C

Reading: 0.1 °C

Display: LED-Display, 3 1/2 digits, 26 mm high

Accuracy: typ +/- 0.8 °C (max +/- 1.5 °C)

Power supply: 4 x 1,5 - V - Mignon cells (included in delivery)

Dimensions: approx. 160 x 120 x 45 mm

Mass: approx. 400 g

Recommended accessories:

P3120-6N - Mains transformer 6V/500 mA DC for supplying the thermometer with power from the 230 V~/50 - 60 Hz mains.

Warning:

- The device may only be operated by qualified persons or persons who have been instructed in its use. Supervision obligation!
- Make sure that the device does not fall down when being moved, packed or unpacked. If this does happen, have the device properly inspected or repaired by authorized specialists.
- If unexpected problems occur during operation of the device, notify the specialist dealer immediately.
- Do not expose the device to dripping or splashing water.
- There are no user-serviceable components inside the instrument.
- The repair of this device may only be carried out by an authorized specialist.



Thermometer differential "inno", 150 °C DE723-2T

This instrument is a magnetic, easy-to-use electronic thermometer for demonstration experiments. It is particularly suitable for accurate measurements in the low temperature range (up to 150 °C). By connecting two thermocouples it is possible to display temperature 1 (t1), temperature 2 (t2) or the difference of both temperature values.

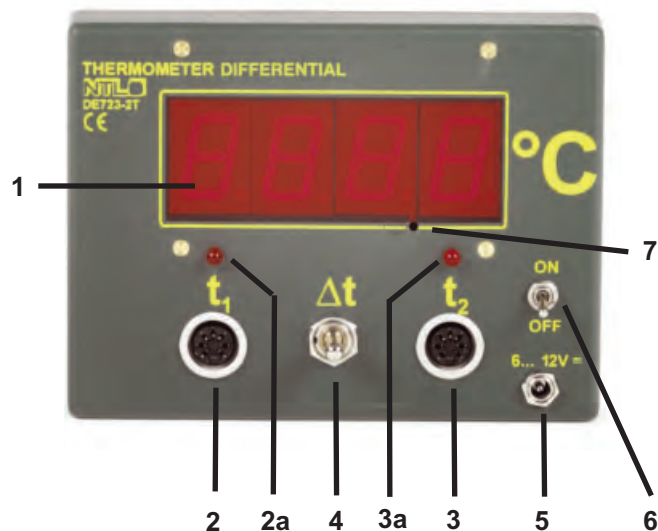
The 26 mm LED display allows accurate reading even from a distance.

**Required accessories:**

C4120-1T - Thermo-sensor, glass,
with handle

DT202-5S - Thermo-sensor,
with handle, DIN





optionally available:
C4120-1T - Thermo-sensor, glass, with handle
 suitable also for aggressive media, easy cleaning

DT202-5S - Thermo-sensor, with handle, DIN
 robust shaft, short response time, also suitable as surface probe.

- 01 - 3 1/2 digit LED display, 26 mm high
 - 02 - DIN socket for connection of thermo-sensor 1 (temperature measurement t1)
 - 02a + 03a - diodes indicating the operating status of the respective sockets
 - 03 - DIN socket for connection of thermos-sensor 2 (temperature measurement t2)
 - 04 - selector switch: display temperature 1 (t1), temperature 2 (t2) or their difference
 - 05 - 2.5 mm input socket for external 6...12 V DC power supply (e.g. P3120-6N)
 - 06 - switch on / off
 - 07 - Temperature compensator for thermo-sensor 2 (t2)
- 4 holding magnets on the rear side

Handling:

Getting started:

The instrument is switched on with the toggle switch in the middle right.

The large toggle switch in the middle is used to select the measuring mode: Switch left means sensor 1, switch right means sensor 2, switch middle means differential temperature measurement. In case of single sensor measurements, the corresponding LED lights up. The measurement results only make sense if the respective sensor(s) are connected.

Sensors:

An integrated semiconductor component is used as the temperature sensor. Output voltage is directly proportional to the temperature in °C. The highest temperature at the entire sensor head is 150°C. We manufacture this sensor in two versions:

C4120-1T - Thermo-sensor, glass, with handle

Shaft made of Duran glass, mechanically robust and above all hardly chemically attackable, but due to the high thermal resistance mainly suitable for measurements in liquids.

DT202-5S Thermo-sensor, with handle, DIN

Shaft made of carbon fiber, very robust short response time, is also suitable as a surface sensor. Since these sensors are electrically identical, there is nothing to prevent their joint use in a test setup.

Attention: The connection of other sensor types does not result in a sensible operating condition!

Measurement problems:

For accurate temperature measurement, good thermal contact between the specimen and the sensing element is an absolute prerequisite. Especially with surface probes this can be difficult! Temperature gradients of several tens of degrees (!) are common, for example, on hot metal surfaces. With suitable silicone paste ("heat conductive paste"), interfering air gaps can be bridged well. Similar problems are also encountered with boiling liquids or liquids containing large quantities of dissolved substances. Here, too, several degrees difference between different points of the same liquid is common. A magnetic stirrer is recommended. For temperature measurements in quiescent gases, because of the particularly significant problems with the thermal inertia of the sensor, only an open design should be used!

Accuracy: maximum error $\pm 1^\circ\text{C}$, typical $\pm 0.5^\circ\text{C}$.

Power supply:

The device is powered by four built-in AA cells. If most modern cells with approx. 3Ah capacity are used, this results in a battery life of about 30 hours of operation. If the device is not used for several months, the batteries should be taken out of the device in order not to damage the device in case of damage.

The instrument can also be powered by the P3120-6N or P3130-1P plug-in power supply. The connection is made via the DC cable with 2.5mm DC plug.

When the DC plug is connected mechanically, the battery is switched off. Defective battery or wrong power supply lead to dark or missing display. As long as the display is lit, it shows correctly. Therefore there is no "LowBatt" - indication with this device.

Calibration:

In order to compensate for the particularly unpleasant measurement errors in the range of tenths of a degree, a compensating regulator has been made accessible from the outside. By means of a small screwdriver (maximum 2.5mm blade width) the regulator can be adjusted from the outside in such a way, that at the same sensor temperature the display becomes 00.0. The controller only acts on sensor 2!