

Thermoelectrical Thermometer
C U T I T E R M
type CTT1

Brugsanvisning Originaleksemplar maa ikke udleveres		Erst.:
		Erst.af:
Skrevet af:	d. / 19	Kontr.:
Der indsættes: <i>strømskema</i> <i>623 AY = CTT16</i>		
Bemærk:		

Thermoelectrical Thermometer CUTITERM type CTT

The instrument consists of two main parts: spotlight instrument and probe. The probe is connected to the instrument through the connector socket at the front. The round pole upwards.

When stored or during transport the switch on the front panel should be set to position "Aforudt/Transport" (Off/Transit). The galvanometer system is then short-circuited, thus minimizing the risk of damage owing to shocks and vibration. Furthermore the compensating battery is disconnected in order to avoid unnecessary wear. The compensating battery (Hellesen, type UNITE) is mounted on the back panel of the instrument protected by a detachable shield. It is replaced by removing the shield and lifting the upper spring.

When the apparatus is put into use the meter should be placed on a horizontal support, which should be free from vibrations. (A window sill will do in many cases, but care should be taken that the instrument be not exposed to excessive heat from a radiator or to direct sunlight). Next the probe is connected, and the instrument is now left for a few minutes in order to allow difference in temperature, if any, between the probe and the metal parts of the instrument to balance. If the instrument has been carried between rooms with differing temperature immediately before the installation, you will have to wait a little longer.

The instrument is then made ready for use:

If the instrument is to be operated from an a-c power line the switch on top of the instrument is set to position "Net" (Line). Before turning on the power, make sure that the voltage indicator plate (which is visible from behind) is in accordance with the voltage available. If the instrument is to be switched to another line voltage it is done by removing the bottom cover and setting the arm of the voltage selector to the position that corresponds to the voltage in question. At the same time the voltage indicator plate should be set accordingly.

If no a-c line voltage is available, a 6 volt accumulator or four 1.5 volt dry cells are used. They are connected to the terminals marked "6 V Akkumulator", and the switch on the top of the instrument is set to position "Akk."

Line voltage, accumulator, or batteries are used for illuminating the light spot only.

Switch on the line voltage and adjust the lamp holder (the round button on the top of the instrument) by turning it and pulling or pressing it, until the light spot appears as an evenly illuminated circular spot on the scale near the "A" mark (22°).

Set the galvanometer switch to position "A" and adjust the screw marked "A-Indstilling" (A setting) till the vertical hair line of the light spot covers the A line (22°). This operation is merely a mechanical adjustment of the zero of the galvanometer system.

Next set the galvanometer switch to position "B" and rotate the knob marked "B-Indstilling" (B adjustment), until the hair line of the light spot coincides with the mark B. This adjustment regulates the voltage of the compensating battery, thus making the indication of the instrument independent of the temperature of the room (the cold junction). If it is not possible to make the hair line coincide with the mark B, the compensating battery is probably exhausted, and it should therefore be replaced (see the section on storage and transport).

When the galvanometer switch is then set to position "Maale" (Measure) the instrument operates as a thermometer, and the hair line of the light spot will at any moment indicate the temperature of the probe thermo-couple in degrees centigrade with an accuracy within 0.2°C . It is recommended to check the B setting occasionally during operation.

After use turn the galvanometer switch to position "Afbrudt/Transport" (Off/Transit).

When operated from accumulator, or batteries in particular, a certain regard should be paid to their limited life. The light is conveniently put out by setting the switch on top of the instrument to position "Net" (Line).

The Probes:

The temperature probes incorporate a copper-constantan thermo-couple having a thermo electromotive-force of about $40\text{ }\mu\text{V}$ per degree centigrade. As the light spot meter is matched to $40.0\text{ }\mu\text{V}$ per degree centigrade the resistance of each probe is adapted for this. Therefore, the cable can neither be extended nor shortened without a subsequent adjustment of the resistance of the probe. The thermo-couple of the skin temperature probe type CTT1H1 consists of a thin strip which is tautly suspended by a pair of springs. When the thermo-couple is tangentially applied to the skin it will almost immediately take the temperature of the skin owing to its very small heat capacity and thermal conductivity. The thermo-couple with springs is mounted in a special holder which is so shaped that its temperature will not affect the measurement.

The thermo-couple of the type CTT1K1 is mounted at the end of an approximately 45 mm long hypodermic needle with a diameter of 0.9 mm. The needle is permanently mounted on a handle of insulating material. This probe is intended for measuring the temperature of tissue, but owing to its small heat capacity it is also very suitable for measuring temperatures of liquids and plastic mediums. When sterilizing the cannula probe the needle will stand heating up to 150°C . However, care should be taken that the heat is not conducted to the holder, which will stand only 50 to 60°C . The whole probe may be sterilized with formalin vapors.

The thermo-couple of the rectal probe type CTT1R1 is located at the end of the probe. The probe is applied in the same way as an ordinary rectal thermometer and requires an adjusting time of about 1 minute.