

# *COMMETER C0121*

**Dual channel digital thermometer for RTD Ni1000/6180ppm probe**

**Instruction manual**

## Manual for use of thermometer COMMETER C0121 for Ni1000/6180 probe

Instrument is designed for measurement of temperature from two RTD Ni1000/6180ppm probes. Measured values are displayed on a dual line LCD display. Temperature is measured by RTD sensor Ni1000/6180ppm. Also temperature difference among channels is possible to measure and display. Instrument compares measured with two adjustable levels. Breaking the level is indicated by blinking the proper value on display and by audio indication (switchable). Instrument is equipped with minimum and maximum memory and Hold function. Minimum and maximum values and Hold value are possible to display on the LCD anytime.

### Technical parameters:

#### Parameters of measurement:

Range of measurement: -50 to +250°C (can be limited by connected probe parameters)

Resolution: 0.1 °C

Accuracy (without probe):  $\pm 0.2$  °C at the range of -50 to +100°C

$\pm 0.2\%$  from reading at the range of +100 to +250°C

Accuracy (including the probe):  $\pm 0.4$  °C at the range of -50 to +100°C

$\pm 0.5\%$  from reading at the range of +100 to +250°C

Type of compatible probe: with RTD sensor Ni1000/6180ppm and Cinch connector

Measuring interval and display reading refresh: approximately 0.7 s in FAST mode

0.7 to 5 s in dynamic mode

Power: battery 9V or ac/dc adapter 12V with NiCd accumulator 9V

Average current consumption: 0.08 to 0.3 mA (depending on operation mode)

#### Operation conditions:

Ambient temperature range: -30 to +65 °C

Ambient relative humidity range: 5 to 95 %RH

Outer characteristics in accordance with EN 33-2000-3: normal environment with characteristics AD1, AE1, AF1, AG1, AH1, AK1, AL1, AN1, AP1, AQ1, AR1, AS1, BA1, BE1

Storing conditions: temperature -40 to +85 °C relative humidity 5 to 95 %RH

Dimensions: 141 x 71 x 27 mm

Weight including battery (without the probe): approximately 150 g

Battery life depends on selected display refresh mode (see below). In FAST mode display is refreshed in shortest possible interval with highest current consumption. In dynamic mode display is refreshed in interval up to 5 s in case measured values remain stable. Refresh interval is shortened to approximately 0.7 s only if measured values change. Current consumption in this mode in usual operation is lower, battery life is up to 4 times longer. The FAST mode is recommend to use only in cases, when slower display response is not acceptable.

Battery voltage drop below 7 V is indicated with blinking of "BAT" in default display mode (displaying of actual values) and FAST mode is automatically cancelled to save the battery. At the same time audio indication of alarms is automatically switched OFF.

If instrument is supplied from external ac/dc adapter, internal 9V battery should be replaced with rechargeable NiCd accumulator. In usual operation from adapter accumulator is charged only with small current. If accumulator is totally discharged, its full charging in instrument takes approximately 100 hours. Instrument with accumulator is not recommended for permanent operation without ac/dc adapter plugged. Accumulator works only as a standby source in case of power mains failure.

## Switching ON and OFF the instrument

Connect the external probes to the connectors before switching ON the instrument. Switch ON the instrument by pressing ON/OFF key. After switching ON the instrument all symbols on the LCD are displayed. If the ON/OFF key is being held pressed, all LCD symbols are displayed till the key is released.

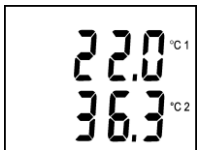


In usual operation instrument then starts the measurement mode and actual measured values are displayed. If instrument is ON, do not disconnect or connect the probe to prevent storing of incorrect value to minimum and maximum memory.

It is possible to switch OFF the instrument anytime, all instrument setting is kept saved.

## Display of actual measured temperature

In this mode is instrument anytime after switching ON. It is possible to enter this mode from other modes by pressing or by repeating pressing of MENU key. If the external probe is not connected properly or probe is out of measuring range, reading -- is displayed on the upper LCD line.



Channel 1 temperature in °C is displayed on the upper LCD line.  
Channel 2 temperature in °C is displayed on the lower LCD line.

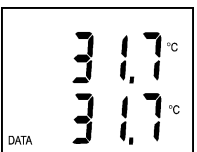


Press DISPLAY key to display the temperature difference DIF between channels.

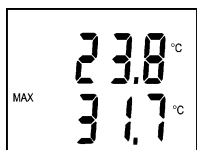


(t dif = t1 - t2)

## Function HOLD (storing of actual measured temperature) and minimum a maximum memory



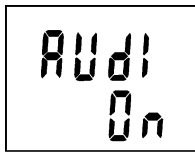
Press HOLD key in the default mode (displaying of actual measured temperature) to store actual measured value to internal memory (indicated by short beep). Anytime it is possible to display stored value from MENU (see below). Each pressing of the HOLD key in the default mode causes value stored in HOLD memory is replaced with actual temperature.



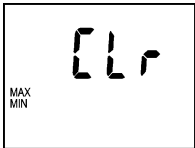
Switched ON instrument permanently updates minimum and maximum memory of temperature. Press MIN key (resp. MAX key) in the default mode to display minimum (resp. maximum) reading. These minimum and maximum readings are indicated by MIN (MAX) symbols on the LCD. Pressing MIN (MAX) or MENU key again to return to default mode. Minimum and maximum memory is cleared from menu after confirmation selection CLR (see below). Values in HOLD, MIN and MAX memories remain stored even after instrument is switched OFF.

## Functions and settings available from menu

Press MENU key to enter mode of viewing menu items one by one. Press arrow keys up and down to list all menu items. Press MENU key again to return to default mode (displaying of actual measured values).



This item indicates if audio signaling of alarm indication is switched on (On) or switched off (OFF). Press ENTER key to change actual setting. Notice: if the battery voltage is low, audio indication is out of operation to reduce current consumption independently on this selection.



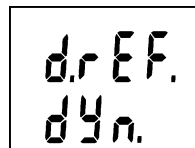
Clearing of minimum and maximum memory of temperature. Memory is cleared after pressing ENTER key. Clearing is confirmed by reading YES on the LCD lower display.



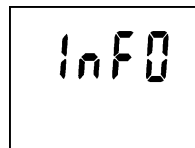
Press ENTER key to display value stored in the HOLD memory. Press MENU key to leave this mode.



Battery voltage of partially loaded battery is displayed. This value illustrates battery condition.



Display refresh mode is indicated. In the FAST mode refreshment is fastest with regular interval approximately 0.7 s. In the dynamic refresh mode (DYN.) each 15 s refresh interval of display is doubled to maximum 5 s if measured values are stable. If measured values change, refresh interval decreases to approximately 0.7 s. This dynamic mode prolongs battery life significantly. Select the desired mode by ENTER key. Notice: if battery voltage is low, the FAST mode is out of operation to reduce current consumption independently on this selection.



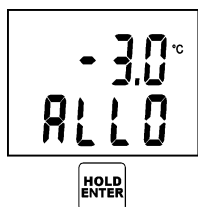
Pressing of ENTER key causes displaying service information on software version (upper LCD line) together with instrument configuration on the LCD lower line.

## Alarm indication and setting

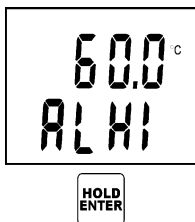


It is possible to set lower and upper limit for each measured temperature and the temperature difference. Breaking of the limit is indicated by blinking of the value on the display. Alarm activation can be disabled by setting lower alarm limit up to its maximum. This is indicated by OFF reading at the position of numeric value. Value of upper limit of the same alarm is indifferent.

To set alarms press ALARM key.



Reading ALLO indicates adjusted lower alarm limit. Set the desired value by means of the arrow keys. Press and hold the arrow key UP to make value increase fast. Press and hold the arrow key DOWN to make value decrease fast. Release the arrow key and press ENTER to confirm new limit.



Reading ALHI indicates adjusted upper limit. Set the desired value in the same way as in above lower limit. If needed it is possible to get back to lower limit setting of the same alarm by pressing DISPLAY key. Press ENTER key to confirm new upper limit.

It is possible to leave the alarm setting mode by pressing MENU key. New adjusted limits up to pressing MENU key are stored in memory.

## Battery replacement

Low battery voltage is indicated on the display with blinking reading "BAT". It is necessary to replace it with new one as soon as possible. Battery is located under small cover on the instrument lower side. It is absolutely necessary to replace battery with instrument switched OFF, otherwise setting of d.REF. and AUDI (from menu selections) and data in memory HOLD, MIN and MAX will be lost. For the same reason do not disconnect the battery for longer than 1 minute even if instrument is switched OFF. If it happens (or if battery is totally discharged), it is necessary to set again in appropriate menu selection LCD refreshment mode (d.REF.), alarm audio indication (AUDI) and clear the minimum and maximum memory (CLR).

## Commeter instruments passed the following electromagnetic compatibility (EMC) tests:

Device conforms in accordance with EN 61326-1 these norms:

radiation:	EN 55022	class B
immunity:	EN 61000-4-2	(levels 4/8 kV, class A)
	EN 61000-4-3	(intensity of electromagnetic field 3 V/m, class B)
	EN 61000-4-4	(levels 1/0,5 kV, class A)
	EN 61000-4-6	(intensity of electromagnetic field 3 V/m, class B)
	EN 61000-4-11	(class A)
	EN 61000-4-5	(class A)