COMMETER C4130

Digital thermo-hygro-barometer

Instruction manual

Manual for use of thermo-hygro-barometer COMMETER C4130

Instrument is designed for measurement of temperature, relative humidity, atmospheric pressure and pressure tendency. It enables to display the dew point temperature and atmospheric pressure corrected to the sea level. Measured values are displayed on a dual line LCD display. Temperature is measured by RTD sensor Ni1000/6180ppm. Instrument compares all measured values (except pressure tendency) with two adjustable levels for each measured quantity. 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:

Temperature: Range of measurement: -10 to +60 °C
Resolution: 0.1 °C
Accuracy: ±0.4 °C

Humidity: Range measurement: 5 to 95 %RH
Resolution: 0.1 %RH
Accuracy: ±2.5 % RH at the range of 5 to 95 %RH

Dew point temperature (calculated from temperature and humidity):
Range: -40 to +60 °C
Resolution: 0.1 °C
Accuracy: ± 1.5 °C at ambient temperature T < 25°C and RV > 30 %,
for more details see Appendix A

Atmospheric pressure: Range of measurement: 800 to 1100hPa
Resolution: 0.1 hPa
Accuracy: ± 2hPa at ambient temperature of 23°C

Measuring interval and display reading refresh: approximately 0.7 s in FAST mode
0.7 to 5 s in dynamic mode

Interval of refresh of pressure tendency display: 0.5 h

Response time (air flow approximately 1 m/s):
temperature: t63 < 35 s, t90 < 60 s (temperature step 20 °C)
relative humidity: t63 < 30 s, t90 < 60 s (humidity step 30 %RH, constant temperature)

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

Average current consumption: 0.3 to 1.3 mA (depending on operation mode)

Typical life of Zinc-Chloride battery: 2 months

Typical life of Alkali-Mangan battery: 3 months

Operation conditions:

Ambient temperature range: -10 to +60 °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

Not allowed manipulation: it is not allowed to touch sensors under the cover to avoid sensors damaging or to effect calibration.

The sensors (under the cover) should not be exposed to direct contact with water or other liquids.

Storing conditions: temperature -10 to +60 °C relative humidity 5 to 95 %RH

Dimensions: 141 x 71 x 27 mm
Weight including battery: 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 canceled to save the battery. At the same time audio indication of alarms is automatically switched OFF.

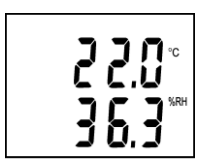
If instrument is powered from external ac/dc adapter, internal 9V battery is replaced with rechargeable NiCd accumulator. In usual operation from adapter accumulator is charged only with small current. If accumulator is totally discharged, its full charging in instrument takes approximately 100 hours. 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

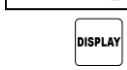
Switch ON the instrument by pressing ON/OFF key. After switching ON the instrument all symbols on the LCD are displayed. If the ON/OFF key is being held pressed, all LCD symbols are displayed till the key is released.
In usual operation instrument then starts the measurement mode and actual measured values are displayed.

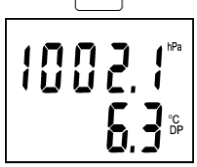
Displaying of actual measured values

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.

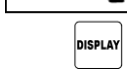


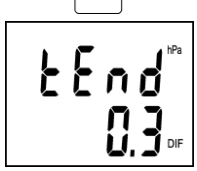
Temperature in °C is displayed on the upper LCD line and relative humidity in %RH is displayed on the lower LCD line.





Press DISPLAY key to display other readings - atmospheric pressure in hPa on upper line and dew point temperature on lower line (°C DP).





Press DISPLAY key to display pressure tendency (hPa), which is the difference between actual pressure and pressure before 3 hours. If the instrument is not switched ON at least 3 hours, pressure tendency is not available yet and symbol „--„ is display.

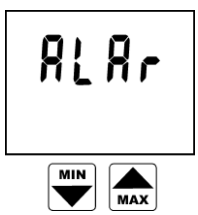
Function HOLD (storing of actual measured values) and minimum a maximum memory

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

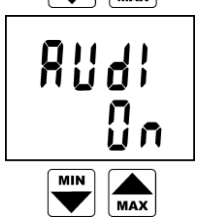
Switched ON instrument permanently updates minimum and maximum memory of each measured values. Press MIN key (resp. MAX key) in the default mode to display minimum (resp. maximum) reading. These minimum and maximum readings are indicated by MIN (MAX) symbols on the LCD. Press DISPLAY key to display minimum (resp. maximum) value of other values. 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

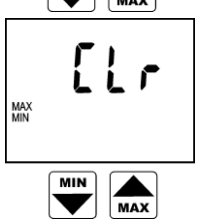
Press MENU key to enter mode of viewing menu items one by one. Press arrow keys up and down to list all menu items. Press MENU key again to return to default mode (displaying of actual measured values).



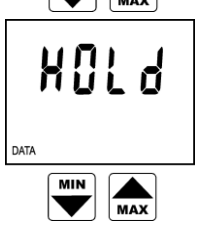
Pressing the ENTER key enables to enter the mode of setting alarm limits for all quantities (see below).



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.

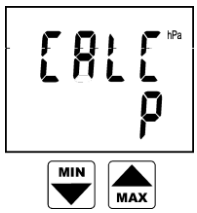


Clearing of minimum and maximum memory of all values. Memory is cleared after pressing ENTER key. Clearing is confirmed by reading YES on the LCD lower display.



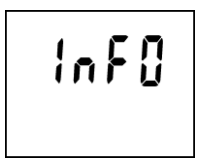
Press ENTER key to display values stored in the HOLD memory. Press DISPLAY key to display other stored values (dew point temperature). Press MENU key to leave this mode.

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



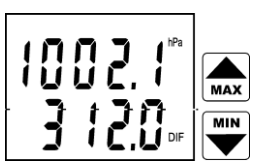
This selection (by pressing ENTER key) enables to enter mode of pressure correction to the sea level (see below).

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.



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

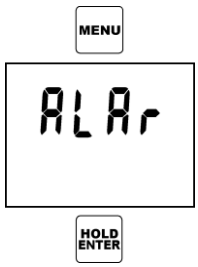
Correction of pressure reading to the sea level



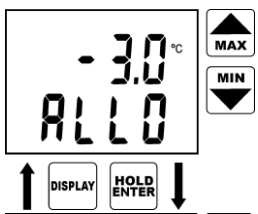
Select menu item Calc P (calculation of pressure) and press the ENTER key. The actual pressure reading is displayed (LCD upper line, hPa) and the value of correction constant is displayed on the LCD lower line (DIF). Use the arrow keys to set the appropriate value of adding constant. At the same time the actual pressure reading on the upper line is updated. Actual pressure value above sea level is possible to gain e.g. from nearest weather station. The new value of adding constant will be stored after pressing ENTER. This is indicated by YES on LCD the lower line. It is possible to leave this mode without any change by pressing the MENU key. The above procedure is necessary to repeat anytime after instrument is moved to the location of different altitude above sea level. If you set the adding constant (DIF) to zero, instrument will display the absolute pressure again.

Alarm indication and setting

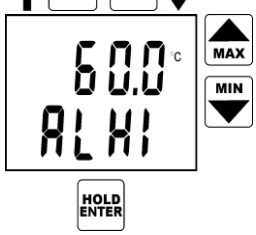
It is possible to set lower and upper limit for each measured quantity. Breaking of the limit is indicated by blinking of the appropriate value on the display. If a new alarm was indicated (i.e. it was not active in the previous measurement), display starts to display the value out of limits. If at least one alarm is active, audio indication can be activated, if menu AUDI "On" is selected (see setting described above). Alarm activation of each value can be disabled by setting lower alarm limit of the desired value 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.



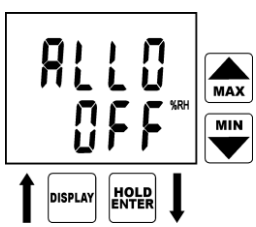
To set alarms press MENU key, select ALAR from menu items and confirm by pressing ENTER key.
The following description of alarm setting is a model for alarm setting of all measured quantities.



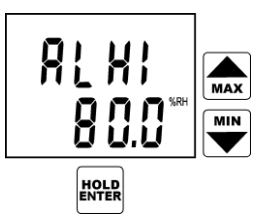
Reading ALLO indicates adjusted lower alarm limit (here air temperature). Set the desired value by means of the arrow keys. Press and hold the arrow key UP to make value increase fast. Press and hold the arrow key DOWN to make value decrease fast. Release the arrow key and press ENTER to confirm new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



Reading ALHI indicates adjusted upper limit of the same alarm (here air temperature). 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.



Then you are offered to set alarm of other input value (here relative humidity). The procedure is the same as the above temperature limit setting. Alarm activation of each value can be disabled by setting lower alarm limit of the desired value 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.



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)

Appendix A - Accuracy of dew point measurement