

Operating Instructions



Active Electrode

RF-T 28 BL



EN



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0.1 Publication Statement

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GANN Mess- u. Regeltechnik GmbH, Gerlingen, Germany.
07/11/2014

0.2 General Notes

This measuring device fulfils the requirements of the applicable European and national directives (2004/108/EC) and standards (EN61010). Appropriate declarations and documentation are held by the manufacturer. To ensure trouble-free operation of the measuring device and operational reliability, the user must carefully read the operating instructions. The measuring device may only be operated under the climatic conditions specified. These conditions can be found in Chapter 3.1 "Technical data". This measuring device may likewise only be used under the conditions and for the purposes it was designed for. Operational reliability and functionality are no longer ensured if the device is modified or adapted. Gann Mess- u. Regeltechnik GmbH is not liable for any damage arising from such modifications or adaptations. The risk is borne by the user alone.

- Using appropriate means, make always sure that there are no electrical cables, water pipes, or other utility lines at the location, at which the measurement is to be carried out.
- The device must not be stored or operated in aggressive air or air containing solvents!
- Material that is frozen or has wet surfaces cannot be measured.
- The notes and tables in these instructions on permitted or normal humidity conditions in practice and the general definitions of terms have been taken from the specialist literature. No responsibility can therefore be taken by the manufacturer for the correctness of this information. The conclusions to be drawn from the measurement results are related to the individual conditions and the knowledge drawn from professional experience for each user.

- The measuring device may be operated in residential and commercial areas, as the stricter class B for emitted interference (EMC) has been adhered to.
- The device may not be operated in the immediate area of medical equipment (heart pacemakers, etc.).
- The measuring device may only be properly used as described in these instructions. Keep the device and accessories out of the reach of children!
- Measurements must not be carried out on metallic surfaces.

Gann Mess- u. Regeltechnik GmbH accepts no liability for damage resulting from non-adherence to the operating instructions or by not taking proper care during transport, storage or operation of the device, even if this requirement for care is not specifically addressed in the operating instructions.

0.3 WEEE Directive 2002/96/EC Law on Electrical and Electronic Equipment

Disposal of packaging, battery, and device must be undertaken in accordance with the legal requirements at a recycling centre.

The device was manufactured after 1 Mai, 2010

1 Introduction

1.1 Description

The active electrode RF-T 28 BL is a precise thermo-hygrometer for many areas of application such as the surveillance of living units, air conditioning systems, print shops, warehouses, etc.

Additional features included: single-handed operation, integrated measurement probes and a 3-line LCD screen for the simultaneous display of air humidity, air temperature and dew point.

1.2 Device Layout and Button Assignment



2 Basic Functions

2.1 Display in Measuring Mode

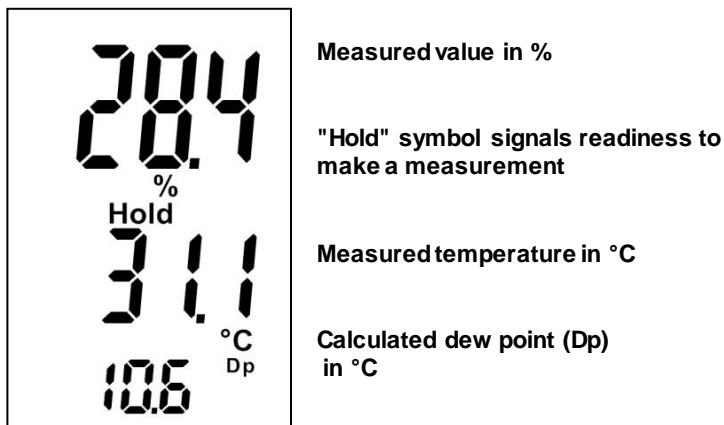


Figure 2-1: measuring mode

A measurement is started by pressing the "M" button. During the measurement process, the "%" symbol blinks and the values adapt to the surrounding conditions. After releasing the "M" button, the "%" symbol is displayed steadily and the "Hold" symbol also appears.

The device is now in Ready mode.

Press the "M" button again to start a new measurement.

Approx. 40 seconds after releasing the measurement button, the device switches itself off automatically to save battery power. If the device is switched on again, the last value measured is shown on the display.

2.2 Setting Menus

If the **up** or **down** buttons are pressed in *Ready mode*, the various setting menus are shown in sequence:

1. **Measurement menu** (*Ready mode*): The measuring process can be carried out here
2. **Measuring mode selection**: Here you can specify the measuring mode (section 2.3.2)
3. **Maximum value display**: The largest value measured is shown here (section 2.3.3)
4. **Minimum value display**: The smallest value measured is shown here (section 2.3.4)
5. **Saved menu**: The last 5 values measured can be called here (section 2.3.5)

2.2.1 Measurement Menu (Main Menu)

The last measurement with the note "**Hold**" is shown here.

In this menu, a new measurement can be started by pressing the "**M**" button.

During the measuring process, the "**Hold**" symbol disappears from the display. After releasing the "**M**" button, the measured value is saved. The "**Hold**" symbol is displayed again.

If the new measured value is larger than the previous maximum value, "**Max**" flashes on the display. If the value is not to be saved, the "**M**" button must be pressed *briefly*. If the value is not to be saved, a new measurement is started with a *long* press on the "**M**" button without changing the previous maximum values.

2.2.2 Measuring Mode Selection Menu

In this menu, the various modes for the BL Compact TF 2 can be set.

The currently active mode is selected with a short press of the M button. The mode then begins to blink. Now a mode can be selected with the Up and Down buttons and confirmed with a short press on the M button.

The BL Compact TF 2 has 2 different setting modes, which are run through in the following increasing sequence:

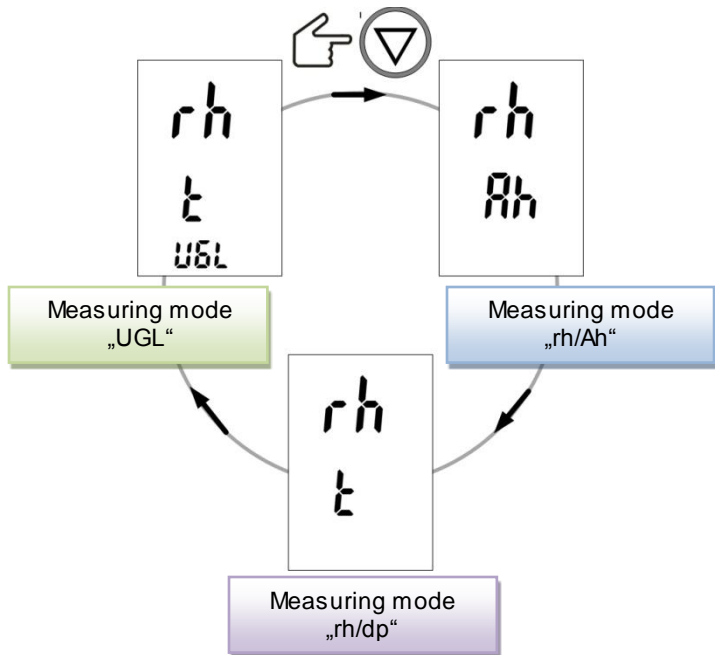


Figure 2-3: measuring mode selection menu

The selected mode changes the display of the measurement menu. Depending on the mode, the appropriate physical dimension is displayed:



Measuring mode "rh" (relative humidity):
the *relative humidity (in %)*, the *temperature (in °C)*
and the *dew point (in °C)* are displayed.



Measuring mode "Ah" (absolute humidity):
the *relative humidity (in %)* and the *absolute humidity*
(in g/m^3 i.e. *grammes of water in 1m³ of air*)



Measuring mode "UGL=EMC" (equilibrium moisture content):

if wood is exposed to a constant climate (constant humidity and constant temperature) long enough, it will finally adopt a certain moisture content. This is called the equilibrium moisture content.

Information and explanations on the individual measuring modes can be found in Chapter 4 "Application instructions".

2.2.3 Maximum Value Display

In this menu, the maximum air humidity value measured in a measurement sequence is displayed. **This function is only available in the "rh" measuring mode.**

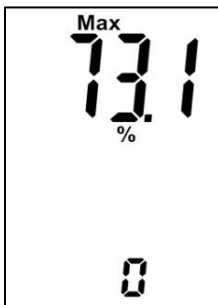


Figure 2-2:
maximum value 1

If a maximum value is to be deleted, the displayed value must be selected with a *short* press on the "M" button.

The value blinks and can now be deleted with a *long* press of the "M" button.

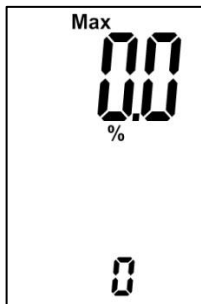


Figure 2-3:
deleted max. value

Afterwards, only the "Max" symbol and the % symbol are still blinking. With a further *short* press of the "M" button, the entry is confirmed and the device returns to the Ready mode.

With the "M" button, a new measurement can then be carried out immediately.

2.2.4 Minimum Value Display

In this menu, the minimum air humidity value measured in a measurement sequence is displayed. **This function is only available in the "rh" measuring mode.**

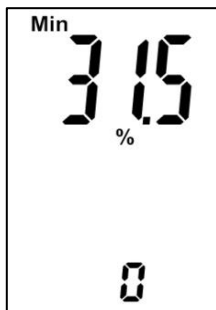


Figure 2-6:
min. value

If a minimum value is to be deleted, the displayed value must be selected with a *short* press on the "M" button.

The value blinks and can now be deleted with a *long* press of the "M" button.

Afterwards, only the "Min" symbol and the % symbol are still blinking. With a further *short* press of the "M" button, the entry is confirmed and the device returns to the Ready mode.

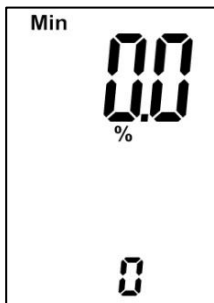
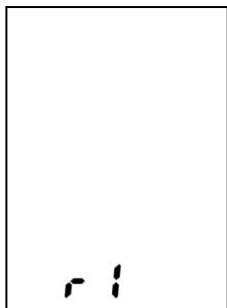


Figure 2-5:
deleted min. value

With the "M" button, a new measurement can then be carried out immediately.

2.2.5 Memory Menu

In this menu, the last 5 measured values are saved. The view and the respective units depend on the measuring mode selected.



The memory location number "r1" is displayed for approx. 1 second, and then the last measured saved value contained there is displayed.

You can recognize saved values as there is no "Hold" symbol in the display.

Figure 2-6:
memory location "r1"

As soon as you select the saved menu, the memory location number "r1" is displayed for approx. 1 second, and then the last measured saved value contained there is displayed.

The last 5 measured values are automatically saved and stored in memory locations "r1" to "r5". The last measured value is in memory location "r1". This is a ring buffer. As soon as the sixth measured value is recorded, the "first" (first measured) measured value is automatically removed from the buffer.

With a *short* press of the "**M**" button, the next memory location "r2" is selected and the value contained there is displayed. After reaching the 5th memory location, the first is shown again.

3 Specifications

3.1 Technical Data

Display:	3-line display
Display resolution:	0,1 %
Storage conditions:	+ 5 to + 40 °C - 10 to + 60 °C (short-term)
Operating conditions:	0 to + 50 °C - 10 to + 60 °C (short-term)
Dimensions:	160 x 40 x 30 (L x W x H) mm
Weight:	approx. 159 g

3.2 Prohibited Environmental Conditions

- Condensation, air humidity continuously too high (> 85%) and damp
- Permanent presence of dust and combustible gases, fumes and solutions
- Ambient temperatures continuously too high (> +50 °C)
- Ambient temperatures continuously too low (< 0 °C)

3.3 Measuring Ranges

Measuring ranges:

Damp:	5 % bis 98 %. ($\pm 2\%$ r.F.)
Temperature:	-40 °C bis +80 °C ($\pm 0,3$ °C)

4 Application Notes

On the following pages, you will find information on the various measuring modes of the RF-T 28 BL (Chapters 4.1, 4.2 and 4.3) and on the operation of the device.

4.1 Measuring Air Humidity

4.1.1 Absolute Humidity

The amount of water vapour in g/m^3 in the air is termed absolute humidity. The amount of water vapour cannot exceed a fixed specified amount.

$$\text{Humidity (absolute)} = \frac{\text{mass of water (g)}}{\text{volume of air (m}^3\text{)}}$$

4.1.2 Moisture Saturation

Moisture saturation is the maximum amount of water that can be contained in a certain volume of air. The higher temperature the larger the amount of water that can be held in the air.

$$\text{Humidity (saturation)} = \frac{\text{maximum mass of water (g)}}{\text{volume of air (m}^3\text{)}}$$

4.1.3 Relative Air Humidity

The relative air humidity is the ratio of the actual water vapour content (absolute humidity) to the moisture saturation. The relative humidity is heavily dependent on the temperature.

$$\text{Humidity (relative)} = \frac{\text{humidity (absolute)} \times 100 (\%)}{\text{humidity (saturation)}}$$

4.1.4 Equilibrium Moisture Content (EMC)

The Hydromette BL UNI 10 is able to display relative humidity, air temperature and the equilibrium moisture content of wood simultaneously.

This makes it easier for parquet recliners and interior designers to evaluate whether timber components can be exposed to the existing climate, or whether damage such as cracking, shrinkage or swelling is to be feared.

The equilibrium moisture content is the moisture content that wood will finally reach when it is exposed to a constant climate (i.e. constant humidity and constant temperature) long enough.

4.2 Measuring the Temperature

Handling

The device is only suitable for measuring the air temperature (and the rel. air humidity), not for recording the temperature of solid materials and liquids. For particularly precise measurements, particularly for temperatures under +10°C or above +40°C, or for significant differences between the temperature of the sensor or measuring device and the surrounding atmosphere, the device should be exposed to the surrounding atmosphere of the

measurement location for approx. 10-15 minutes or until the temperature has equalised. The measuring range of -40°C to +80°C only applies to the sensor tip of the electrode (length of the protective/filter cap). The measuring device may only be exposed to temperatures above 50°C for short periods. False measurements can arise from shielding with bodyparts (e.g. hand) as well as blowing or speaking/breathing in the direction of the sensor.

The setting time of the air temperature sensor in moving air is approx. 3 minutes for 90% of the temperature difference.

The air temperature sensor adapts to the surrounding temperature even when stored (not switched on).

4.2.1 Dew Point

The dew point is the temperature at which the air is saturated with water vapour. Condensation occurs below this temperature. The dew point generally lies below the air temperature, except with 100% r.h, where both temperatures are the same.

The dew point is dependent on the air temperature and water vapour partial pressure and equal to the temperature whose saturation pressure is equal to the water vapour partial pressure present. The water vapour partial pressure is calculated as follows:

$$\text{Water vapore pressure} = \frac{\text{rel. humidity} \times \text{sat. water vapour press.}}{100}$$

Further information can be found in the Internet.

4.2.2 Dew Point Dependent on the Air Temperature and the Rel. Humidity for Condensation Calculation

Air temperature °C	Dew point in °C at a relative humidity of:							Moisture saturation = amount of water in g/m ³
	30%	40%	50%	60%	70%	80%	90%	
	°C	°C	°C	°C	°C	°C	°C	
30	10.5	14.9	18.5	21.2	24.2	26.4	28.5	30.4
28	8.7	13.1	16.7	19.5	22.0	24.2	26.2	27.2
26	7.1	11.3	14.9	17.6	19.8	22.3	24.2	24.4
24	5.4	9.5	13.0	15.8	18.2	20.3	22.2	21.8
22	3.6	7.7	11.1	13.9	16.3	18.4	20.3	19.4
20	1.9	6.0	9.9	12.0	14.3	16.5	18.3	17.3
18	0.2	4.2	7.4	10.1	12.4	14.5	16.3	15.4
16	-1.5	2.4	5.6	8.2	10.5	12.5	14.3	13.6
14	-3.3	-0.6	3.8	6.4	8.6	10.6	14.4	12.1
12	-5.0	-1.2	1.9	4.3	6.6	8.5	10.3	10.7
10	-6.7	-2.9	0.1	2.6	4.8	6.7	8.4	9.4
8	-8.5	-4.8	-1.6	0.7	2.9	4.8	6.4	8.3
6	-1.3	-6.6	-3.2	-1.0	0.9	2.8	4.4	7.3
4	-12.0	-8.5	-4.8	-2.7	-0.9	0.8	2.4	6.4
2	-13.7	-10.2	-6.5	-4.3	-2.5	-0.8	0.6	5.6
0	-15.4	-12.0	-8.1	-5.6	-3.8	-2.3	-0.9	4.8

5 Appendix

5.1 General Concluding Remarks

The notes and tables in these operating instructions on permitted or normal humidity conditions in practice and the general definitions of terms have been taken from the specialist literature. No responsibility can therefore be taken by the manufacturer of the measuring device for the correctness of this information.

The conclusions to be drawn from the measurement results are related to the individual conditions and the knowledge from professional experience for each user. In cases of doubt, for example concerning the permitted moisture content in coating or screed substrates when laying floor coverings, it is recommended to contact the manufacturer of the coating or floor covering and to take account of the recommendations of trade organisations.

Guarantee Conditions

Gann Mess- u. Regeltechnik GmbH shall rectify material or manufacturing defects at no cost by repair or replacement of the defective parts at its choice that occur within six months of purchase or one year of dispatch from the factory, whichever period ends first. Neither the replacement nor the repair of a part is grounds for a new guarantee or an extension of the original guarantee.

Batteries and other wearing parts such as cables or filter material are excluded from the guarantee.

When claiming under the guarantee, the device must be sent post-free to Gann Mess- u. Regeltechnik GmbH or the supplier with details of the claim and accompanied by proof of purchase. The guarantee is void if repairs or other manipulations have been carried out by the owner or a third party.

Gann Mess- u. Regeltechnik GmbH accepts no liability for damage or defective functions caused by improper or incorrect handling or storage of the device. Gann Mess- u. Regeltechnik GmbH will on no account accept liability for damage, lost profits, lost usage or other consequential damage that arise from the use of the product or the inability to use it.

-Subject to technical changes-

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