Operating instructions

GANN BlueLINE

HYDROMETTE *BL*

COMPACT RH-T

RH-T *flex*

GANN MESS- U. REGELTECHNIK GMBH
70839 GERLINGEN SCHILLERSTRASSE 63 INTERNET: http://www.gann.de
Verkauf National: TELEFON 07156-4907-0 TELEFAX 07156-4907-40 EMAIL verkauf@gann.de
Verkauf International TELEFON +49 7156-4907-0 TELEFAX +49 7156-4907-48 EMAIL sales@gann.de

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➔ Graphical short operating instructions in the centre ←

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0.1 Publication statement

GANN Mess- u. Regeltechnik GmbH, Gerlingen, Germany. 13.10.2009

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.

- 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!

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

The device was manufactured after May 1, 2010

1 Introduction

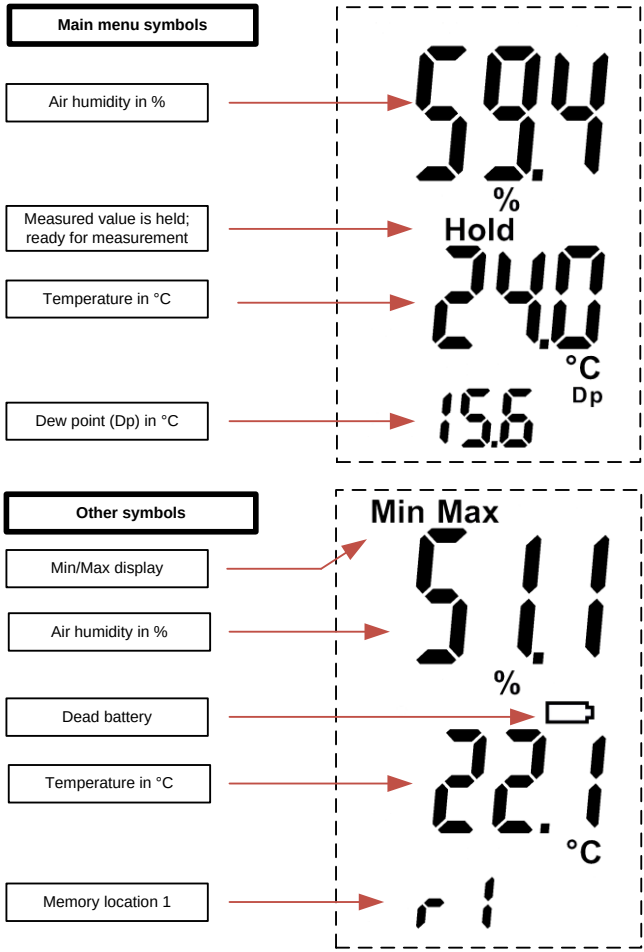
1.1 Description

The **Hydromette BL Compact RH-T** is a precise thermo-hygrometer for quick measurement of relative air humidity and air temperature. Using programmed sorption-isotherms, the weight and mass percentages can be determined for various building and insulation materials, as well as hardwoods and softwoods. Due to the thin sensor tube (5.5 mm diameter), it is eminently suited to moisture analyses, damage evaluation, dehumidifying buildings and checking the readiness of floor and wall coatings. Additional features include single-handed operation, integrated measurement probe and a 3-line LCD screen for the simultaneous display of air humidity, air temperature and dew point.

The **Hydromette BL Compact RH-T flex** T model has a flexible sensor tube (6.5 mm diameter, swan neck) and is therefore excellent for measurements of points that are difficult to access.

1.2 Device layout and button assignment

1.3 Display symbols



2 Basic functions

2.1 Switching on the device/Ready mode

The device is switched on by pressing the **"on"** button .

After the start phase, the main menu appears in the "rh" measuring mode (see also section 2.3.2)

Last value measured in %

"Hold" symbol

Last measured temp. in °C

Calculated dew point (Dp) in °C

Figure 2-1:
main menu/measuring mode

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

See also Chapter 2.2

2.2 Display in measuring mode

Measured value in %

"Hold" symbol signals readiness to make a measurement

Measured temperature in °C

Calculated dew point (Dp) in °C

Figure 2-2: 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.

2.3 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)

2.3.1 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.

2.3.2 Measuring mode selection menu (ring menu)

In this menu, the various modes for the BL Compact RH-T 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 RH-T has 7 different setting modes, which are run through in the following increasing sequence:

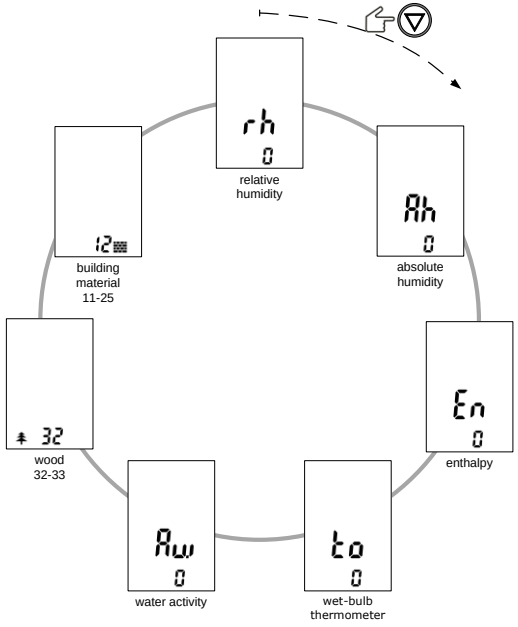
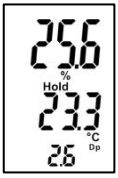


Figure 2-3: measuring mode selection menu

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/m³ i.e. grammes of water in 1m³ of air)*

Measuring mode "En" (enthalpy):
the *relative humidity (in %)* and the *enthalpy (in kJ/k)* are displayed.

Measuring mode "to" (wet-bulb thermometer):
the *temperature (in °C)* and the *wet-bulb temperature (in °C)* are displayed

Measuring mode "Aw" (water activity):
the *temperature (in °C)* and the *water activity (non-dimensional)* are displayed

Measuring mode "Wood":
the *wood moisture (in %)*, the *temperature (in °C)* and the *selected wood type* are displayed

For information on the wood types, see Chapter 5.1

Measuring mode "Building material":
the *material moisture (in weight %)*, the *temperature (in °C)* and the *selected building material* are displayed

For information on the building material types, see Chapter 5.1

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

2.3.3 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.**

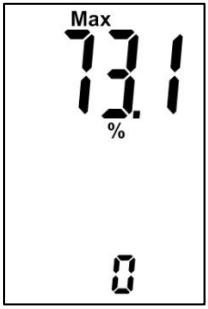


Figure 2-4: maximum value 1

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.

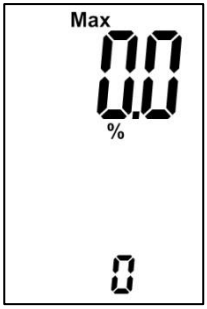


Figure 2-5: deleted max. value

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.

2.3.4 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.**

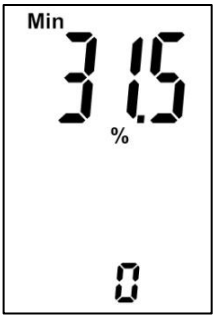


Figure 2-6: minimum value menu

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.

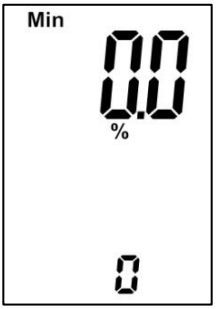


Figure 2-7: deleted min. value

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.

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

2.3.5 Saved menu

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

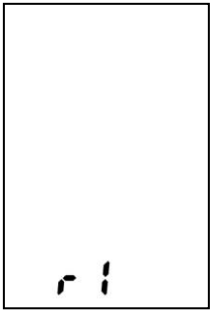


Figure 2-8:
memory location "r1"

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.

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 memory. As soon as the sixth measured value is recorded, the "first" (first measured) measured value is automatically removed from the memory.

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.

The menu can be exited with the **up** and **down** buttons.

2.4 Other functions

2.4.1 Automatic switch-off

If no button is pressed within approx. 40 seconds, the device switches itself off automatically. The current values are retained and are displayed again after it is switched back on.

2.4.2 Battery monitoring

If the battery symbol appears in the display, the battery is dead and must be renewed

A list of battery types that can be used can be found in the "Technical data" chapter.

3 Specifications

3.1 Technical data

Display:	3-line display
Display resolution:	0.1 %
Response time:	< 2 s
Storage conditions:	+ 5 to + 40 °C
	- 10 to + 60 °C (short-term)
Operating conditions:	0 to + 50 °C
	- 10 to + 60 °C (short-term)
Power supply:	9 V block battery
Approved types:	type 6LR61 or type 6F22
Dimensions:	180 x 50 x 30 (L x W x H) mm
Weight:	approx. 320 g

3.2 Prohibited environmental conditions

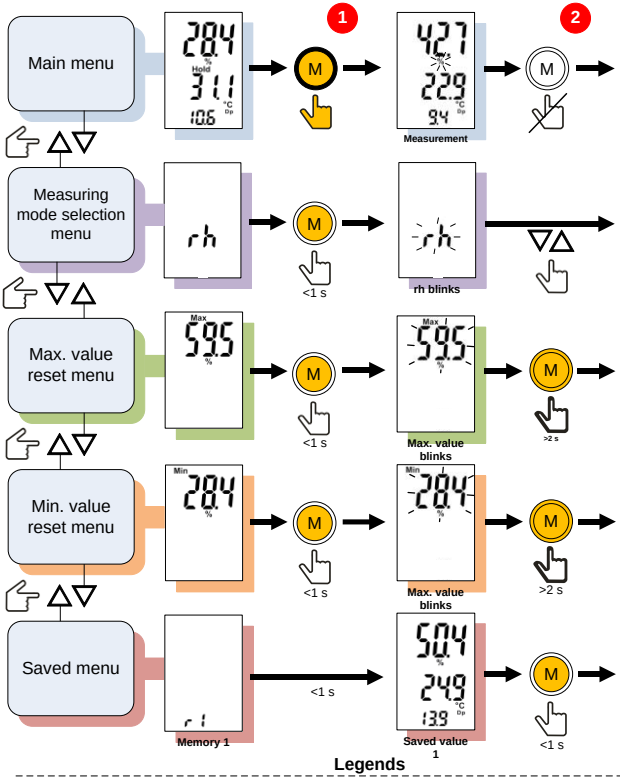
- Condensation, air humidity continuously too high (> 85 %) and damp
- Permanent presence of dust and combustible gases, fumes and solutions
- Environmental temperatures continuously too high (> +50 °C)
- Environmental temperatures continuously too low (< 0 °C)

3.3 Measuring ranges

Measuring ranges:

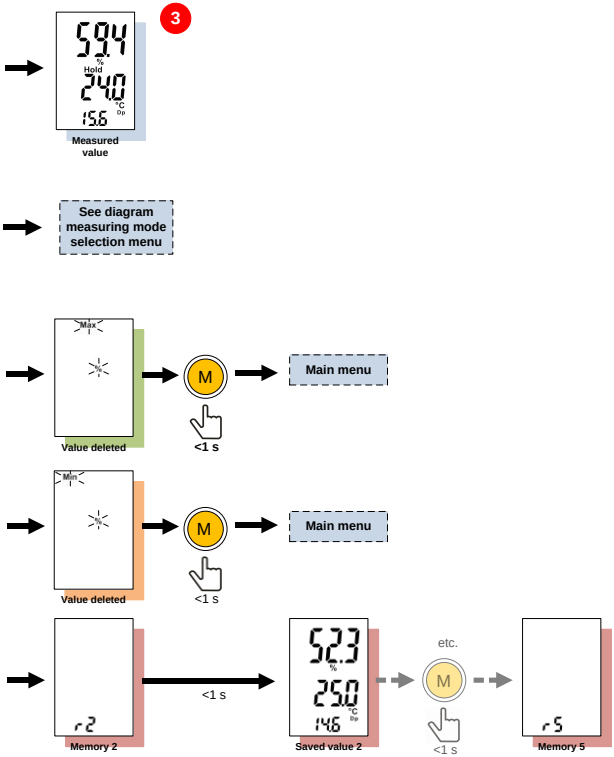
Damp:	5 % to 98 %
Temperature:	-40 °C to +80 °C

Graphical short operating instructions



Graphical short operating instructions

Softwareversion: V1.03



Legends

Press up or down button

Up or down for menu selection

Route to simple measurement:

Switch on device – main menu is displayed 1

Hold measurement button pressed as long as wanted to carry out a measurement 2

Release measurement button. Measured value is held ("Hold" appears in display) 3

4 Application instructions

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

4.1 Measuring air humidity

4.1.1 Absolute humidity

The amount of water vapour in g/m³ in the air is termed absolute humidity. The amount of water vapour cannot exceed a fixed specified amount.

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

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.

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

4.1.3 Relative air humidity

The relative air humidity is the relationship between the actual water vapour content (absolute humidity) and the moisture saturation. The relative humidity is heavily dependent on the temperature.

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

4.1.4 Water activity (AW)

Water activity is defined as the relative humidity that has to prevail in the surrounding medium to prevent an exchange of water between air and material. In practice, it corresponds roughly to the equilibrium moisture content of a material, but is not given as a percentage value but as a value between 0 and 1 aw.

The water activity is a measure of the degree of freedom of the free water (of various types) bound in a material.

The aw value is an important measure concerning the shelf life of foodstuffs and influences the incidence of microorganisms that have differing requirements for freely available water. With a lack of free water, growth processes are slowed or prevented, whereas others are accelerated. Therefore, the aw value is an important measure in the chemical and food industries.

4.1.5 Wet-bulb temperature

The **wet-bulb temperature** is the lowest temperature that can be achieved with evaporative cooling.

The release of water from the damp surface is in balance with the ability of the surrounding atmosphere to absorb water and thus saturates the surrounding air with water vapour. Because of the evaporative chill, the wet-bulb temperature is dependent on the relative air humidity and lies under the air temperature. The temperature difference is the larger, the drier the surrounding air is. Using the temperature difference, the relative humidity can thus be determined.

The wet-bulb temperature (in the drawing (**T2**)) is determined with a psychrometric measurement with a thermometer provided with a damp material cover.

The wet-bulb temperature is mainly of interest where large amounts of liquids evaporate, such as in wood drying machinery.

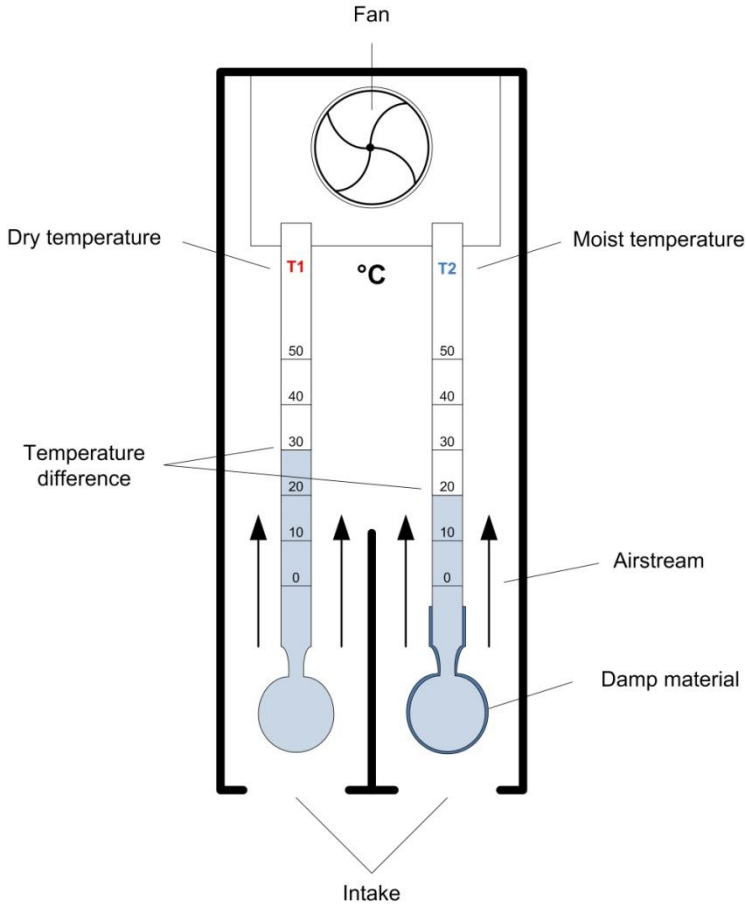


Figure 4-1: aspiration psychrometer

4.1.6 Enthalpy

Enthalpy (En) is a measure of the energy content of air-water vapour mixtures, in kJ per kg.

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 body parts (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:

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

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	Dew point in °C at a relative humidity of:							
°C	30%	40%	50%	60%	70%	80%	90%	Moisture saturation = amount of water in g/m³
	°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	-10.3	-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

4.3 Handling the Hydromette

The Hydromette BL Compact RH-T is mainly used for measuring the relative air humidity in bulk goods and solid materials (e.g. masonry, concrete, etc.).

To do so, hold the Hydromette at the measuring location in the air, or insert into the building material, and commence the measurement. For particularly precise measurements, particularly for temperatures under interior temperatures (20-25 °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 sensor adapts to the surrounding temperature even when not switched on.

Condensation occurs on all parts in a room that are cooler than the dew point.

No adjustment of the sensor is necessary.

Response time of the air humidity sensor

The response time is delayed by the filter material in the metal tube.

The response time of the air humidity sensor in slightly moving air is approx. 5 minutes for 90 % of the humidity difference with a surrounding temperature of 20 to 25 °C, and approx. 15 minutes for 95 % of the humidity difference

By moving the device (ventilating the sensor), the response time can be reduced in stationary air or with very little air movement.

4.4 Sorption isotherms

Sorption isotherms describe the equilibrium state of the sorption of a material on a surface at a constant temperature. In this equilibrium state, the relationship between water content and equilibrium moisture content of the surface (i.e. of the material) can be described and represented by a curve. Each moisture value can be allocated to an appropriate water content of the material using this curve.

Different materials also have different sorption behaviour depending on the specific properties of the material.

As these processes are extremely complex, the sorption curves are obtained empirically, i.e. they relate to practical data and experience. For each material, its own characteristic curve must be obtained experimentally.

Measuring the relative air humidity/water activity in building materials

This method is mainly used for measurements at depth in old building structures where measurements using the resistance measuring method (sandstone, quarry stone, damp walls with blooming, etc.) do not provide reproducible results. For this, the Blue Line Compact RH-T devices with tube lengths of 160 and 350 mm are available. For measurements over a long period at multiple points or at different depths, drilled holes should be secured and closed.

The method for measuring the relative air humidity/equilibrium moisture content in screeds has been used for a long time in Great Britain and the Scandinavian

countries. Compared to the non-destructive measurement or the resistance measurement, it is, however, more time-consuming and requires suitable drilled holes. However, it provides very reliable results when an equilibrium moisture content is sought. This method also increases the reliability where there is insufficient information on the composition of the screed.

Handling

For the measurement, a hole with a diameter of 7 mm or 8 mm (flex) mm and a depth of at least 40 mm is drilled. The drilling depth depends on the required measurement depth or screed thickness. Before making the measurement in the hole, it should be carefully cleaned of drilling dust and blown out. There must be no free water in the hole. To prevent an exchange of air in the hole, it should be sealed.

The equilibrium moisture content in the hole is indicated after approx. 30 minutes, given temperature equilibrium (same temperature in material being measured and the sensor tube sensor).

Damage to the sensor

The sensor can be made irreparable by various mechanical and environmental influences. These include in particular:

- direct contact of the sensor with the fingers

- direct contact with solid or sticky materials or objects

- measurement in atmospheres holding solutions, oil vapours or other high levels of contaminants

Measurement errors

Measurements under 20 % r.h. and above 80 % r.h. should not be carried out over a long period where possible (continuous measurements). Other false measurements can arise from shielding with body parts (e.g. hand) as well as blowing or speaking/breathing in the direction of the sensor.

Warning:

The sensor is not designed for continuous measurements at above 80 % r.h. (longer than approx. 36 hours at once without regeneration at 30-40 % r.h. in the same period)

4.4.1 Building and insulation materials

4.4.1.1 Equilibrium moisture content/household humidity

The equilibrium values generally mentioned refer to a temperature of 20 °C and 65 % relative humidity. These values are often referred to as "household humidity" or as "air-dry". However, these should not be confused with the values at which the material can be handled and processed.

Flooring and coatings must be viewed and evaluated in conjunction with the respective permeability of the material used. For example, when laying a PVC covering, the later average equilibrium moisture content is taken as the basis. Please note here the recommendations provided by trade associations and covering manufacturers.

When evaluating wall surfaces, the respective long-term environmental conditions must also be considered. The lime mortar plaster in an old vaulted cellar can easily have a moisture content of 2.6 percent by weight, whereas the gypsum plaster in a centrally heated room would have to be considered as too damp with a moisture content of 1 percent by weight.

When evaluating the moisture in building material, the surrounding climate is the primary consideration. All materials are subject to continuously changing temperatures and air humidity. The influence of the material moisture depends significantly on the heat conductibility, the thermal capacity, the resistance to water vapour diffusion and the hygroscopic properties of the material.

The "expected moisture content" of a material is the moisture level that corresponds to the average of the equilibrium moisture content under changing climatic conditions that it is continuously exposed to. The air humidity values in living areas in central Europe in the summer are approx. 45 - 65 % rel. humidity and in winter approx. 30 - 45 % rel. humidity. Increased damage occurs in centrally heated rooms in winter as a result of these variations.

It is not possible to lay down generally applicable values. Much more it always requires the technical and expert experience to correctly evaluate the measured values.

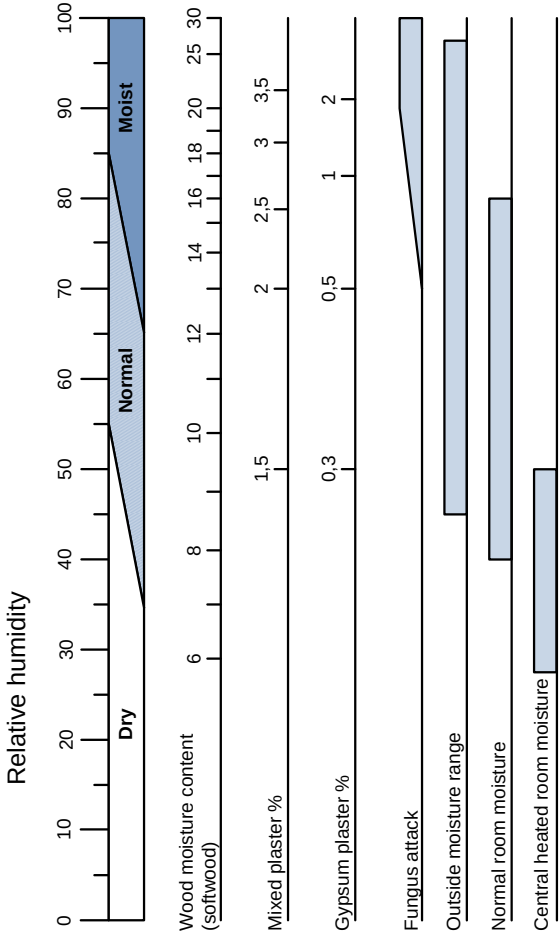
With organic building materials, the water content is generally given in percent by weight, as the hygroscopic water content of the respective material is to a large extent proportional to the density, i.e. for all densities of a building material, when giving the moisture content in percent by weight the same value is displayed. In percent by volume, with double the density the display will be twice as high.

For materials not included in the BL Compact RH-T, there are currently no sorption isotherms confirmed or checked by us

4.4.1.2 Equilibrium moisture values in percent by weight

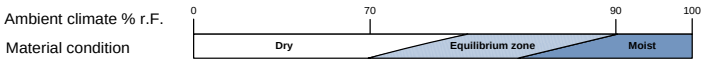
Building materials	at 20 °C, approx. 50 % RH	at 20 °C, approx. 65 % RH	at 20 °C, approx. 90 % RH
Cement screed (sealed), applied rel. dry)	1,5	1,7 - 1,8	3,1
Cement screed (unsealed, applied rel. wet)	2,0	2,4 - 2,6	3,8
Cement mortar 1: 3	1,5	1,7 - 1,8	3,2
Lime mortar 1: 3	1,6	1,8 - 1,9	3,4
Gypsum plaster, plasterboard	0,5	0,6 - 0,7	1,0
Gypsum screed	0,6	0,8 - 0,9	1,3
Magnesite screed	7,0	8,3 - 8,7	13,0
Xylolite in accordance with DIN	11,0	13,5 - 14,5	16,7
Gas concrete (Hebel)	8,5	11,0 - 12,0	18,0
Elastizell screed	1,6	1,8 - 2,2	2,8
Anhydrite screed	0,5	0,6 - 0,7	0,9
Concrete (200 kg cement/m3 sand)	1,4	1,6 - 1,7	3,0
Concrete (350 kg cement/m3 sand)	1,6	1,8 - 2,0	3,4
Concrete (500 kg cement/m3 sand)	1,8	2,0 - 2,2	3,8

4.4.1.3 Comparison graphic of air humidity - material moisture



Notes on graphic in section 4.4.1.3:

The areas shown in the graphic mean:



Light area: dry

Equilibrium moisture content reached.

Shaded area: adjustment area

Caution! Coatings or adhesives without diffusion properties should not yet be processed. Contact the respective manufacturer.

Dark area: damp

Handling and processing at very high risk!

4.4.2 Wood

Equilibrium wood moisture content – equilibrium moisture content

If wood is stored in a particular climate for a long period, it takes up the moisture matching this climate, which is termed equilibrium moisture content or equilibrium wood moisture content.

On reaching the equilibrium moisture content, the wood no longer loses moisture if the surrounding conditions remain the same and also does not take up any moisture.

Below are some equilibrium moisture content values that are reached with wood in the conditions given:

Equilibrium wood moisture content					
	Air temperature in °C				
	10 °C	**15** °C	**20** °C	**25** °C	**30** °C
Relative air humidity	Wood moisture content				
20%	4,70%	4,70%	4,60%	4,40%	4,30%
30%	6,30%	6,20%	6,10%	6,00%	5,90%
40%	7,90%	7,80%	7,70%	7,50%	7,50%
50%	9,40%	9,30%	9,20%	9,00%	9,00%
60%	11,10%	11,00%	10,80%	10,60%	10,50%
70%	13,30%	13,20%	13,00%	12,80%	12,60%
80%	16,20%	16,30%	16,00%	15,80%	15,60%
90%	21,20%	21,20%	20,60%	20,30%	20,10%

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5 Appendix

5.1 Material table

Material identifier Code	Description
11	Cement screed
12	Anhydrite screed
13	Concrete
14	Cement mortar
17	Gypsum plaster
19	Lime sand brick
20	Lime cement mortar
22	Insulation wood fibre insulating board
23	Mineral wool insulation
25	Brick
32	Hardwood/beech
33	Softwood/pine

5.2 References

We would like to specifically draw your attention to the fact that the literature mentioned is only an extract and is not complete. The individual titles must also be viewed with regard to the respective usage case.

Trocknungstechnik, Erster Band, Springer-Verlag, Berlin, ISBN: 3-540-08280-8

Wassertransport durch Diffusion in Feststoffen, H. Klopfer, Bauverlag GmbH, Wiesbaden, ISBN: 3-7625-0383-4

Schadensanalysen, H. Fischer, expert Verlag, ISBN: 3-8169-0928-0

Schall, Wärme, Feuchte, Gösele/Schüle, Bauverlag GmbH, ISBN: 3-7625-2732-6

5.3 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.

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-Subject to technical changes-