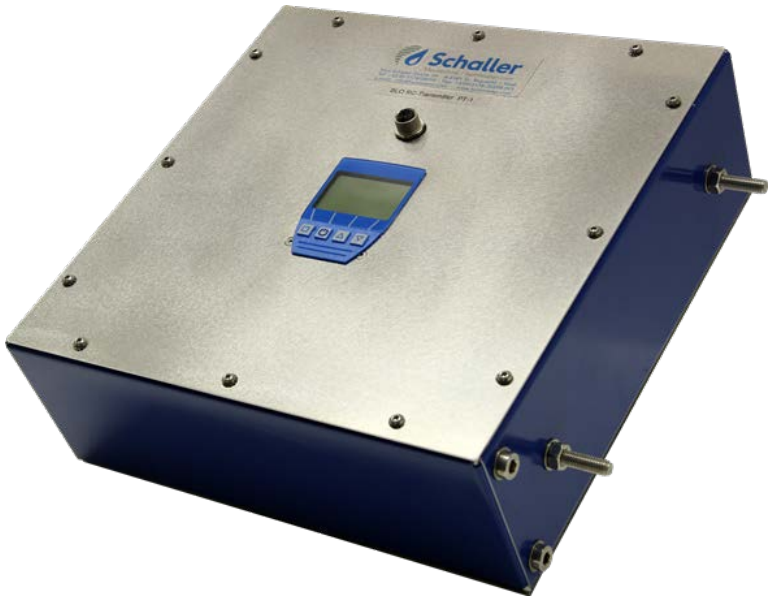
GRUBATEC
MESS- UND REGELTECHNIK

humimeter.com®
by Schaller Messtechnik

Instruction manual



BRC Moisture Transmitter for Water Content Determination of Dry Wood Chips

Version 1.1

1. General

The BRC moisture transmitter enables online measurement of the water content (optionally water content and temperature) of wood chips. For this purpose, a sensor is installed in the material flow. This is a fully calibrated system, the measured values are calculated by the transmitter unit. The water content (optionally also the temperature) is output via 4 to 20mA analogue output.
This sensor has been specially developed for the moisture measurement of dry wood chips.

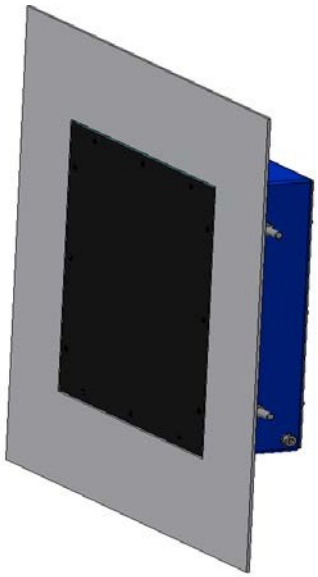
2. Installation instructions

Prerequisite:
During the measurement, it must be ensured that the black sensor surface of the universal moisture sensor is in constant contact with the product (wood chips). The sensor penetrates the entire material to be measured up to a depth of 300mm. For a correct measurement result, there must always be the same amount of material in the measuring field of the sensor. There must be no other materials in this area.

Possible installation locations:

• Bunker:
Installation in the side wall

• Moving floor:
Installation in the side wall



Measuring principle:
The capacitive measurement method exploits the different dielectric constants (permeability of a material to electric fields) of dry, non-conductive substances (approx. 2-10) and water (approx. 80). The wetter the material to be measured, the higher its dielectric constant. If there is material with a higher water content in the scattered field of the sensor, this results in an increased capacity .
The Evaluation electronics calculates this Capacitance Value into weight percentages and shows them on the display as water content.

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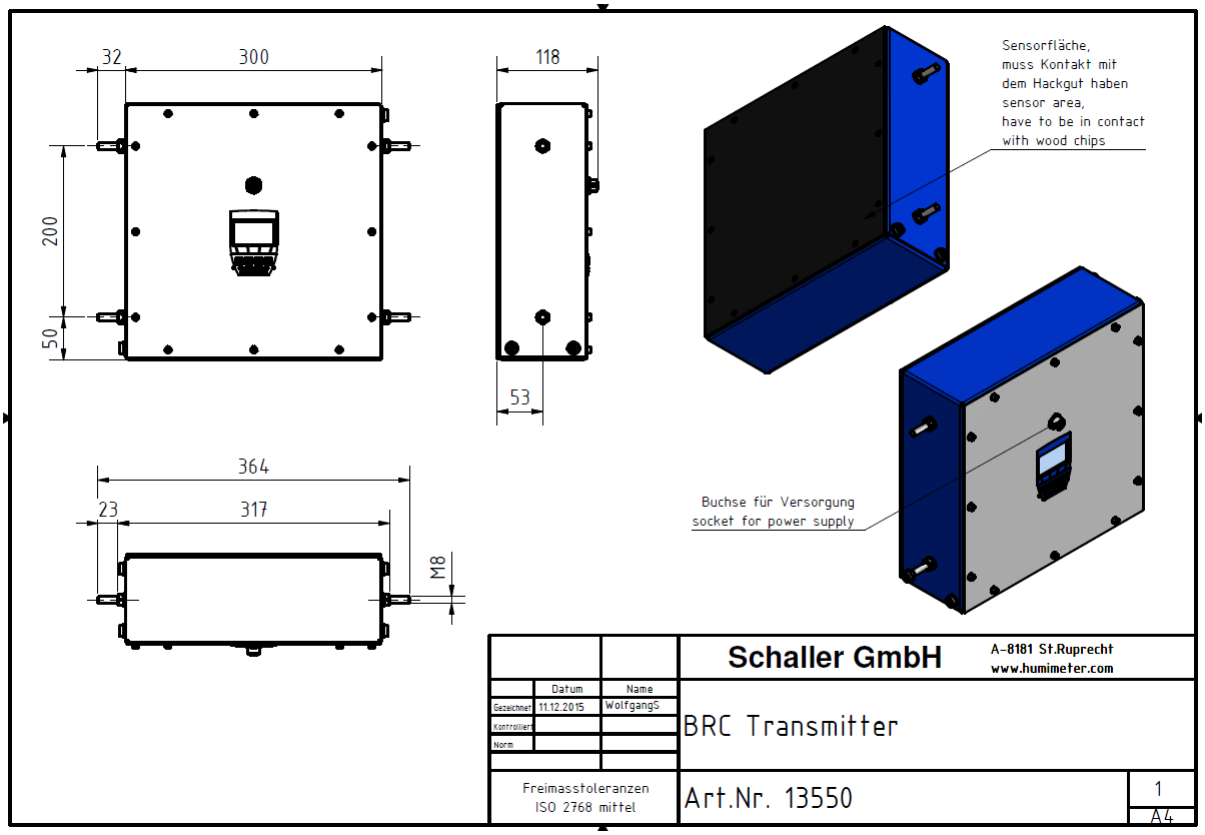
3. Drawing

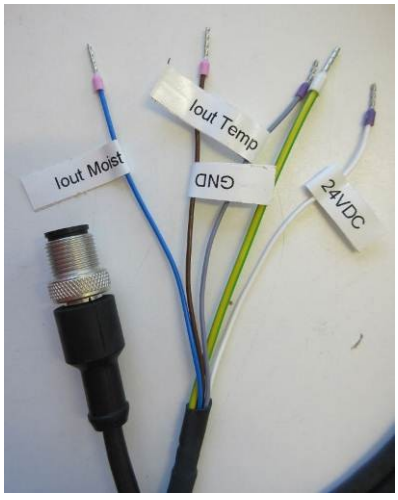


4. Electrical connection

The wood chip moisture transmitter must be supplied with 24 VDC (15 to 29 VDC). The measurement result is delivered via an analog 4 to 20mA current output. The scope of delivery includes a plug with open cable ends for the power supply and the analog output.

Connection Assignment Connection Cable:

White 24VDCSupply(15to29VDC)Brown GroundSupply&
AnalogOutputYellowGreen Cable shield
Blue Analog output water content 4 to 20mA
Grey *Optional analog output*
temperature 4 to 20mA



To connect to the customer's evaluation unit (PLC), a shielded cable with a wire of at least 0.25mm² must be used.
The shielding of the cables must be grounded at the evaluation unit (PLC)!

5. Analog Output Scaling

The water content is continuously transmitted via the 4 to 20mA analog output.
The temperature on the analog output is optionally available!

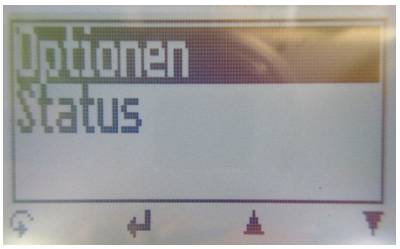
Signal	Type	Minimum Value	Maximum Value
Water content	**4 to 20mA**	**4mA ≙ 0%**	**20mA ≙ 30%**
Temperature	*4 to 20mA*	*4mA ≙ -10°C*	*20mA ≙ 70°C*

6. Characteristic curves

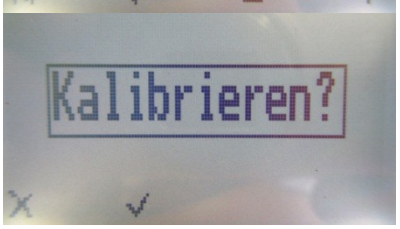
Name	Description	Measuring range
1 -- Wood chips	Very high-density wood chips	2 - 30%
2 - Wood chips	High-density wood chips	2 - 30%
3 wood chips	**Wood chips standard**	**2 - 30%**
4 + wood chips	Low-density wood chips	2 - 30%
5 ++ Wood chips	Very low density wood chips	2 - 30%
Reference	*Only for Schaller GmbH*	

7. Adjust

After installation, as well as every four weeks during operation, the humidity transmitter must be adjusted. To do this, it must be switched on for at least five minutes beforehand. **During this process, there must be NO material in the area of the black sensor surface!** The temperature of the sensor should be similar to the measurement.



Press the left button (↶) twice to get to the main menu.
There is then with the arrow keys (▲ or ▼) and confirm it with the second button from the left (⏻).
Now the arrow keys (▲ or ▼) the menu item "Adjust" and confirm with the second button from the left (⏻).
The prompt "Calibrate" that appears is to be confirmed with the second button from the left (✓).



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8. Disclaimer

As the manufacturer, we are not liable for any incorrect measurements and any damage resulting from them. Since this rapid measurement method is a measuring principle that can be influenced by product- and application-specific boundary conditions, it is advisable to carry out a plausibility check of the measured values. There is a serial number and a warranty seal in each device. If this is broken, no warranty claims can be asserted. In the event of a defect, please contact Schaller GmbH or your dealer.

9. Technical data

Measuring range	2 to 30 % water content
Material temperature	0 to +50 °C
Ambient temperature	-10 to +60 °C (non-condensing)
	IP52
Supplies	24 VDC (15 - 29 VDC)
Current consumption	90mA & analog output (4-20mA)
Dimensions	364x300x118mm
Weight	3.7kg

10. Care instructions

- Please note that the humidity sensors are sensitive measuring instruments and therefore handle them WITH CAUTION.
- If there are problems with the measurement, please restart (interrupt the power supply) first.
- Clean the sensor regularly from dirt.
- The sensor cable must not be bent strongly. We recommend installing protection for this. If the cable is bent too often, it could cause damage to the sensor.
- An incorrect connection of the sensor can destroy it! In this case, no warranty claims can be made.

11. Common causes of incorrect measurements

- If there is no material above the sensor, the air value is displayed (2.0%)
- The sensor surface is not completely surrounded by wood chips
- Condensation of water droplets on the measuring surface of the sensor
- The temperature (material or environment) is outside the specified range. In general, due to the higher compensation factor, the accuracy of the measurement decreases with increasing temperature
- Unequal contact pressure of the material on the sensor
- The cables must not be located in the area of electromagnetic interference fields
- The sensor connector is not connected properly
- Do not open the sensor on your own, but contact your local dealer or Schaller GmbH directly in order to be able to clarify possible errors in advance.