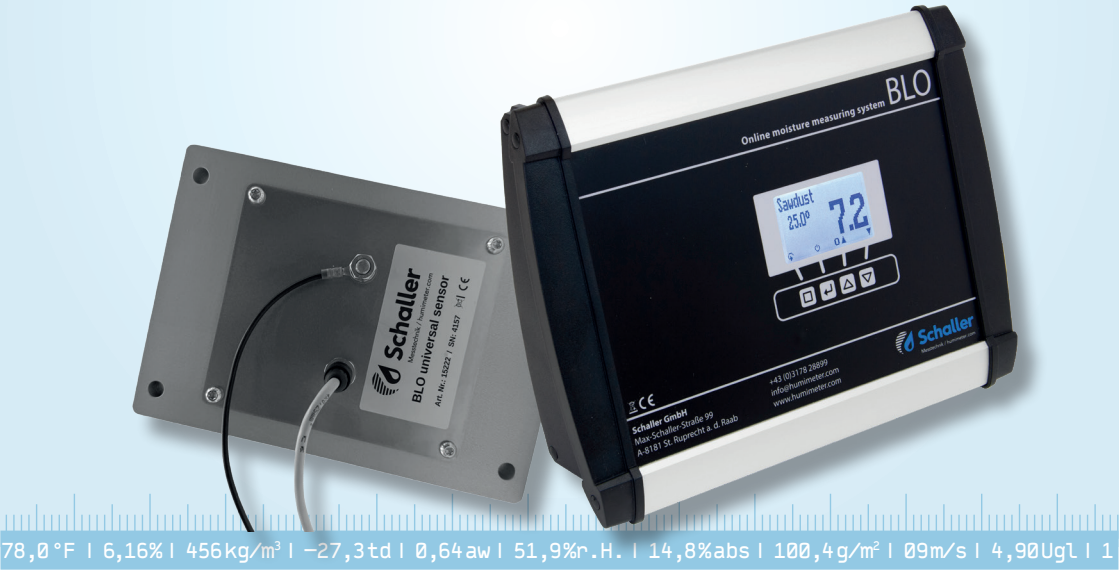
Schaller

Moisture meter

Operating manual

BLO online analysing device with universal sensor

for measuring the moisture content of wood chips, pellets, sawdust and other materials



78,0°F | 6,16% | 456kg/m³ | -27,3td | 0,64aw | 51,9%r.H. | 14,8%abs | 100,4g/m² | 09m/s | 4,90Ugl | 1

Version 3.2

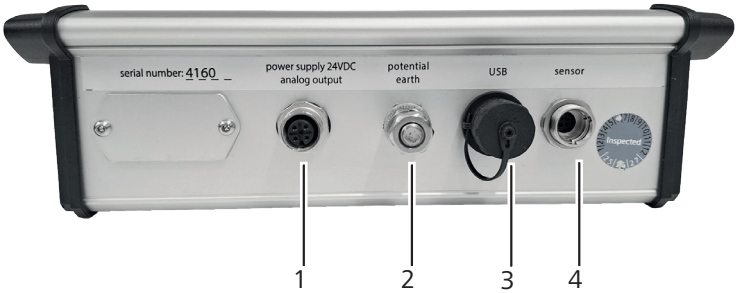
Always read this operating manual before using the BLO!

Your BLO device at a glance

The main unit

No.	Name
1	Aluminium housing for electronics
2	Display
3	Keypad

Overview plugs

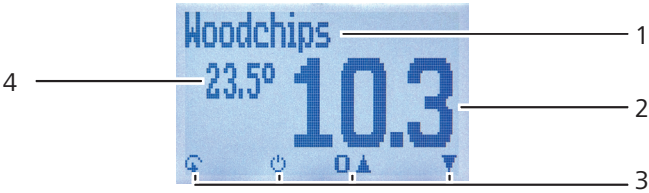


No.	Name
1	Power input 24 VDC & analogue output
2	Ground screw
3	USB Mini-B port for software updates
4	Push-Pull sensor plug

Overview plugs option 100 - 240 VAC art.no. 12215

No.	Name
1	Power input 100 - 240 VAC
2	Analogue output
3	Ground screw
4	USB Mini-B port for software updates
5	Push-Pull sensor plug

The display



No.	Name
1	Calibration curve
2	Moisture content in % ("6.2 How moisture content is defined")
3	Display symbols
4	Temperature display

The display symbols

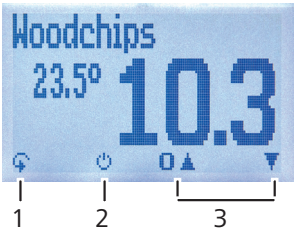
Symbol	Name
	Enter
	Up
	Down
	Back
0..9	Enter numbers
A..Z	Enter letters
	Continue / go right

Symbol	Name
	Left
	Yes
	No
	Change input level
OK	OK
	Change menu

The menus

The device has two different menus: product selection and main menu:

Product selection menu



No.	Name
1	Change menu
2	Device on/off
3	For changing the calibration curve

Main menu

The main menu comprises the following menu items:

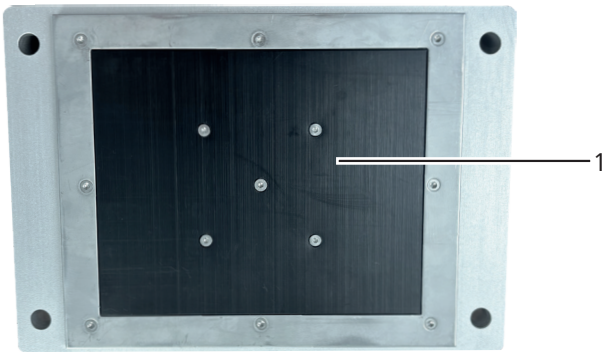
- **Options:**
  Language, Unlock, °C/°F, Averaging, BL On Time, Materialcalibration, Password, Reset
- **Status**

Your universal sensor art.no.: 15222

Back side of the universal sensor

No.	Name
1	Ground screw
2	Push-Pull sensor plug

Front side of the universal sensor



No.	Name
1	Sensor surfaces

Table of contents

Your BLO device at a glance 2

The main unit 2

Overview plugs 3

Overview plugs option 100 - 240 VAC art.no. 12215 3

The display 4

The display symbols 4

The menus 5

Your universal sensor art.no.: 15222 6

Back side of the universal sensor 6

Front side of the universal sensor 6

1. Introduction 9

1.1 Information about this operating manual 9

1.2 Limitation of liability 9

1.3 Symbols used in this manual 10

1.4 Customer service 10

2. For your safety 11

2.1 Proper use 11

2.2 Improper use 11

2.3 User qualifications 11

2.4 General safety information 11

2.5 Warranty 12

3. On receipt of your device 12

3.1 Taking the device out of its packaging 12

3.2 Making sure that all of the components have been included 12

3.2.1 Scope of supply 12

4. Installation of the wood chips sensor 13

4.1 Laying of the supply line or transmission line 13

4.2 Mounting the sensor 13

4.3 Measuring principle 13

4.4 Mounting the analysing device 14

4.5 Connecting the sensor cable 14

4.6 Disconnecting the sensor cable 14

4.7 Pin assignment 15

4.8 Wiring diagram 16
4.9 Wiring diagram option 100 - 240 VAC art.no. 12215 16
5. Using the device - Basics 17
5.1 Selecting the calibration curve 17
5.2 Taking a measurement 17
6. Calibration curves 18
6.1 Selection of calibration curve for wood chips 19
6.2 How moisture content is defined 19
7. Checking the device's status 20
8. Configuring the device 20
8.1 Selecting a language 20
8.2 Activating options 21
8.3 Deactivating options 22
8.4 Selecting °C/°F 22
8.5 Setting the averaging time 22
8.6 Configuring the display illumination time 23
8.7 Configuring the material calibration function 23
8.8 Changing the password 23
8.9 Resetting the device to its factory settings 24
9. Cleaning and maintenance 25
9.1 Care instructions 25
9.2 Cleaning the device 25
9.3 Adjusting the moisture transmitter 26
9.4 Replacing the protective plate 27
10. Faults 28
11. Repair 29
12. Storage and disposal 30
12.1 Storing the device 30
12.2 Disposing of the device 30
13. Device information 31
13.1 EC declaration of comformity 31
13.2 Technical data 35
13.3 Technical drawing universal sensor 36
14. Notes 37

1. Introduction

1.1 Information about this operating manual

This operating manual is designed to enable you to use the BLO safely and effectively. It is part of the device, has to be stored nearby and must be easily accessible to users at all times.

All users are required to carefully read and make sure that they have understood this operating manual before using the BLO. All of the safety and operating instructions detailed in this manual have to be observed to ensure the safety of the device.

1.2 Limitation of liability

All of the information and instructions provided in this operating manual have been compiled on the basis of the current standards and regulations, the state of the art, and the extensive expertise and experience of Schaller Messtechnik GmbH.

Schaller Messtechnik GmbH does not accept any liability for damage associated with the following, which also voids the warranty:

- Non-observance of this operating manual
- Improper use
- Inadequately qualified users
- Unauthorised modifications
- Technical changes
- Use of unapproved spare parts

This fast measuring procedure can be affected by a range of different factors. For this reason, we recommend periodically checking the device's measurements with a standardised oven-drying method.

We, as the manufacturer, do not accept any liability for any incorrect measurements and associated consequential damage.

1.3 Symbols used in this manual

All of the safety information provided in this manual is shown with a corresponding symbol.

ATTENTION

It is essential to observe this warning. Non-compliance can lead to damage to property or equipment.

Information

This symbol indicates important information that enables users to use the device more efficiently and cost-effectively.

1.4 Customer service

For technical advice, please contact our customer service department at:

Schaller Messtechnik GmbH
Max-Schaller-Straße 99
A - 8181 St.Ruprecht an der Raab

Telephone: +43 (0)3178 28899
Fax: +43 (0)3178 28899 - 901

E-Mail: info@humimeter.com
Internet: www.humimeter.com

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2. For your safety

The device complies with the following European directives:

- Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)
- Electromagnetic compatibility (EMC)

The device corresponds to state-of-the-art technology. However, it is still associated with a number of residual hazards.

These hazards can be avoided through strict observance of our safety information.

2.1 Proper use

- Online measurement of the water content and temperature of wood chips, pellets, sawdust and other materials by installation of a sensor in the material flow
- Fully calibrated system with calculation of the measuring value by the transmitter unit

2.2 Improper use

- The device must not be used in ATEX.
- The installation location must be chosen in such a way that it is ensured that no condensation occurs in the sensor!

2.3 User qualifications

The device must only be operated by people who can be expected to reliably take the measurements. The device must not be operated by people whose reaction times may be slowed due to, e.g. the use of drugs, alcohol or medication.

All persons using this device must have read, understood and follow the instructions provided in the operating manual.

2.4 General safety information

The following safety information has to be observed at all times to avoid damage to objects and injury to people:

- In case of damages or loose parts on the device, contact Schaller Messtechnik GmbH or your dealer.

All of the device's technical features have been inspected and tested before delivery. Every device has a serial number. Do not remove the tag with the serial number.

2.5 Warranty

The warranty does not apply to:

- Damage resulting from non-observance of the operating manual
- Damage resulting from third-party interventions
- Products that have been used improperly or modified without authorisation
- Products with missing or damaged warranty seals
- Damage resulting from force majeure, natural disasters, etc.
- Damage from improper cleaning

3. On receipt of your device

3.1 Taking the device out of its packaging

- Take the device out of its packaging.
- Next, make sure that it is not damaged and that no parts are missing.

3.2 Making sure that all of the components have been included

Make sure that all of the components have been included by checking the package contents against the following list:

3.2.1 Scope of supply

- BLO analysing device
- Universal sensor
- Connecting cable of 1.9 m length
- Push-pull sensor cable with a length of 5 metres
- Ground cable with 5 metre length
- Operating manual

Optional accessories:

- 100 - 240 VAC power supply
- Ethernet interface

4. Installation of the wood chips sensor

4.1 Laying of the supply line or transmission line

- The cable must not be laid in the area of interference fields.
- Do not operate the sensor in the area of electromagnetic interference fields.
- The cable must not be bent excessively.
- The permissible cross-sections for the installation must be observed.
- The cable length must be kept as short as possible.

» If an extension of the cable is required, the cross-section of the extension must not be below 0.25 mm^2.

4.2 Mounting the sensor

- During the measurement a continuous contact between the white sensor surfaces and the material being measured has to be ensured.
- For a correct measurement result, a constant amount of material in the measuring field of the sensor is essential.
- No metal or other materials may be present within the sensor's measurement range (200 mm).
- Mount the sensor on the four drilled holes (ø 9.0 mm) in the sensor block.

Possible mounting locations:

- Bunker

» Installation at the side wall

- Screw conveyor

» Installation at the bottom of the trough

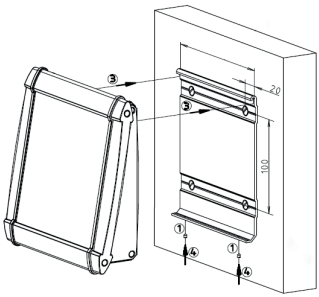
» There must be no coils directly above the sensor.

4.3 Measuring principle

The capacitive measuring principle utilises the different dielectric coefficient (electric field permeability of a material) of dry, nonconductive material (approx. 2-10) and water (approx. 80). The wetter the material, the higher is its dielectric coefficient.

Material with higher water content in the stray field of the sensor is reflected in a higher capacity. The evaluation electronics converts this capacity value into weight percent and shows the water content on the display.

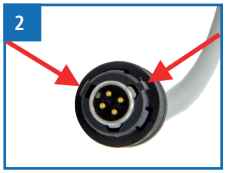
4.4 Mounting the analysing device



1. Pre-mount the setscrews.
2. Mount the wall bracket using 4 countersunk screws (ø 5.0 mm).
3. Place the analysing device into the wall bracket.
4. Fix the analysing device to the wall bracket using the pre-assembled setscrews.

Note: The evaluation unit and the sensor must have the same serial number!

4.5 Connecting the sensor cable

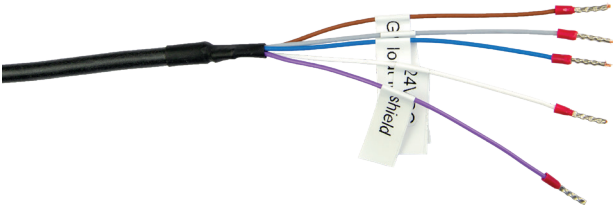


- The sensor cable has a Push-Pull plug.
- » To connect the plug, simply press it onto the socket (figure 1).
- » Pay attention to the elevations in the plug and their correct positioning (figure 2).
- After connecting the sensor cable, connect the evaluation electronics and the sensor with the delivered ground cable (figure 3).

4.6 Disconnecting the sensor cable

- To disconnect the plug of the sensor cable pull the black sleeve off the device (figure 4).

4.7 Pin assignment



Cable color	Pin no.	Function
Brown	1	Power supply V- (0 VDC) Ground current output
White	2	Power supply V+ (24 VDC)
Blue	3	Analogue output humidity 4 - 20 mA
Black	4	n.c.
Grey	5	Analogue output temperature 4 - 20 mA
Purple	Housing	Equipotential bonding GND

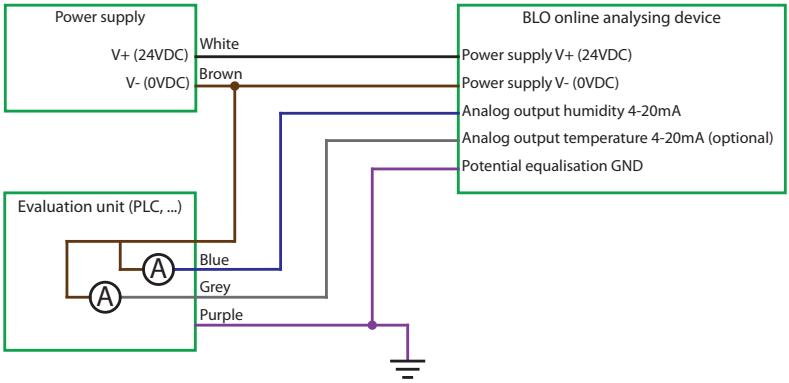
ATTENTION

Damage to the electronics due to incorrect cable connection

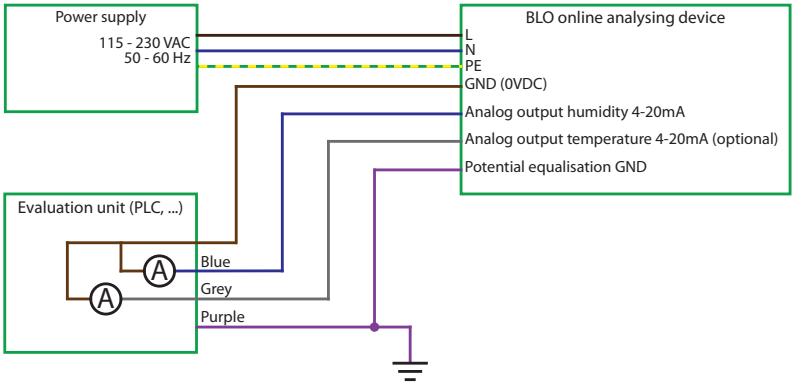
Incorrectly connected cables can lead to severe damage of the electronics.

▶ Connect all cables correctly.

4.8 Wiring diagram



4.9 Wiring diagram option 100 - 240 VAC art.no. 12215

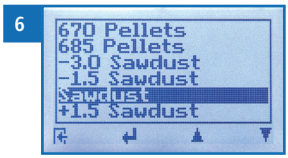


5. Using the device - Basics

5.1 Selecting the calibration curve

To do so: The device has to be in the product selection menu (figure 5).

For an overview of the different calibration curves and the criteria for selecting them, please refer to "6. Calibration curves".



1. Press the ▽ or △ button to move from one calibration curve to the next Or
2. Press the ▽ or △ button for 3 seconds to open the calibration curve overview (figure 6).
3. Use the arrow keys to move from one calibration curve to the next
4. and keep any of them pressed to scroll through the types.
5. Confirm your selection by pressing ↵.

» The calibration curve you selected will now be shown at the top of the display.

5.2 Taking a measurement

- In order to obtain current measuring values, the device must be in the measuring window.

6. Calibration curves

Calibration curve	Material	Measuring range	Scaling Analog output
625 Pellets	Wood pellets with a bulk density of 625 kg/m³	2 - 20%	4 – 20 mA = 0 to 20%
640 Pellets	Wood pellets with a bulk density of 640 kg/m³	2 - 20%	4 – 20 mA = 0 to 20%
655 Pellets	Wood pellets with a bulk density of 655 kg/m³	2 - 20%	4 – 20 mA = 0 to 20%
670 Pellets	Wood pellets with a bulk density of 670 kg/m³	2 - 20%	4 – 20 mA = 0 to 20%
685 Pellets	Wood pellets with a bulk density of 685 kg/m³	2 - 20%	4 – 20 mA = 0 to 20%
1 Sawdust	Sawdust with very high atro bulk density	2 - 60%	4 – 20 mA = 0 to 60%
2 Sawdust	Sawdust with high atro bulk density	2 - 60%	4 – 20 mA = 0 to 60%
Sawdust	Sawdust with medium atro bulk density	2 - 60%	4 – 20 mA = 0 to 60%
4 Sawdust	Sawdust with low atro bulk density	2 - 60%	4 – 20 mA = 0 to 60%
5 Sawdust	Sawdust with very low atro bulk density	2 - 60%	4 – 20 mA = 0 to 60%
-1 Woodchips	Fine wood chips with very high atro bulk density (fine and heavy hardwood)	2 - 60%	4 – 20 mA = 0 to 60%
0 Woodchips	Wood chips with very high atro bulk density (heavy hardwood)	2 - 60%	4 – 20 mA = 0 to 60%%
1 Woodchips	Wood chips with high atro bulk density (hardwood)	2 - 60%	4 – 20 mA = 0 to 60%
2 Woodchips	Wood chips with medium atro bulk density (hardwood/softwood)	2 - 60%	4 – 20 mA = 0 to 60%
3 Woodchips	Wood chips with medium atro bulk density (hardwood/softwood)	2 - 60%	4 – 20 mA = 0 to 60%
4 Woodchips	Wood chips with low bulk atro density (softwood)	2 - 60%	4 – 20 mA = 0 to 60%

5 Woodchips	Wood chips with very low atro bulk density (light softwood)	2 - 60%	4 – 20 mA = 0 to 60%
6 Woodchips	Coarse wood chips with very low atro bulk density (coarse and light softwood)	2 - 60%	4 – 20 mA = 0 to 60%
Reference	! Only for testing the moisture meter !		
0% = 4mA	! Only for testing the analogue output !		
60% = 20mA	! Only for testing the analogue output !		

6.1 Selection of calibration curve for wood chips

The calibration curves for wood chips depends on the atro bulk density (bulk density at 0% water content), the wood type (hardwood, softwood), the size of the chips as well as on the content of fine fraction.

If you are not sure which calibration curve is the best suited for your material, it is recommended to carry out a reference measurement by kiln-drying (according to EN ISO 18134-2).

Schaller Messtechnik GmbH will be happy to advise you on the selection of the right calibration curve. Please send a picture of your wood chips, placing a measuring tape to the material, to support@schaller-gmbh.at. You will receive a recommendation from us immediately.

6.2 How moisture content is defined

The device measures and shows the material's moisture content. The moisture content readings it displays are calculated in relation to the material's overall mass:

$$\%WG = \frac{M_n - M_t}{M_n} \times 100$$

M_n: Mass of the sample with average moisture content

M_t: Mass of the sample with zero moisture content

%WG: Moisture content (in accordance with EN ISO 18134-2)

7. Checking the device's status

1. Press twice or hold for 2 seconds.
2. Select **Status**. To do so, press or and confirm by pressing .

» The display will then show the status indicator **humimeter**.

» The display will show the following information:

No.	Name
1	Serial number
2	Software version
3	Battery status
4	Memory status

3. Confirm by pressing .
4. Press to leave the main menu.

8. Configuring the device

8.1 Selecting a language

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Language**. To do so, press or and confirm by pressing .
4. Navigate to the required language. To do so, press or and confirm by pressing .

» The settings have been saved.

5. Press to leave the **Options** menu.

6. Press to leave the main menu.

8.2 Activating options

To do so: Some of the options must be deactivated.

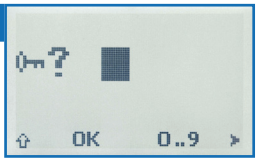
1. Press twice or hold for 2 seconds.

2. Select **Options**. To do so, press or and confirm by pressing .

3. Select **Unlock**. To do so, press or and confirm by pressing .

   » The display will now appear as shown in figure 7.

   » On delivery, the four-digit password is the device's serial number.



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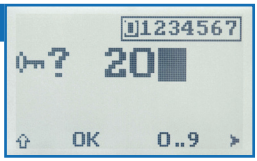
4. Inputting numbers:
   Press and hold 0..9 to quickly scroll to the required number and either press it for 3 seconds or press to confirm the selected number (figure 8).



8

5. Moving back:
   Press to switch to another input level.
   To move back, press .

6. Confirm the four-digit password by pressing OK.

   » The setting has been saved.

   » The **°C/°F, Averaging, BL On Time, Materialcalibration, Password, Reset** options are now activated

7. Press to leave the **Options** menu.

8. Press to leave the main menu.

8.3 Deactivating options

Once the device has been switched restarted, the **C/°F, Averaging, BL On Time, Material-calibration, Password, Reset** options will be deactivated again.

8.4 Selecting °C/°F

To do so: All of the options must be activated (see "8.2 Activating options").

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **°C/°F**. To do so, press or and confirm by pressing .
4. Navigate to the required temperature scale, i.e. Celsius (**°C**) or Fahrenheit (**°F**). To do so, press or and confirm by pressing .

» The setting has been saved.

5. Press to leave the **Options** menu.
6. Press to leave the main menu.

8.5 Setting the averaging time

To do so: All of the options must be activated (see "8.2 Activating options").

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Averaging**. To do so, press or and confirm by pressing .
4. Navigate to the desired time period in which the arithmetic average is to be calculated (90 seconds/45 seconds/20 seconds/7 seconds/5 seconds). To do so, press or and confirm by pressing .

» The setting has been saved.

5. Press to leave the **Options** menu.
6. Press to leave the main menu.

8.6 Configuring the display illumination time

To do so: All of the options must be activated (see "8.2 Activating options").

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **BL On Time**. To do so, press or and confirm by pressing .
4. Navigate to the required setting, turned off (**0 Off**) or turned on (**1 On**). To do so, press or and confirm by pressing .

» The setting has been saved.

5. Press to leave the **Options** menu.
6. Press to leave the main menu.

8.7 Configuring the material calibration function

The type calibration function is described in a separate operating manual.

8.8 Changing the password

To do so: All of the options must be activated (see "8.2 Activating options").

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Password**. To do so, press or and confirm by pressing .

» The display will show the current password.

4. Overwrite the current password. To do so, press and hold 0..9 to quickly scroll to the required number and either press it for 3 seconds or press to confirm the selected number.
   Moving back:
   Press to switch to another input level.
   To move back, press .
5. Confirm the new four-digit password by pressing OK.

» The setting has been saved.

6. Press to leave the **Options** menu.

7. Press to leave the main menu.

8.9 Resetting the device to its factory settings

To do so: All of the options must be activated (see "8.2 Activating options").

1. Press twice or hold for 2 seconds.

2. Select **Options**. To do so, press or and confirm by pressing .

3. Select **Reset**. To do so, press or and confirm by pressing .

» The display will then show the message **Reset?** (figure 9).

4. Confirm by pressing .

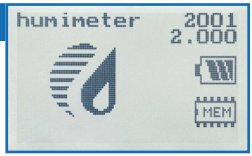
» The device will now be reset to its factory settings. All of your personal settings will be lost.

» The display will show the status indicator **humimeter** (figure 10).

» Resetting the device will not affect the saved measuring values.

9

10



9. Cleaning and maintenance

Regularly cleaning and maintaining the device will ensure that it will have a long service life and stay in good condition.

9.1 Care instructions

- The moisture transmitter has to be adjusted every four weeks.
- Do not immerse the sensor in water.
- Do not expose the device to extreme temperatures.
- Do not bend the sensor cable excessively. Repeated bending of the sensor cable can lead to a damage of the sensor.
- Protect the device from strong mechanical shocks and loads.

9.2 Cleaning the device

Sensor surface

Clean the sensor surface with a cloth and cleaning alcohol.

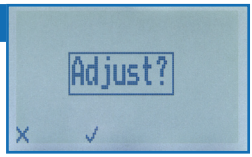
9.3 Adjusting the moisture transmitter

The moisture transmitter has to be adjusted after installation and every four weeks during operation.

To do so: The moisture transmitter has to be turned on for at least 30 minutes. There must be no material in the area of the white sensor surface!

1. Press twice or hold for 2 seconds.
2. Select **Options**. To do so, press or and confirm by pressing .
3. Select **Adjust**. To do so, press or and confirm by pressing .

11



» The display will then show the message **Adjust?** (figure 11).

» **There must be no material in the area of the white sensor surface!**

» The temperature of the sensor should be similar to that during a measurement.

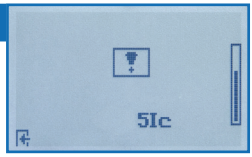
4. Confirm by pressing .

» The display will now appear as shown in figure 12**.**

» The bar will run upwards.

» This will only take a couple of seconds to complete and when completed, the display will show the **Options** again.

12



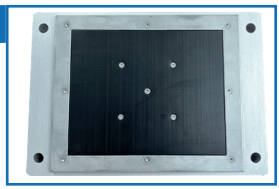
5. Press and then to leave the **Options** and the main menu.

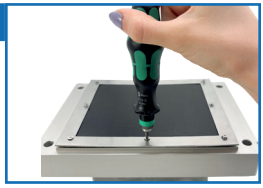
9.4 Replacing the protective plate

1. Loosen the eight outer countersunk screws M3 with hexalobular socket (figure 14).
2. Remove the stainless steel frame (figure 15).
3. Loosen the five M3 countersunk screws of the protective plate with hexagon socket (figure 16).
4. Remove the protective plate from the sensor (figure 17).

   » The protective plate is slightly glued, use a tool to remove it.

5. Position the new protective plate in the intended place.
6. Fasten the protective plate with the five M3 countersunk screws with hexagon socket (figure 16).
7. Replace the stainless steel frame and secure it with the eight M3 countersunk screws with hexagon socket (figure 14).

13


14


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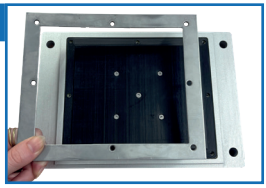
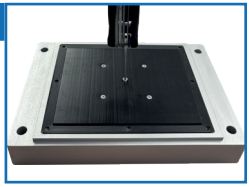
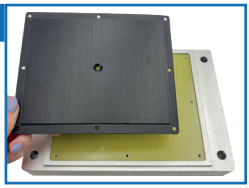


16


17


10. Faults

If the measures listed below fail to remedy any faults or if the device has faults not listed here, please contact Schaller Messtechnik GmbH.

Fault	Cause	Remedy
Measuring error	The temperature of the material being measured is too low or high. I.e. the material's temperature is lower than 0 °C or higher than +70 °C	The temperature of the material being measured has to be between 0 °C and +70 °C.
	Measurement error due to too short temperature adjustment time	Let the device adjust to the surroundings.
	Frozen material or material mixed with snow Accuracy decreases significantly	The material must not be frozen or mixed with snow.
	Mouldy or rain wet material Accuracy decreases significantly	Only measure dry, not mouldy material.
	Air value being displayed	If there is no material above the sensor, the air value will be displayed (200 %).
	Uneven pressure of the material	Make sure that the material applies even pressure onto the sensor.
	Polluted sensor	Clean the metal sensor plates (see "9.2 Cleaning the device").
	Conductive material on the sensor plates	Make sure that there is no contact of any conductive material with the sensor plates.
	The sensor plug is not connected correctly	Make sure that the sensor plug is connected properly.

Fault	Cause	Remedy
Incorrect adjustment (the exclamation mark on the display does not go away)	There is an object/material in the vicinity of the white sensor surface (during calibration)	Remove any objects/materials in the vicinity of the white sensor surface.
	Adjustment not possible	During the calibration process, there must be no test specimen in front of the sensor's measuring surface.
	Adjustment not possible	No metal or other materials may be present within the sensor's detection range (200 mm).
	Adjustment not possible	Check the serial numbers of the sensor and the evaluation unit; they must be identical.

11. Repair

If your humimeter needs repair, please pack it securely for transport and send it to:
Schaller Messtechnik GmbH
Max-Schaller-Straße 99
A - 8181 St.Ruprecht an der Raab

Download the repair form at humimeter.com/reparatur. Please fill out the form completely and enclose it with your package. This will allow us to clearly identify your repair request and process it quickly.

WARNING

For safety reasons, deeply discharged, damaged, or swollen rechargeable or non-rechargeable batteries are not allowed to be sent. Rechargeable and non-rechargeable batteries must be removed from the device before sending.

12. Storage and disposal

12.1 Storing the device

The device must be stored as follows:

- Avoid mechanical shocks/loads
- Storage temperature: -20 °C to +60 °C

12.2 Disposing of the device

Devices marked with this symbol are subject to Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).
If the device is being operated outside the European Union, the national regulations on the disposal of such devices that apply in the country of use must be observed.

Electronic devices must not be disposed of as domestic waste.

The device must be disposed of appropriately using appropriate collection systems.

13. Device information

13.1 EC declaration of comformity

KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY

Name/ Adresse des Herstellers: *Name/ address of manufacturer:*	**Schaller Messtechnik GmbH** **Max-Schaller-Straße 99** **A – 8181 St. Ruprecht**
Produktbezeichnung: *Product designation:*	**humimeter**
Typenbezeichnung: *Type designation:*	**BLO ; BLO inkl. BLO-LC, BLO-LW**
Produktbeschreibung: *Product description*	**Messgerät zur Bestimmung des Wassergehalts in Biomasse** ***Measuring device for determining the water content in biomass***

Das bezeichnete Produkt erfüllt die Bestimmungen der Richtlinien:
The designated product is in conformity with the European directives:

EMV - Richtlinie 2014/30/EC	***EMC Directive 2014/30/EU***
RoHS - Richtlinie 2011/65/EG	***RoHS-Directive 2011/65/EU***
Niederspannungsrichtlinie 2014/35/EU	***Low Voltage Directive 2014/35/EU***

Die Übereinstimmung des bezeichneten Produktes mit den Bestimmungen der Richtlinien wird durch die vollständige Einhaltung folgender Normen nachgewiesen:
Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned EC Directives:

EN 61326–1:2013	Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen *Electrical equipment for measurement, control, and laboratory use – EMC requirements*
EN IEC 63000:2019-05 *ersetzt / replaced* **EN 50581:2012**	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährliche Stoffe. *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.*

EN ISO 12100:2011 **EN ISO 12100:2013**	Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung *Safety of machinery - General principles for design - Risk assessment and risk reduction*

Für das angeführte Produkt ist eine vollständige Dokumentation mit Betriebsanleitung in Originalfassung vorhanden.

For the above mentioned product a complete documentation with manual of instruction in original version is available.

Bei Änderungen, die nicht vom Hersteller spezifiziert sind, verliert diese Konformitätserklärung die Gültigkeit.

In case of any changes not agreed upon with the manufacturer, this declaration of conformity loses its validity.

Schaller
Messtechnik / humimeter.com
Schaller Messtechnik GmbH
Haus - Schaller - Straße 99
AT-8181 St. Ruprecht a.d. Raab
www.humimeter.com | info@humimeter.com

St. Ruprecht a.d. Raab, 31.07.2022

Bernhard Maunz
Rechtsverbindliche Unterschrift des Ausstellers
Legal binding signature of the issuer

UK CA *DECLARATION OF CONFORMITY*

Name/ address of manufacturer:	**Schaller Messtechnik GmbH** **Max-Schaller-Straße 99** **A – 8181 St. Ruprecht**
Product designation:	**humimeter**
Type designation:	**BLO ; BLO inkl. BLO-LC, BLO-LW**
Product description	**Measuring device for determining the water content in biomass**

The designated product is in conformity with the following directives:

- **Electromagnetic Compatibility Regulations 2016 Great Britain**
- **RoHS-Directive 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment**
- **Supply of Machinery (Safety) Regulations 2008 Great Britain**

Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned Directives:

EN 61326–1:2013	Electrical equipment for measurement, control, and laboratory use – EMC requirements
EN IEC 63000:2019-05 replaced **EN 50581:2012**	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
EN ISO 12100:2011 **EN ISO 12100:2013**	Safety of machinery - General principles for design - Risk *asassessment and risk reduction*

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St. Ruprecht a.d. Raab, 31.07.2022

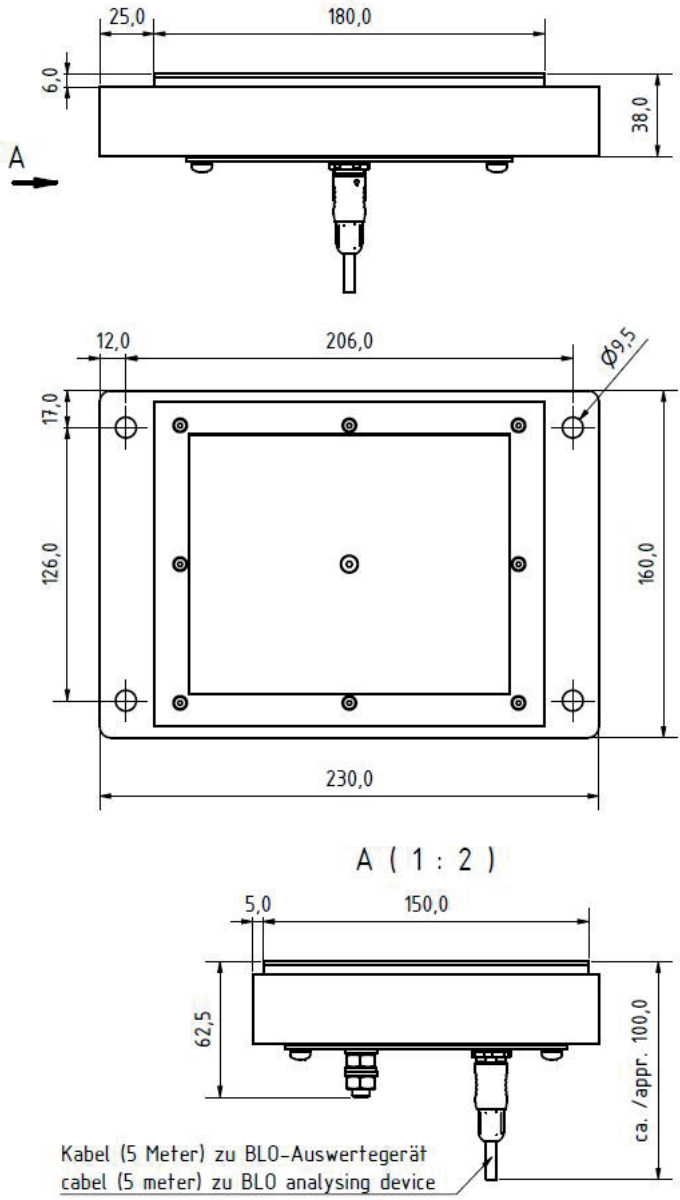
Schaller
Messtechnik / hummeter.com
Schaller Messtechnik GmbH
Max - Schaller - Straße 99
AT - 8181 St.Ruprecht a.d. Raab
www.hummeter.com | info@hummeter.com

Bernhard Maunz
Legal binding signature of the issuer

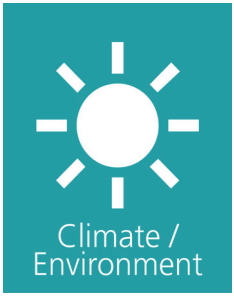
13.2 Technical data

Measuring range moisture content	2 % to 60 % (calibration curve dependent)
Measuring range temperature	-10 °C to +70 °C
Material temperature	0 °C to +70 °C
Operating temperature BLO	0 °C to +50 °C
Measuring depth	200 mm
Outputs	Moisture content (4 - 20 mA) -Scaling (0% to 60% Sawdust, Woodchips) -Scaling (0% to 20% Pellets) Temperature (4 - 20 mA) (optional) -Scaling (-10 °C to +70 °C) Working resistance < 500 Ohm (UB 24 V)
Temperature compensation	Automatic
Power supply	24 VDC (18 to 29 VDC) (optional 100 - 240 VAC)
Current consumption	100 mA (without output)
Electrical connection	Connecting cable 1.9 m
Menu languages	English, German, French, Italian, Spa-nish, Portuguese, Czech, Polish, Russian, Inter-national
Display	128 x 64 illuminated matrix display
Aluminium housing dimensions	250 x 185 x 75 mm (without cable)
Aluminium housing weight	1.100 g (without cable)
Aluminium housing IP rating	IP 54
Sensor dimensions	230 x 160 x 62,5 mm (without cable)
Sensor weight	2730 g (without cable)
Sensor IP rating	IP 54

13.3 Technical drawing universal sensor



14. Notes



Schaller Messtechnik develops, produces and sells professional moisture meters and turnkey solutions.

Schaller Messtechnik GmbH
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info@humimeter.com, www.humimeter.com