

# **User manual**

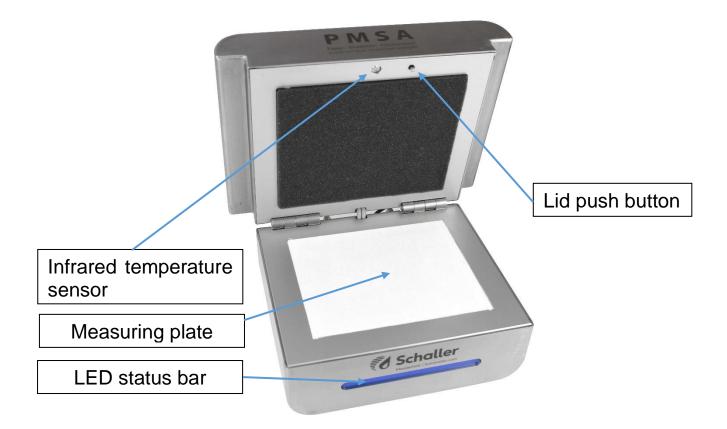


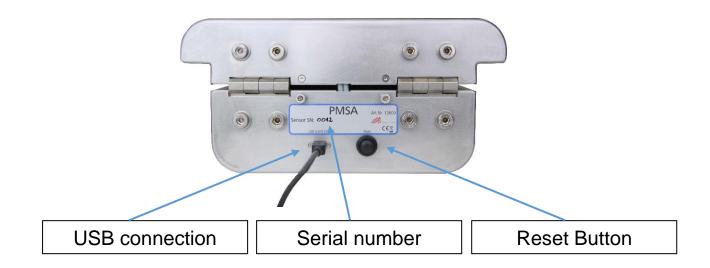
Moisture analyser for single paper sheets



version 1.3\_en © Schaller GmbH 2021

# **Design of device**





# **General information**

The PMSA (paper moisture single sheet analyzer) is a measuring system for determining the water content of single sheets of paper. The system consists of a moisture sensor and an analyzing software for a PC.

## Software start-up

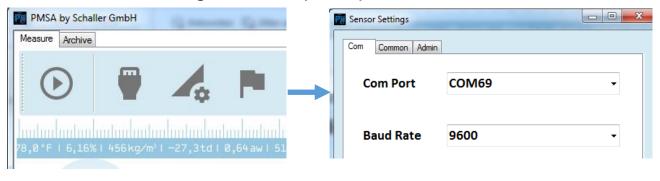
The delivery contains an USB flash drive with the analysing software PMSA. By double-clicking the file "PMSA\_setup.exe" the installer is started. With the installation, the USB driver (FTDI) is installed automatically. Your PC needs that driver for PMSA connection. After that the software can be started.

## Hardware start-up

The measuring device has to be connected to your PC via USB mini B connector. The driver for the virtual COM port has been installed together with the software and should be ready for use.

# Setting the correct COM port

Clicking on the button "Settings" (USB connector symbol), a window for selecting the COM port opens.



After choosing the correct COM port, the connection between hardware and software can be tested by clicking the button "Test". If the test was successful, this is shown by a popup window and by the LED status bar shining in blue. Then click the "Save" button.



# Measuring procedure

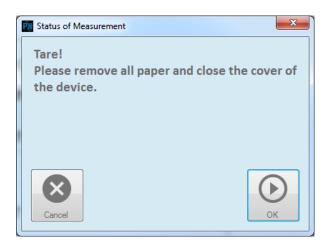
After the connection has been established as described, the measurement can be started.

PMSA by Schaller GmbH	
Measure Archive	
78,0°F∣6,16%∣456kg/m³∣−27,3t	d∣0,64aw∣51,9%r.H.∣14,8%abs∣100,4g/m²∣09m/s∣4,90Ug
	Characteristic
	Kraftliner White Top 140 🛛 -
Paper	Grammage
Archive	135
Start	Water Content
	0.0 %
No Sensor detected	Schaller GmbH 1.0.0.16

First of all choose the corresponding characteristic curve for the paper to measure. Clicking the arrow in the field Characteristic, a list with all available calibration curves opens. Select the desired curve by clicking on it.

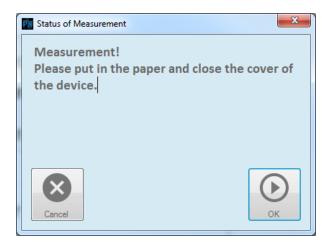
### For creating a new characteristic curve for your paper there is another manual available.

Now press the button Start. The device effects a blank measurement, executing a self-check and adjusting to the surrounding conditions. This procedure ensures long-time stable measurement values. For this blank measurement, no paper sheet must be situated in the device!





Upon successful completion of the blank measurement, put the paper sheet into the device and press OK.





Now the measuring procedure is started. The ongoing measurement is shown by the blue LED blinking. When the measurement is completed, a window with the measuring results appears, offering the possibility of adding additional information for measured paper.

×.	Measurement valid				
	Measure	ment s	ucce	ssfull	
	Type of P	aper			
	Number o	of Chai	ge		
	Characteristic	Kraftliner \	White To	p 140	
	Grammatur	135	g		
	Water Content	11,27	%		
	Temperatur	25,92	°C		
				Cancel	Save

If desired, the popup window "Measurement successful" can be hidden.

For that, remove the respective tick in the tab "Common" of the sensor settings.

NOTE: In this mode the measuring data is <u>NOT SAVED</u> in the archive!!



# Database / Archive

PMSA by Schaller GmbH Measure Archive	Annual Conterant		-					
		adantarian a	riff dantan landard			; , 13. Juni		
Paper Measure	id ▶ 4 5 6 *	chargennr 2007-004	papiersorte sample 4	grammatur 135 135 135	kennlinie Testliner braun 135 Testliner braun 135 Kraftliner White T	datum 15.05.2017 10:16 15.05.2017 11:19 15.05.2017 11:20	wassergehalt 10,13 10,13 8,94	materialtemp 25 25.4 25.4 25.4
No Sensor detected	Schaller GmbH 1.0	0.0.16						,

In this window all saved measuring values are viewed. For each measurement a separate identification number is allocated.

## **Filter**

The filter functions allow an easy retrieval of measurements in the database. If you leave archive, all filters will be reset.

#### Date filter:

With that function you can chose a period. All saved measured in that period will be shown.

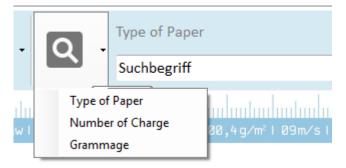
For selection of that time, you have to use two arrays:



In the first field enter the start date.

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r kenr	22	23	24	25	26	27	28	wassergehalt	mat	altemp
Testli	29	50	31 He	1 ute:	2 15.05	3 5.201	4 7	0,31	24,9	
Testlin	e		(5) 11	5.05	2017	10.1	<u>a 1</u>	0.13	25	

In the second field the end date is entered.



Additionally, the filter by specific data like entered paper type, charge number or grammage is possible. For that, click the button with the magnifying glass, select one of the filter functions and enter the desired search term.

The date filter and filter by entered data can also be combined.

By clicking on the fields ID, charge number ecc., the list is sorted in ascending or descending order.

PMSA by Schaller GmbH	1.0	12 miles		-					
	•	<b>.</b> .	Type of F	aper		Montag	, 15. Mai	2017	
			Suchbeg	riff		Dienstag	g,13. Juni	2017	
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,0°F∣6,16%∣456kg⁄m									
		id	chargennr	papiersorte	grammatur	kennlinie	datum	wassergehalt	materialtemp
	•	4	2007-004	sample 4	135	Testliner braun 135	15.05.2017 10:16	10,13	25
		5			135	Testliner braun 135	15.05.2017 11:19	10,13	25,4
		6			135	Kraftliner White T	15.05.2017 11:20	8,94	25,4
Paper	•								
Magaura									
Measure									

## **Further database functions**

All data in the database can be deleted, edited or exported.

#### **Delete measurements:**



Clicking the waste bin button, the selected data series are deleted irretrievably.

PMSA by Schaller GmbH								
leasure Archive								
		Type of Pa	iper		Montag	, 15. Mai	2017	
	+	Suchbegr	ff		Dienstag	g,13. Juni	2017	•
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					1 1 .			
	id	chargennr	papiersorte	grammatur	kennlinie	datum	wassergehalt	materialtemp
		2007-004	sample 4	135	Testliner braun 135	15.05.2017 10:16	10,13	25
	▶ 5			135	Testliner braun 135	15.05.2017 11:19	10,13	25,4
				105	Kraftliner White T	15.05.2017 11:20	0.04	
	6			135	Nattiner white 1	15.05.2017 11.20	8,94	25,4

The selection functions are the same as in Excel. For selecting a measuring series, click the arrow field in front of the field ID, for selecting a certain sector, keep the Shift button pressed. For the selection of single measuring series, keep the Strg button pressed.

#### Editing measuring data:



Using the pencil button, saved measurements can be modified. Just select the desired measuring series and click the pencil button.

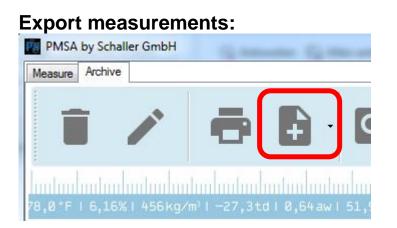
TableEdit				
Id	4			
Papierso	rte			
sample 4				
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2007-004				
Kennlinie	Testliner b	oraun 135	5	
Grammatur	135	g		
Wassergehalt	10,13	%		
MAt Temp	25	°C		
			Cancel	Save

Now paper type and charge number can be modified. Confirm by clicking the Save button.

#### Print measurements:



Clicking on the printer symbol, all measuring series shown in the list below are printed out. If a filter is set, only the filtered data is printed.



Clicking the Export button, the export of CSV, HTML or XML formats is possible. All measuring data shown in the list below is exported. If a filter is set, only the filtered data is exported.

## **Determination of reference water content**

The PMSA determines the water content, which means that it calculates the moisture referred to the total mass (EN ISO 287).

Mn - Mt	Mn:	Mass of the sample before drying
$\%WG = \frac{MH}{M} \times 100$	Mt:	Mass of the dried sample
Mn	%WG:	Calculated water content

## **Exemption from liability**

For misreading's and wrong measurements and of this resulting damage we refuse any liability. This is a device for quick determination of moisture. The moisture depends on multiple conditions and multiple materials. Therefore, we recommend a plausibility check of the measuring results. Each device includes a serial number and the guarantee stamp. If those are broken, no claims for guarantee can be made. In case of a faulty device, please contact Schaller GmbH (www.humimeter.com) or your dealer.

# **Device maintenance instructions**

- Please note that the moisture sensor is a sensitive measuring instrument and handle it with care.
- The white sensor plate (measuring plate) most not be exposed to mechanical stress. Heavy mechanical load may cause the breaking of the sensor plate. In this case, return the sensor to Schaller GmbH. The breaking of the sensor plate is not subject to warranty.
- If the device is transported, secure the lid to prevent unintentional opening.
- We recommend to regularly save all measuring data in the database.
- Furthermore we recommend to regularly save the database with eventual added or modified calibration curves.

# **Technical data**

Grammage range	30 to 800 g/m <sup>2</sup>
Paper size	minimum 180x180mm
Paper thickness	up to 0.8mm (higher range on request)
Resolution	0.01% water content; 0.1°C temperature
Measuring range	1 to 20 % water content (depending of characheristics curve)
Operating temperature	+10°C to +40°C / 50°F to 104°F
Storage temperature	-20°C to +60°C / -4°F to 140°F
Temperature compensation	automatic
Menu languages	English, German
Power supply	Power supply via PC 5VDC (USB connector)
Dimensions	280 x 200 x 135 mm
Weight	4.8 kg
Protection class	IP 30
Scope of supply	moisture sensor, PC analysing software, USB connection cable for PC