

operation manual

SMG100
industrial dust measuring device

SAXON Junkalor GmbH
Alte Landebahn 29
06846 Dessau-Roßlau
Germany

Tel.: ++49 / 340 / 5510 200

Fax: ++49 / 340 / 5510 201

Hotline: ++49 / 340 / 5510 214

Without prior written permission from Saxon Junkalor GmbH no part of this manual may be reproduced or transmitted by electronic or mechanical means, by photocopying or any other means of recording and storage.

©2014 Saxon Junkalor GmbH. All rights reserved.

0.	PREAMBLE	5
1.	SAFETY HINTS.....	5
1.1.	GAS SAFETY	5
1.2.	ELECTRICAL SAFETY.....	5
2.	INSTALLATION AND ASSEMBLY.....	6
2.1.	SCOPE OF DELIVERY	6
2.2.	PLACE OF INSTALLATION	6
2.4.	SELECTION OF POINT OF PROBE	7
3.	COMPONENTS	8
3.1.	OPERATING AND DISPLAY ELEMENTS.....	8
3.2.	REAR PANEL	8
3.2.1.	MECHANICAL CONNECTORS	8
3.2.2.	WATER TRAP AND FILTER.....	8
3.2.3.	DATA TRANSMISSION	9
3.2.3.1.	MEASURING VALUES	9
3.3.2.2.	BLUETOOTH	9
3.3.2.3.	POWER	9
4.	STARTUP AND MEASUREMENT.....	10
4.1.	STARTUP	10
4.2.	MEASUREMENT.....	10
4.3.	MENUES.....	10
4.3.1.	MEASURING MENU	10
4.3.2.	PARAMETERS	10
4.3.2.1.	SOFTWARE INFORMATION	10
4.3.2.2.	HARDWARE INFORMATION	11
4.3.2.3.	LEAK TEST.....	11
4.3.2.4.	SOFTWARE UPDATE	11
4.3.2.5.	LANGUAGE.....	11
4.3.2.2.	SENSOR CHECK	11
5.	MAINTENANCE	12
5.1.	VISUAL CHECK	12
5.2.	CLEANING.....	12
5.2.1.	CLEANING AFTER THE MEASUREMENT	12
5.2.2.	WEEKLY CLEANING.....	13
5.2.	CHANGE OF FILTER INSERT.....	13
5.3.	WATER TRAP	13
5.4.	LEAK CHECK.....	14
5.5.	CHANGE FUSES	14
6.	SENSOR CHECK AND CALIBRATION.....	15
6.1.	PRELIMINARY OF SENSOR CHECK	15
6.2.	SENSOR CHECK.....	15
6.3.	CALIBRATION.....	15
7.	TROUBLESHOOTING.....	16
7.1.	DEVICE DON´T OPERATE.....	16
7.2.	ERROR MESSAGES	16
7.3.	ERRORS AT SENSOR CHECK.....	17
7.4.	RS232 – NON OR WRONG DATA.....	17
7.5.	BLUETOOTH – NO CONNECTION OR NO DATA	17
7.6.	FURTHER ERRORS	17
8.	DECOMMISSIONING AND DEPOLLUTION.....	18
9.	RESHIPMENT.....	18
10.	WEAR AND SPARE PARTS.....	19

11.	TECHNICAL DATA	20
11.1.	OPERATING CONDITIONS	20
11.2.	TRANSPORT AND STORAGE CONDITIONS	20
11.3.	MEASURING PARAMETERS	20
11.4.	MEDIA CONDITIONS	20
11.5.	SYSTEM TIMINGS	20
11.6.	INTERFACES.....	21
11.7.	CONSTRUCTION AND ASSEMBLING	21
11.8.	POWER SUPPLY.....	21
12.	WARRANTY	22
13.	PACKAGING AND TRANSPORT	22
14.	ANNEX	23
ABB.1	SMG100 – FRONT PANEL	23
ABB.2	SMG100 – REAR PANEL	23
ABB.3	DIMENSIONS	24

0. Preamble

In the following operation manual we give you all information you will need for a stable and proper operation of the dust measuring device SMG100.

If you have questions about any points, if you have hints or if you miss information we are glad to get your call. You can reach our serviceteam at

+49 340 5510 214

1. Safety Hints

For your safety please consider the following hints!

A safe and error free operation of SMG100 requires an appropriate transport and storage, professional installation and initiation, an approved operation and an accurate maintenance.

1.1. Gas Safety

Without and special safety procedures it is not allowed to measure flammable or explosive gas or dust mixtures with the SMG100. This does also for gas or dust mixtures which can be flammable or explosive in environmental air. Possible safety procedures may be e.g. the flushing with an inert gas or the application of flame barriers.

1.2. Electrical Safety

If it is necessary to open the device for justification, maintenance or repair it has to switch voltage free first (remove power plug).

If it is necessary to work under live-work conditions during adjustment or maintenance work, the work have to carried out only by trained personnel familiar with the potential hazards of the instrument as well as its operation and maintenance. The personnel must be in possession of appropriate qualifications for the tasks performed.

Strictly obey any safety regulations marked with "Caution" in these operating instructions! Failure to comply with these safety specifications may result in fatal accidents, bodily harm or damage to the instrument.

If hazard-free operation of the instrument can no longer be assumed, immediately remove the instrument from service and secure it against unauthorized startup.

2. Installation and Assembly



2.1. Scope of Delivery

The scope of delivery of SMG100 comprises:

- dust measuring device SMG100
- power cord with two-pole and earthing-pin plug
- probe with 2m heated hose (option)
- zero point filter
- checkpen (option)
- cleaning set (option)
- CD with operation manual and software

2.2. Place of Installation

Select a place of installation near of probe point. Extending of hose is not allowed. At long distances from probe point to place of evaluation please use the wireless Bluetooth interface.

Put the SMG100 at a horizontal stable surface, the inclination (angle to horizontal layer) may have maximum $\pm 15^\circ$.

Protect the dust measuring device against direct solar radiation and heavy heat radiation. Please consider the limit value for the temperature. The installation place also should be free of shocks or vibrations.

Please take care that there is enough free air around the analyzer, please prevent from heat accumulation.

Caution!

It is not allowed to operate in explosion hazardous areas.

2.4. Selection of Point of Probe

An error free and low maintenance operation with correct measure values is only possible by proper installation of the complete measuring system. Most important is the selection of point of probe itself.

Please observe following hints:

- The particle flow at the probe point must be mixed all-over. Beware of probe points directly after changes of flow direction or behind components in the flow (e.g. other probes, electro filters). The particle flow should flow at least a distance of two times of pipe diameter unhindered to the point of probe.
- Place the probe cone in the middle of particle leading pipe.
- To prevent against condensing water the hose is heated. Please don't extend it with another hose (heated or unheated), because this can lead to wrong measured values. In worst case the SMG100 can be damaged irreversible.
- High dew points lead to condensate inside of probe and device. If it is not possible to prevent from high dew points please do a maintenance after every measurement.

3. Components

3.1. Operating and Display Elements

3.1.1. Power Switch

With the power switch the SMG100 is started. A light inside shows the current status.

3.1.2. Operation Panel

All inputs and outputs are done at the touch screen. It shows the measured values, the device parameters and the data of dust measuring device SMG100.

The temperature module in the lower part controls the heating of the probe.

3.2. Rear Panel

3.2.1. Mechanical Connectors

At the back panel you find following connectors:

- gas input (snap connector)
- gas output
- condensate output (tap)

All connectors are labeled.

Never close the gas output during operation.

3.2.2. Water Trap and Filter

The water trap collects the water during measurement. Check it after every measurement and drain it on demand.

The filter protects the gas guides from dust. Check the status of the filter after every measurement and change it on demand.

If the filter is fogged inside drain it with the tap at the bottom.

3.2.3. Data transmission

3.2.3.1. Measuring Values

From the serial interface at the rear panel you can request device and measurement data during the measurement.

USB connector is for service only.

3.3.2.2. Bluetooth

You can forward device and measuring data live by Bluetooth to a suitable device. Bluetooth Class 1 has a range of up to 100m.

3.3.2.3. Power

Only use the power voltage and frequency given at the type label.

Caution! Only connect the SMG100 with a power supply with a grounding-type plug.

4. Startup and Measurement

4.1. Startup

Check the device visual according point 7.1.

Connect the power plug of probe. Therefore plug the connector and tighten it manually. Connect the zero point filter.

If you want to use RS232 interface, connect it with the notebook / computer.

Connect the SMG100 with the power supply and turn it on. It starts with a warm-up phase.

On demand couple the Bluetooth link with the notebook / computer now.

4.2. Measurement

Press the button measuring and select your required measurement time in menu. Than do the zero point justification, remove the zero point filter and plug the gas connector of probe.

Now start the measurement. You can stop it every time.

4.3. Menues

4.3.1. Measuring

You start the measurement in measurement menu. Set the duration of measurement, do the zero point justification and start the measuring. During measuring you will see the corrent particle mass concentration related to DEHS as well as measured minimum and maximum values.

With the stop button you can interrupt the measuring.

4.3.2. Parameters

4.3.2.1. Software Information

The menu software information shows the serial numbers of measuring chamber and of the device. Also you see the Bluetooth adress of your SMG100.

These and further information showed in this menu may needed for service.

4.3.2.2. Hardware Information

Inside of SMG100 are a lot of sensors for temperature, pressure and flow to watch and control the functions of SMG100.

4.3.2.3. Leak Test

The successful leak test guarantees the reliable media transport inside of SMG100.

4.3.2.4. Software Update

This point the service team needs to update your SMG100.

4.3.2.5. Language

Choice your designed menu language.

4.3.2.2. Sensor Check

The sensor check tests the precision of the SMG100. For this sensor check you need the checkpen you can source from our company.

By the sensor check you spare expensive and extensive check-ups at the manufactures site, and you get the guarantee that you SMG100 measures correct data.

5. Maintenance

Caution !

Live parts may be exposed when covers are removed. Terminals may be live.

The instrument must be disconnected from the supply before being opened for repair and maintenance purposes.

If repair or maintenance of the instrument is possible only with the instrument open and still connected to the power supply, then this work may

be carried out only by trained personnel who are fully aware of the hazards involved.

Always replace fuses with new fuses of the same type and current rating.

If safe operation of the instrument can no longer be guaranteed, remove it from service and ensure that it cannot be started up accidentally.

5.1. Visual Check

Check your SMG100 at apparent failures and damages. Watch especially at:

- apparent damages at SMG100
- scratches and damages at touch screen
- cracks at the filter
- not fixed or damaged hoses

If you find failures or damages don't start the SMG100 and call our service team.

5.2. Cleaning

5.2.1. Cleaning after the Measurement

Turn off your SMG100 before you clean it.

Don't use any kind of liquids!

Clean the display with a dry cloth.

Flush possible condensate with the tap and flush the condensate trap.

Blow through the probe and the hose with a hand ball pump.

Caution! Never use pressurized air.

5.2.2. weekly Cleaning

For the weekly cleaning you need the cleaning set which you can source from us.

Do the cleaning after 5.2.1 first.

On demand change the filter insert (point 5.3.).

Turn the SMG100 upside down. Open the bottom plate by removing of the knurled screws. Unscrew the two measuring chamber screws, remove the chamber lid and put it sidewise at the bottom.

Clean the gas input at the rear panel with the small brush from your cleaning set. Next take the big brush and clean the gas pipe in the middle of the chamber. Clean the optics inside of the chamber, the measuring chamber and the chamber lid with a cleaning cloth you find in the cleaning set.

Put the chamber lid back on the chamber and screw it manually. Fix the bottom plate.

Finally do a leak test (point 5.5).

5.3. Change of Filter Insert

If the filter insert has fade to gray or at least after a month please change it.

- unscrew the clear cap of the filter and check it for cracks
- unscrew the stay with the filter insert
- remove the insert, put the new insert on the stay and turn it in the filter carrier so that it is not possible to turn the insert
- check the seal ring inside of the filter carrier
- turn the clear cap on the filter manually, check it for correct fitting
- do a leak test (point 5.5)

5.4. Water Trap

The water inside of the water trap may never reach the lower yellow ring. If there is too much water in the water trap the gas flow is interrupted and the measurement shows wrong measuring values.

Pull the water trap out of its clip and remove both hoses. Pull the lower insert out of the clear cap, flush out the water and dry it with a dry fluff-free cloth. Also check the water trap for pollution.

Assembly the water trap, mount the hoses and put it back on the rear panel. Watch for the mounting direction (arrows upward).

Do a leak test (point 5.5).

5.5. Leak Check

After every maintenance and after a long-time non operation do a leak test at your SMG100.

Start it at parameters – leak test and follow the instruction at the display.

If the leak test is not successful please check all external components (hoses, filter, seal rings, measuring chamber lid, water trap) for cracks and damages. Also check that the condense tap is closed.

If you don't find the cause for leakage please call our service.

5.6. Change Fuses

Turn off your SMG100 and unplug the power cord.

The fuses are located in the jack for power cord at the rear panel of SMG100.

fuse parameters:

for 200 ... 240 V : 2,0 A lazy

6. Sensor Check and Calibration

Your SMG100 is a sensitive optical measuring device. To guarantee the precision of your measurement it has to check every year.

6.1. Preliminary of Sensor Check

To do a successful sensor check it is necessary that your SMG100 operates properly. If you see one or more error messages please call our service.

Do a cleaning according point 5.2.2.

6.2. Sensor Check

The sensor check determines the internal parameters of SMG100 for measurement of particle mass concentration.

For the sensor check you need a checkpen. If you don't have one, you can source it from our service team. Alternatively our service team can do the sensor check and further maintenance.

Start the sensor check and follow the instructions at the display.

.

6.3. Calibration

If the sensor check is not successful your SMG100 doesn't measure correctly and has to be recalibrated.

For recalibration you must ship your SMG100. Please call our service for the nearest service point.

7. Troubleshooting

At this part of manual you find information about causes of malfunctions of your SMG100 and corresponding hints for fault recovery.

If you can remove a malfunction please call our service.

7.1. Device don't Operate

error	possible cause	hints / correction
no display	non or wrong power supply	check power cord and power supply
	fuse damaged	change fuse
	error inside of device	call service
dubious or incorrect display	init error	turn device device off and after 1min on
	error in electronics	call service

7.2. Error Messages

Following error messages you can find at the upper right corner at the screen.

error	possible cause	hints / correction
bottom plate open	bottom plate not fixed or in wrong direction	please check bottom plate for correct assembly
temperature error	operation temperature of a heated component not correct	if you already see this error messages after 10 min please call our service
flow error	leak in gas flow or blocked gas flow	check the external components and the measuring chamber lid for cracks and fixture. Also check the assembly of filter and water trap. Do a leak check
pump error	pump or electronic damaged	call our service
green temperature display not 60 (after >10min)	error at the probe	change probe
implausible measuring values	device polluted	please clean the SMG100 (point 5.2.1.)
	device or probe are leaky	check, do leak test

	error in electronics	call service
--	----------------------	--------------

7.3. errors at sensor check

error	possible cause	hint / correction
sensor check not successful	device polluted	please clean your SMG100 (point 5.2.1) and repeat the sensorcheck
	error messages	check it, on demand call service

7.4. RS232 – non or wrong data at notebook / computer program

error	possible cause	hint / correction
no data	wrong cable or cable damaged	please use a standard RS-232 cable
	wrong protocol	please use following configuration: 115200bps, 8bit, one stopbit, no parity, no hardware protocoll
data incorrect or contain special characters	protocol error	please use following configuration: 115200bps, 8bit, one stopbit, no parity, no hardware protocoll

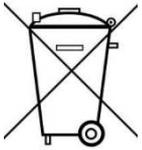
7.5. Bluetooth – no connection or no data

Fehler	Mögliche Ursache	Hinweise / Behebung
Bluetooth link not possible	wrong SMG100	please check for the right SMG100
	distance to high	Please ensure that the receiver also supports Bluetooth Class 1

7.6. further errors

If you get other errors as described please call our service team.

8. Decommissioning and Depollution



Turn off the power supply.

To protect the environment in many countries it is not allowed to depollute the SMG100 with urban waste (haushold garbage). Please depollute the SMG100 according the local laws / rules.

The materials the SMG100 is made from recyclable materials. We developed the SMG100 also for a simple seperation of components, we use reusable materials.

If you don't have the possibility to depollute the old device please call our service. Our service co-operates with you to depollute the device in our company.

9. Reshipment

To protect the environment and our employees we can only carry, check, repair or depollute devices without any risks for our team and environment.

Please add the contamination declaration to every return. You find the form at www.saxon-junkalor.de unter Service. Reshipments without contamination declaration we don't accept.

If you have worked with hazardous materials please execute an approved decontamination and add a certificate of decontamination to the shipment.

10. Wear and Spare Parts

zero point filter	Art. 38728
filter insert	Art. 38723
stay for filter insert	Art. 38739
clear cap for filter with seal ring	Art. 38741
seal ring for clear filter cap	Art. 38962
water trap	Art. 39277
site cover 2pcs	Art. 38299
bottom plate	Art. 38581
set knurled screws for bottom plate	Art. 38932
edge protector (rubber bumps) 2 pcs	Art. 38548
fuses (10pcs)	Art. 39035
cleaning set	Art. 39309
- 10x cleaning cloth	
- 2x big cleaning brush	
- 10x small cleaning brush	

11. Technical Data

11.1. Operating Conditions

operating temperature:	+5°C ... +40°C +41°F ... +104°F
relative humidity:	< 75% annual average 95% at most 30 days a year dew not allowed
air pressure:	860 ... 1060 hPa
orientation:	horizontal or inclination of at most 15° in all directions

11.2. Transport and Storage Conditions

temperature:	-25°C ... +65°C -13°F ... +149°F
humidity:	at most 95% relative humidity

11.3. Measuring Parameters

measuring range:	5 ... 150mg/m ³
precision:	< ±5% of range
repeatability:	< ±3%
particle dimensions:	0.1 ... >10µm
reference:	normalized at DEHS

11.4. Media Conditions

gas temperature:	< 400°C / <752°F
flow:	2,88NI/min ±5%
dew point:	< 70°C / < 158°F
probe	hot extractive / cold extractive isokinetic

11.5. System Timings

response time:	< 15s (at 2m probe)
warm-up time:	< 10min
zero point:	20s

11.6. Interfaces

RS232:	115200bps one stopbit no parity no hardware protocol
Bluetooth:	Bluetooth Class 1 (100m)

11.7. Construction and Assembling

type:	mobile measuring system
material of housing:	aluminium
dimensions of housing:	190 x 275 x 330mm ³
protection class:	IP 40
weight:	7,5kg / 16,5lbs

11.8. Power Supply

voltage:	230 VAC +10/-15%
frequency:	50 Hz ±2 %
power consumption:	220 VA

12. Warranty

We give a warranty of 24 months at appropriate handling and operation of SMG100.

Not included are all wear parts as filters and filter inserts.

We only accept a guarantee claim if we got a guarantee notification with a SAXON Junkalor GmbH register number. Also we only accept guarantee claims notified with the Junkalor faximile document.

For repair services we give a guarantee of six months. This is only valid for errors reported by customer and corrected by Junkalor. If there will be another error during this time this error isn't covered by the given guarantee. The guarantee expired at unauthorized treatment.

13. Packaging and Transport

Please ship your SMG100 in the original package. If you don't have it put your SMG100 in at least two layers of air bubble film and put it in a suitable box. Please check that spaces in the box are filled with shock damping material (e.g. cellular material).

If you send us a SMG100 please note that there must be the contamination declaration (www.junkalor.com at service) included!

14. Annex

Abb.1 SMG100 – front panel

- 1 touch screen
- 2 probe heating
- 3 power switch
- 4 rubber protectors

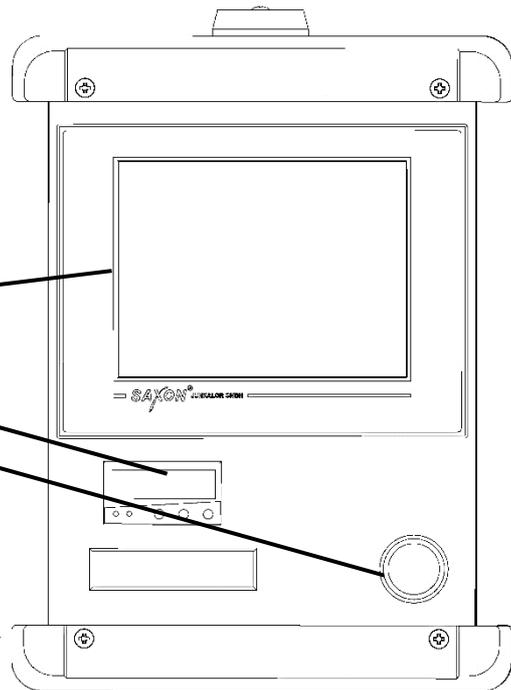


Abb.2 SMG100 – rear panel

- 1 media input
- 2 probe heating
- 3 water trap
- 4 filter
- 5 RS232
- 6 power connector with fuse
- 7 condense tap
- 8 media output
- 9 rubber protectors

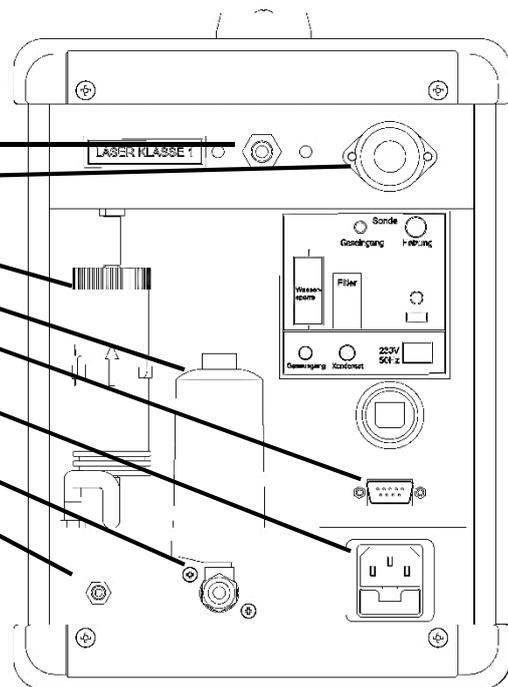


Abb.3 Dimensions

