KERN & Sohn GmbH

Ziegelei 1
D-72336 Balingen
E-Mail: info@kern-sohn.com

Tel: +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.kern-sohn.com

Service manual

Electronic Moisture Analyser

KERN DAB

Version 1.0

06/2016

GB



DAB-SH-e-1610

GB

KERN DAB
Version 1.0 05/2016
Servicemanual

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1 Basic Information

The device must be repaired only by trained specialist staff or personnel with professional formation (such as a repair-specialist accredited by law concerning verification). The service manual is obligatory for repair work. After repair, original conditions of the device have to be restored. Only original spare parts should be used.

Instructions about conformity-evaluated scales:

Repair must be carried only at 100% compliance with the type approval. A violation of this specification will result in a loss of the type approval! After successful repair the balance will have to be reverified before it can be used again in a statutorily regulated field.

Detailed instructions about conformity-evaluated scales:

Repair must be carried only at 100% compliance with the type approval. A violation of this specification will result in a loss of the type approval!

After successful repair the balance will have to be reverified before it can be used again in a statutorily regulated field.

2 Introduction

This service manual covers the DAB series and is edited for the authorized servicing personnel.
Note all rights are reserved. Copying any part of this manual is prohibited without our permission.

3 Instruction

3.1 Security

Please reading the following before you use the Moisture analyzer



- The instrument can use for test the moisture of the sample,each improper operation may result in personal injury and equipment damage
- Please access the AC power accordance with the manual;
- Please make sure the power cord does not interfere with people action;



- Do not use the instrument under the hazardous,wet or unstable environment;
- Unplug the power before you clean the analyzer;
- Please keep enough space around the instrument,and keep the top of the space at least 1m;
- During a special experiment, please wear protective equipment by yourself.
- Please do not change the instrument's components and any other aspects. Maintenance of this equipment by the factory authorized professionals.
-

Moisture analyzer use Halogen lamp.



- Do not put the flammable materials around the instrument;
- Do not touch the halogen lamp when it on working.

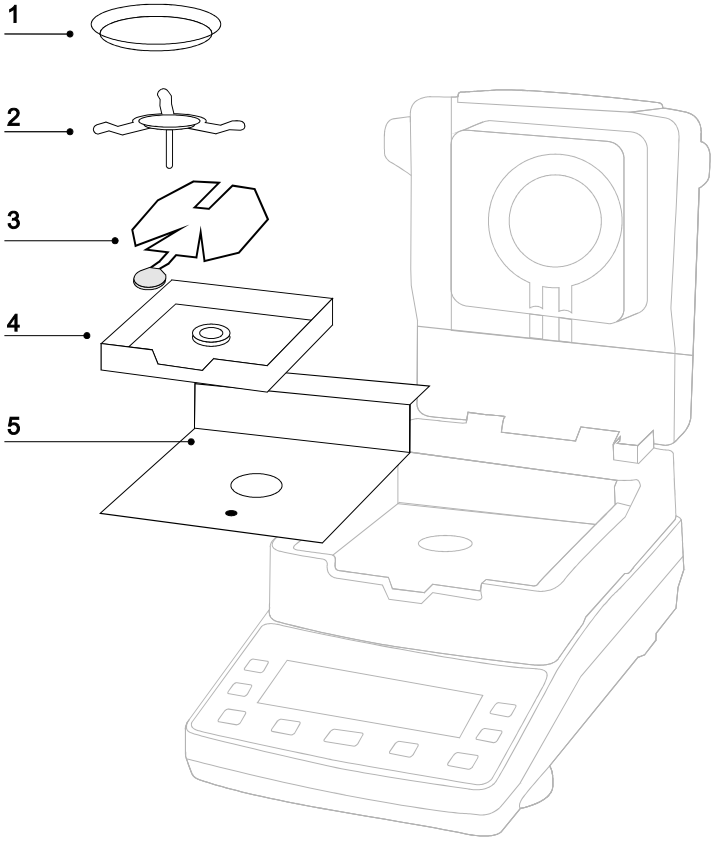
Special attention to the dangers of some sample;



- Before you test the moisture of dangerous good,please take Full investigation
- Inflammable and explosive materials:Heating the inflammable and explosive materials will produce flammable gases or vapors, so need to lower the temperature in a dry environment. In case of fire or explosion.
- Toxic and corrosive substance: Keep the samples of toxic or corrosive ingredients in well-ventilated environment.

Above the sample test will be particularly careful, for any damage caused by your own risk

4 Assembly drawing



Please installation the instrument according the picture

Installation order from top to bottom:1 --2--3--4--5

1. Aluminum scale pan

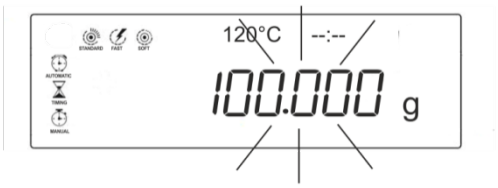
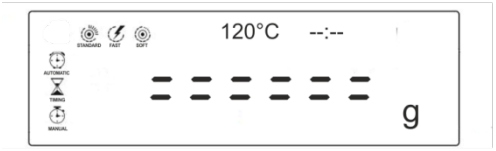
2. The triangle scale frame,keep in the center with sensor fix.

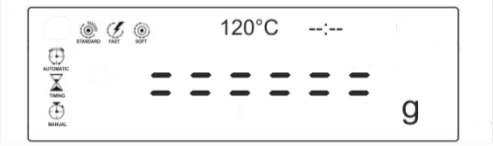
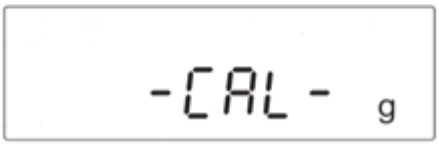
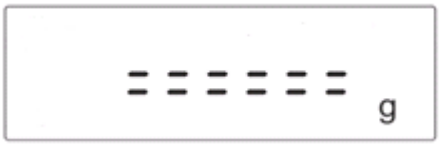
3.Scale pan brackets

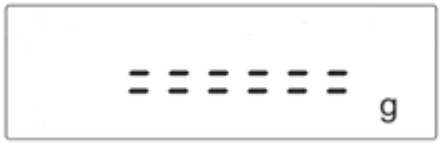
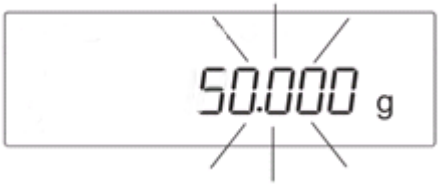
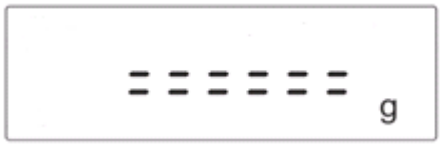
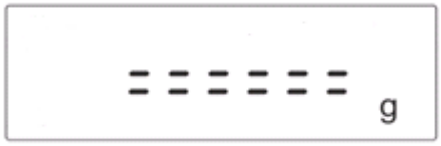
4. Wind cover

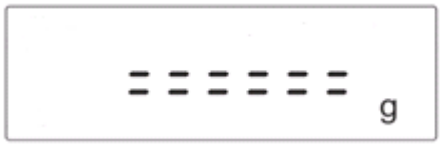
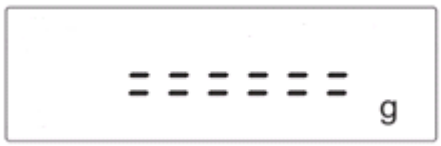
5. Stainless steel plate

4.1 Adjustment

No	Problem	Solution
1	The weighing not accurate	**One point weight adjustment** Press and keep ESC pressed until „CAL“ is displayed.    1) Wait until the weighed value for the required adjustment weight appears flashing.  Put the required adjustment weight carefully into the centre of the sample dish and close heating hood.Adjustment is carried out automatically.  

		2) After successful adjustment the balance automatically returns to weighing mode, „100,000 g“ will be displayed.Take away adjustment weight.  3) Wait until „0.000 g“ appears. 
	The balancecan not weighing, and the liner error more than ±10d.	**Three point weight adjustment** Press”” when the light turn on, release and press   Max load (100g) is flashing  put on the calibration weight (100g F2 is recommended) 

		when the display shows  Remove the calibration weight. The display will show  After a few second it will display  Put on the next calibration weight (50 g F2 recommended)  After a few second it will display  Remove the calibration weight. The display will show 

		After a few second the display will show  Put on the next calibration weight (20g F2 recommended)  After a few second it will display  Remove the calibration weight  Return to the normal operating mode 

4.2 Error massages



Err-1: The sample weight less than 1g,Please put on more than 1g sample, then test.



Err-2: The temperature setting less than 40℃, please reset.



Err-3：The testing time less than 30 seconds



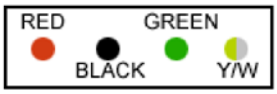
Err-4: The power for halogen lamp problem.



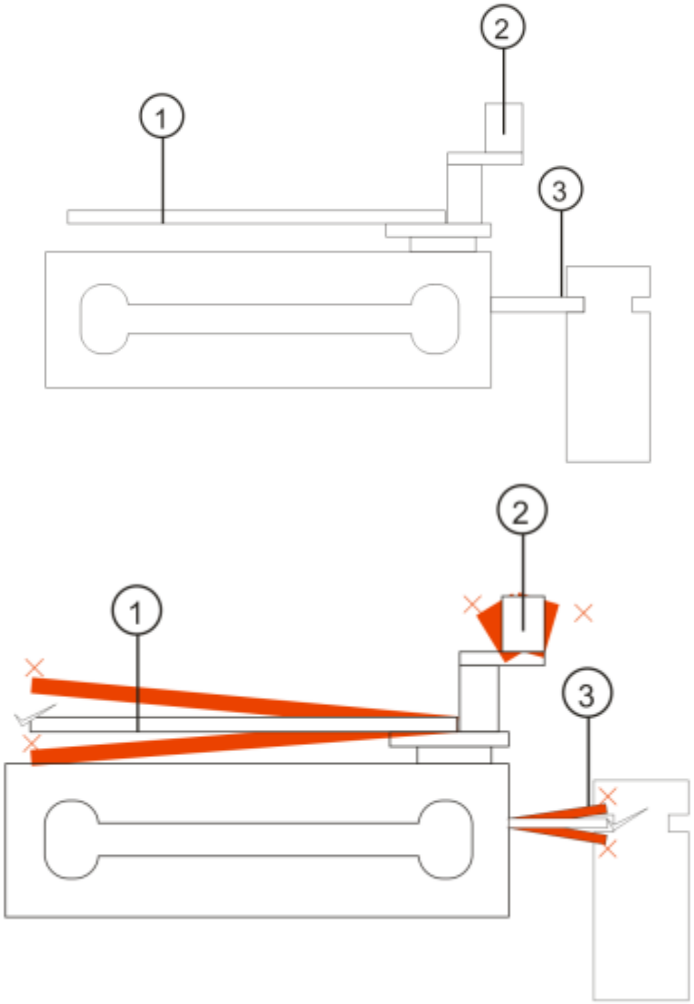
Err-5: The time setting for Soft testing mode less than 3 minutes



Err-6:The temperature sensor broken.

		2.The sensor parts touch other place.(see the**4.2.1**) 
		3.The weighing sensor broken: must change the load cell sensor.there are five line connect with main-board, the connect order is: 
3	The big error for repeatability	Please try to adjust the four corner error, adjust the sensor level place.
4	When test finish,not go zero	The sensor not warm up, and also can put 100g weight on the pan for one day (Aging experiment)

4.2.1 Sensor fix:



1. Heat insulating layer: keep level, if up will touch the case, if down will touch the sensor, the result is make the balance not stable.
2. The connecting pole must in the center of the hole in upper shell
3. The spring also need in the middle.

4.3 Halogen Error

No	Problem	Solution
1	Not heating	The temperature set too lower, please reset the temperature
		The mode soft with lower temperature,will light soft,it looks not heating
		The lamp broken,it will show the white fog inside.
		The Filament broken. Please check the lamp first
		Lamp life is reached, there will show black smoke inside.
2	Temperatureis not reached	The input voltage is to low (220 V / 110V)
		The temperature sensor is broken. 
3	Not stop heating	The temperature control IC in main-board broken.
		The lamp continue heating and not stop,it will broken the machine, it means temperature control broken, need change.
4	Temp Sensor	After a long use the sensor will be dirty. You have to clean it from time to time.
5	Tempcalibration	Must use our calibration meter and put on the pan center,useSoft mode with manual stop, and check the temperature. See 4.3.1

6	Halogen lamp beyond control	1.The transistor is broken. 2.The chip broken (temperature control system) 
7	Not working when press Start	The switch broken,so can not send the close signal. 

4.3.1 Temperature calibration set



TEMP METER

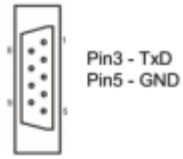


Calibration procedure you will find in the manual DAB-BA-e-1610

4.4 Interface And Fan



4.4.1 RS232 INTERFACE.



Parameter setting and input you will find in the manual DAB-BA-e-1610

1	Can not connect computer	Choose continue mode, check the software baud rate and the com interface.
		The RS232 interface is broken.
2	Can not print	Choose the truebaud rate
		The RS232 broken
		The printer has a problem
3	Print the error font	The baud rate is wrong

4.4.2 FAN

1	Fan is not spinning	Not heating, so not start the fan.
		The power line loose. Need open the case and connect again.
2	Fan makes noise	The fan miss place,need open and adjust
		Something inside like dust and cotton.
		The fan use so long time will big noise, but it not effect test result.

4.5 POWER

1.The power for halogen lamp: 220V/450W(110V/450W) and direct connect with AC power supply.So the power supply effect affect the results, we suggest if you want get the more precise and stable results, please choose the regulated power supply (more then 1KW)

Please choose the matching power supply 220V 50HZ or 110V 60HZ

The wrong voltage will broken themoisture analyzer

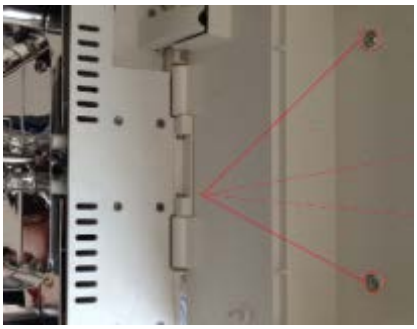
The wrong Hz will effect the test result.

4.6 LCD

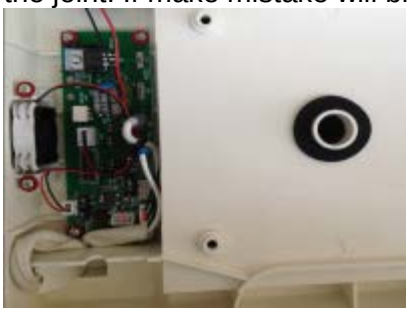
No	Problem	Solution
1	No light	Check the power supply
		Standby state
		The line loose.
		The display broken.
2	Back light shining	The power supply not stable.
3	Back light close	1.Press "↑" key to switch on the back light 2.Back light broken.
4	Just back light,but no font show	Please restart the moisture analyzer The main chip in main-board was broken The LCD is broken.

5 How To Replace The Halogen Lamp

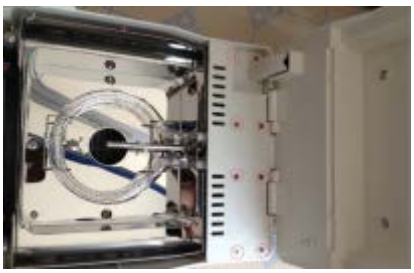
1).Remove the stainless steel plate, unscrew four screws.



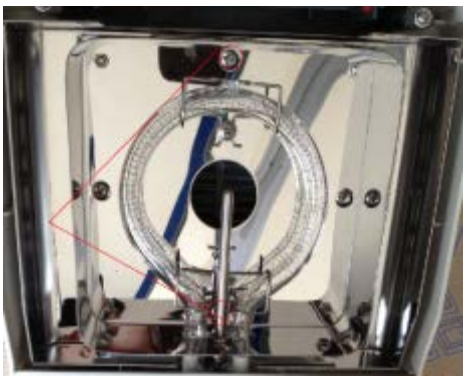
2).Please note the connection position, 1 connect the mainboard, 3 connect the AC power supplier,2 connect with the temperature sensor. And please give some mark when you move the joint. If make mistake will broken the mainboard.So this step is most important.



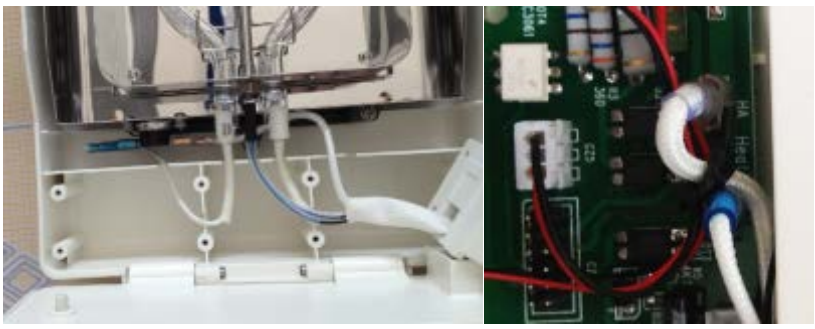
3).Unscrew the 8 screws on the baffle



4).Unscrew the 2 screws, so we can remove the lamp.



5)Then we can replace the lamp,and fix it.The line on the lamp is blue color,
The short one connect with temperature control,length one connect with heating joint.



The assembly process note the connection position please,and be careful the halogen lamp it is fragile. And avoid touching the lamp with bare hands. Fingerprints will reduce the light intensity.

6 Spare part list

Article number	Product name
RDAB-1001	Load cell
RDAB-2001	Platine, Front
RDAB-2002	Heater PCB
RDAB-2003	Main PCB
RDAB-3001	LCD Display
RDAB-4001	Display overlay
RDAB-5001	Temperature sensor
RDAB-5002	Temperature sensor
RDAB-5003	Switch
RDAB-8001	Level bubble
RDAB-8002	Adjustable base foot
RDAB-9001	Fan
RDAB-9002	Triangle bracket
RDAB-9003	Sample pan handler
RDAB-9004	Draft shield
RDAB-9005	Removal aid
RDAB-9006	Halogen Lamp