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**DBC-M660  
PORTABLE MEDIUM TEMPERATURE DRY BLOCK CALIBRATOR  
OPERATION MANUAL**

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VIDEO OF PRODUCTS.



## Safety Instruction

- ⚠ : **Warning** indicates a state or behavior that may pose a danger to users.
- ⚠ : **Caution** indicates conditions and processes that may result in product damage, equipment under test damage, or permanent loss of data.

### ⚠ Warning

To prevent possible electrocution, fire or personal injury:

- Please use the product only for specified purposes, otherwise it may weaken the performance of the product and the protection provided by the product.
- Please check whether the power supply meets the rated voltage requirements of the device.
- Please ensure that the equipment is well grounded.
- Please check if block is installed correctly, and then turn on the power supply to heat. Do not replace the block during heating.
- Please do not use the equipment If the fan is damaged, otherwise it will cause permanent damage to the equipment.
- Please do not open the product shell. If the shell is opened, the internal devices may be damaged, and the high-voltage devices are dangerous. Opening the cover under the condition of electrification may pose a threat to your personal safety. Please do not use if the product is damaged.
- If the product is damaged, do not use and disable the product.
- When the instrument is not in use , please turn off the switch and unplug the power plug.

### ⚠ Caution

To avoid possible damage to this product or the device under test:

- Do not use this product to calibrate the sensor over the range, otherwise it may cause permanent damage to the sensor.
- After the instrument stops heating, it still has a very high temperature. Please wait until the temperature drops below 60°C to turn off the power supply and move the instrument.
- Sensors need to be inserted into the effective temperature field area, with the bottom as the benchmark and the upper 40mm as the effective temperature field area.

- The use of equipment in environments with low temperature fluctuation and poor ventilation will help to improve the performance of equipment. Too large diameter of the isothermal block will affect the calibration accuracy, and the recommended diameter = sensor diameter + 0.1mm

## Safety instruction

- For long distance transportation, please take the block out of the equipment and pack it separately to avoid damage caused by vibration.
- When the equipment is not in use for a long time, please take out the block and keep it sealed to avoid oxidation.

## Instruction

- DBC-M660 Dry Block Calibrator is reliable and stable medium and high temperature constant temperature source, which can be used in the field or laboratory. It has the precision, stability, speed and portability required by almost all field calibration applications. In the design of the instrument, the user's field application requirements are fully taken into account, and the stability, consistency and accuracy of the instrument are similar to those of the same type of laboratory equipment under the conditions of portability, portability and rapidity.
- The 7-inch touchable LCD can display setting temperature, measuring temperature, fluctuation and deviation temperature at the same time. It can adjust temperature by stages and correct temperature deviation. The curve page can display the historical temperature curve and intuitively view the temperature change
- When receiving this Instrument, please check whether it is in good condition. Temperature control parameters, calibration parameters, upper, lower limits, and over temperature protection parameters have been set to the optimum value
- The solid design and special features of the instrument make it ideal for field and laboratory applications. When used correctly, sensors can be continuously and accurately calibrated. Before use, users should carefully read the warnings, precautions and the sequence of operation of the instrument as described in the operation manual.

## Function

This section introduces the functions of the instrument for you.

- The probe of this instrument contains a high-precision temperature sensor with fast response, which can quickly and accurately measure the internal temperature of the block.
- The product adopts piecewise temperature control technology, which can realize fast and stable temperature control in full range.
- The product adopts unique furnace compensating heating technology to ensure uniform and stable temperature in the block.
- The product has the function of data transmission. It can transmit data to PC through RS-232 interface.
- The product has the function of multi-point correction, temperature correction can be made for every whole hundred degrees point.
- The product has curve display function.
- The product has the function of fluctuation display.
- The product has the function of displaying the set temperature deviation.
- The product has the function of temperature control parameter automatic tuning.
- The product has the function of automatic over temperature protection.
- The product has the function of setting the upper limit of temperature freely.
- The product adopts 7 inch touch type LCD screen, simple and convenient operation.
- This instrument is made of high thermal conductivity material, temperature field is uniform and stable.

## Specification

Temperature range	50°C~660°C	
Horizontal temperature field	≤0.2°C	
Vertical temperature field	within 40mm from the bottom of the well	≤0.5°C (at 50°C~300°C) ≤1.0°C (at 300°C~660°C)
Temperature fluctuation	±0.15°C	
Temperature resolution	0.01°C	
Control method	touch screen	
Soaking block	insertion aperture: Φ4.5mm, Φ6.5mm, Φ8mm, Φ10mm can be customized	
Well depth	170mm	
Power	600W	
Power supply	220V/50Hz	
Dimension	285×170×335mm	
Weight	9.4kg	

## Operation

**⚠ Caution:** The instrument is a high temperature equipment. Careful operation should be taken to avoid scalding.

### Equipment Opening Sequence:

- Check whether the power cord is plugged in, check whether the power cord is in good condition, and ensure that the power socket is grounded well;
- Check and ensure that the block is properly placed in the equipment;
- Insert the standard device into the constant temperature zone of the soaking block (40mm from the bottom of the furnace) to ensure the same depth as possible;
- Turn on the power switch, then display the LOGO, automatically enter the uniform temperature prompt interface, click the confirmation button, enter the standby interface;
- After the PV reads out the temperature, click SV to set the target temperature;
- Click the Start button and start to heat up;
- Waiting until the fluctuation is 0.0°C and the deviation is less than 0.1°C, after 10 minutes, calibrator can be used.

## Operation

### Deviation Correction

When the deviation between the standard reader's reading and the PV reading of the calibration furnace is large after the temperature control is stable, the calibration settings can be corrected by clicking on the settings and entering the calibration settings.

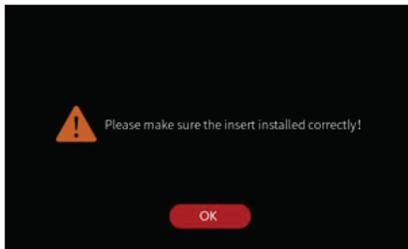
### Cooling

- During the operation of the equipment, the fan opens automatically. When the equipment stops running, if the temperature is lower than 50°C, the fan automatically closes. When the temperature is higher than 80°C, the fan restarts.
- When the temperature of the equipment is above 80°C, do not move the instrument to avoid scalding and damage to the furnace.
- Power off the device only after the fan is turned off automatically.

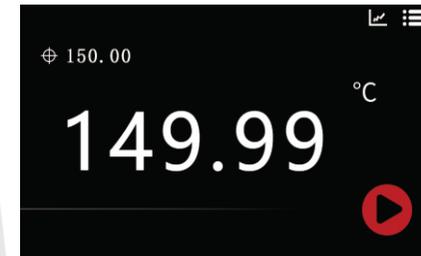
## Instructions for use

### Start the device

1. Turn on the switch, the boot LOGO will be displayed at this time, and it will automatically enter the boot prompt interface. Click "OK" button to enter the standby interface.

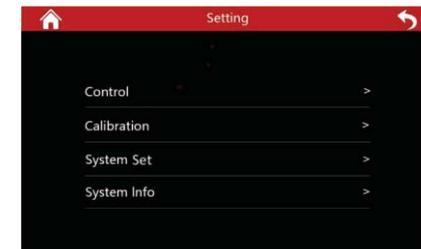


2. Temperature setting: Tap the icon  on the left of the screen on the home screen to enter the "Set Temperature SV value" interface, enter the required temperature setting value and press ; Click the icon  on the main interface and select the device as prompted to start running.

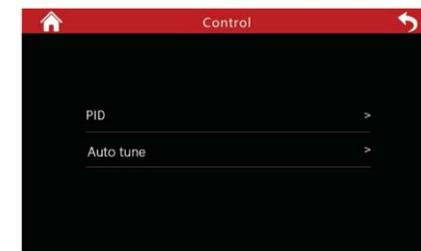


3. Menu Functions:

3.1 Setting menu:  The menu includes control setting, calibration setting, system setting, system information. Password (880810)



3.1.1 Control setting interface as shown below, you can set the required functions according to the use situation



PID Settings provides 8 sets of temperature parameters.  
(As shown below)

Point (°C)	P	I	D	P <sub>max</sub>
50				
100				
200				
300				
400				
500				
600				
650				

PID setting has generally been adjusted before delivery. When the control fluctuation is not ideal during use, PID self-setting is required. Select the dialog box of parameter self-setting interface to enter the self-setting interface, click "AT(ON)" interface, and the message "In the process of self-tuning" is displayed on the main interface.  
(As shown below)



Click the "SAVE" button below to complete the self-tuning.



3.1.2 Calibration settings: 16 sets of data calibration corrections are provided. When there is a deviation between the displayed temperature and the standard platinum resistance temperature, the temperature at the point of use needs to be calibrated and corrected. When calibrating, enter the deviation value in the deviation column, and return to the main interface after the input is completed.

**Note: deviation value = standard value - equipment temperature set value**

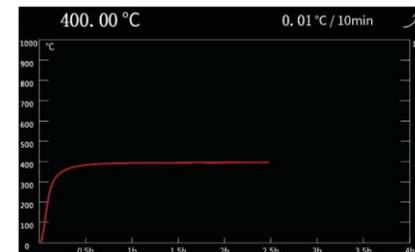
Calibration Point (°C)	Offset (°C)	Calibration Point (°C)	Offset (°C)
25		350	
50		400	
100		450	
125		500	
150		550	
200		600	
250		650	
300		700	

3.1.3 System setting:

Optional display languages: Chinese and English  
Optional display temperature unit: °C and °F



3.1.4 Temperature curve: Menu can display the change of heating process



## Stop/End

After verification, click the stop button on the main interface to stop the operating system and turn off the main power switch as prompted.



## Maintenance

The dry temperature calibration furnace is designed carefully, easy to operate and easy to maintain. Minimal maintenance is required when the instrument is properly maintained. Users should avoid using the instrument in greasy, damp, dirty or dusty environments. The use of the instrument in an environment without ventilation helps to improve the performance of the instrument.

### Soaking block and hearth maintenance

- The soaking heat block will be oxidized when it is used for a long time, which is a normal phenomenon, and the oxidation degree is related to the use frequency, use temperature and use environment. When the soaking heat block is oxidized seriously, it should be replaced, otherwise the calibration data will be affected.
- When using the instrument, care should be taken to prevent the collision or fall of the heat block, otherwise it may cause permanent damage to the furnace.
- The removable insert may be covered with dust and carbon oxides. If the accumulation is too thick, it will cause the insert to block the metering furnace. Clean the insert regularly to avoid this accumulation.
- If the insert is accidentally dropped, check whether the insert is deformed before inserting it into the furnace. If there is deformation, it is likely to block the metering furnace, the protruding part should be filed or polished.

- Do not cause the probe rod to fall into the furnace or violently impact the furnace bottom. This kind of action can impact the sensor and damage the furnace.

### Power supply and protection switch maintenance

- If the power cord is damaged, replace it with a cable of an appropriate size that matches the current of the instrument. Do not use cables with insufficient rated power.
- If the device is used in a manner inconsistent with the design of the device, the operation of the device may be affected or safety issues may be caused.
- The overheat protection function should be checked every 6 months to see if it is working properly. When checking the protection function selected by the user, set the protection temperature according to the controller instructions. Set the instrument temperature to high and protection and begin heating. When the PV value is higher than the protection temperature, check whether the heating is automatically stopped.

### Cleaning product

#### Caution

- If the outside of the instrument is dirty, it can be cleaned with a wet cloth and neutral detergent. Do not use strong chemicals and organic solvents on the surface to prevent damage to the paint or plastic.
- Be sure to keep the calibration furnace clean and free of any foreign objects. Do not use liquids to clean the furnace.