KERN OPTICS

# Digital Refractometer



# Operational Manual

## Catalogue


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Before operating your instrument, please read this manual properly.

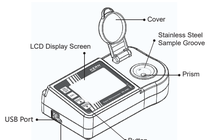
⚠

This digital refractometer cannot measure any liquid that is highly corrosive to metal or glass. When measuring liquids that are corrosive to plastics or react chemically with plastics, be careful not to drop the measured liquid onto the shell. Otherwise it will corrode the shell.



## 1.Introduction

Panel Descriptions



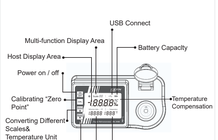

The Packing Accessories：

Packaging x1 The instructions x1 Dropper x1
Screwdriver x1 USB Line x1 Charger x1



## 2.Display and Buttons

Display Areas and Buttons




⚠ If ⊐ is displayed, please charge it.

## 3.Preparations before Operating

3.1 Install the Battery

Use the screwdriver to open the battery hatch.






3.2 USB Connection

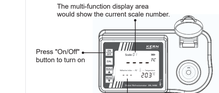
Connect to USB for charging/connecting to the computer.



USB Interface

## 4.Booting and Measurement

4.1 Booting

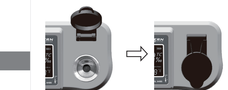



⚠ Note：

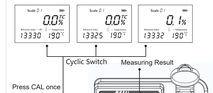
1. When used outdoors,please avoid strong light so as not to affect the measurement accuracy.
2. Before dripping into the sample liquid, please clean the sample plate and Prism with soft clean cloth or soft paper.
3. Please keep the instrument in a stable status to measure.
4. Please ensure instrument, environment and sample are in the same temperature level before measuring.

4.2 Measurement

After turn on,clear the distilled water and dry the sample plate, drip 0.3~0.4ml sample then close the cover to measure.







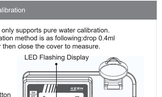

If press the "Read" button for 2 seconds, the instrument would make the automatic measurements upon programmed times (default 15times), the final value is the average of 15 times' measurements, After measurements, it will return to the normal state and the scales display area would display the average of the automated measurements

The multifunctional area displays the number of remaining automatic measurements.For each automatic measurement, this number is reduced by 1.



## 5.The Calibration

The meter only supports pure water calibration. The calibration method is as following:drop 0.4ml pure water then close the cover to measure.




Press "CAL" button once again during the 'CAL' flashing to start to calibrate. When the calibration is completed showing as following.
If no any operations for 15seconds the instrument would return back to booting status.



If fail to complete the calibration, multi-function display area would show an error code.



Display error code A03,indicating error of sensor measurement.See the appendix for other error codes .



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We recommend calibrating the refractometer,

- when commissioning
- after a strong shock
- after longer transport
- after a change of location with a large temperature difference
- if the device has not been used for a long time

Always use distilled water and make sure that the refractometer, the water and the environment are at the same temperature.

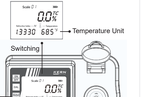
## 6.Scales converting and temperature systems converting

6.1Scales Converting




6.2Temperature System Converting






If exceed the temperature limitations, the signs "HHH" or "LLL" would show.



## 7.Turn Off

1. After turn on if without any operations for 3 minutes, the instrument would be automatically turned off.
2. Press 'on/ off " button for 2-3 seconds, the instrument would be turned off.

## 8.Maintenance and Preservation

1. Please clean and wash the sample plate with distilled water and dry it with soft cleaning cloth or paper towel after finishing the measuring one kind sample.
2. Never left the remains and residuals of samples in the sample plate for long time.



3. After finishing measurements of the corrosive liquid, please clean the sample plate as quick as possible to avoid the irreparable damage of the prism and metal surface of the plate.
4. Please use soft cleaning cloth or paper towel to clean the sample plate to avoid scribing the prism's glass.
5. When the dropper and dust-free cloth are not used, please clean it with clean water and put it in the packing box after drying.
6. If no using the instrument for a long time, please remove the battery, and preserved in a cool and dry environment.

## 9.Appendix

Performance:

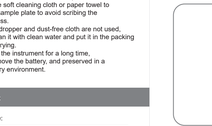
| | Range | Accuracy | Resolution |
|---|---|---|---|
| Brix | 0.0%~94.0% | ±0.1% | 0.1% |
| R.I. | 1.3330~1.5290 | ±0.0002 | 0.0001 |
| Temperature | 0.0~40.0℃ | ±0.3℃ | 0.1℃ |
| | 32.0~104.0℉ | ±0.6℉ | 0.1℉ |
| Dimension | 180*100*55mm | | |
| Net weight | 365g (excluding battery) | | |

The Error Codes Table:

| Code | Instructions |
|---|---|
| A01 | Beyond the scope of calibration temperature. (1.0℃~40.0℃) |
| A02 | During calibration, no solution or non-pure water |
| A03 | This instrument has a hardware failure. |



Description of Scales Numbering:



2024/09 V3.2