KERN OPTICS ORM-2CO Digital Refractometer Instruction Manual

Contents

KERN OPTICS ORM-2CO Digital Refractometer

INSTRUCTION MANUAL

Carefully read through the operating manual even if you have prior experience with KERN refractometers.

1. General information

1.1 Intended use

The refractometer is a measuring instrument for determining the refractive index of transparent substances in liquid or in some cases also in the solid state. It is used to observe the behaviour of light as it passes from a prism with known properties to the substance being tested.

Use of the refractometer for other purposes is contrary to its intended use and may be hazardous. The manufacturer shall not be liable for any damages caused by improper use.

1.2 Warranty

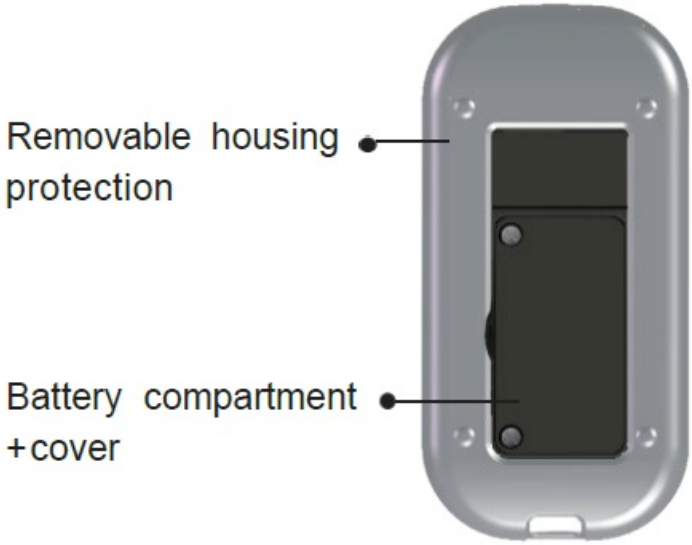
The warranty shall be void in the event of:

- Failure to observe the instructions in the operating manual
- Use for purposes other than those described
- Modifications or opening the device housing
- Mechanical damage and/or damage resulting from media, liquids, natural wear and tear

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.

2. Introduction

2.1 Description

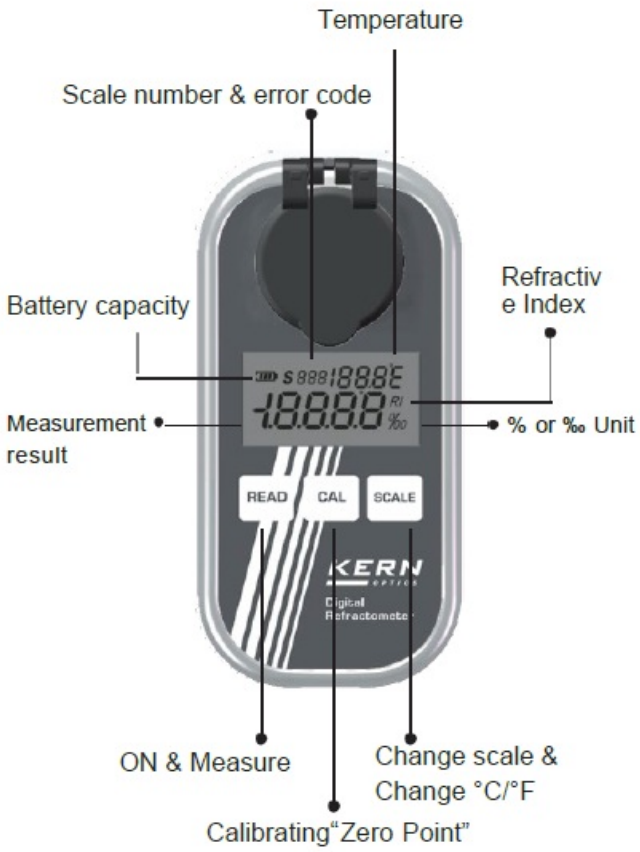


2.2 Scope of delivery

- 1x Strorage box |
- 1x Digital refractometer |
- 1x Operating manual |
- 1x AAA Battery 1.5 V |
- 1x Pipette |
- 1x Screwdriver

3. Display & operating buttons

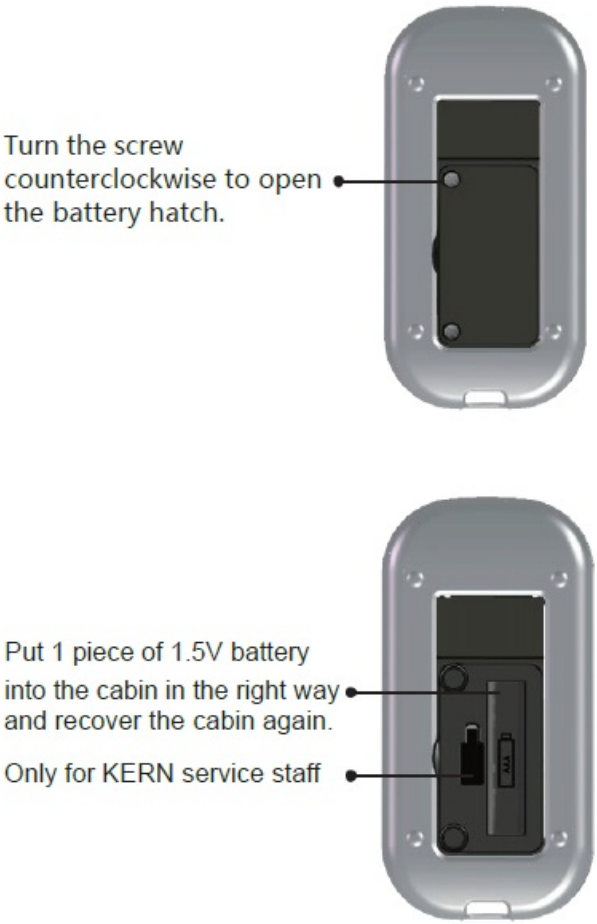
3.1 Description display & operating buttons



Note Please replace the battery when the  is displayed.

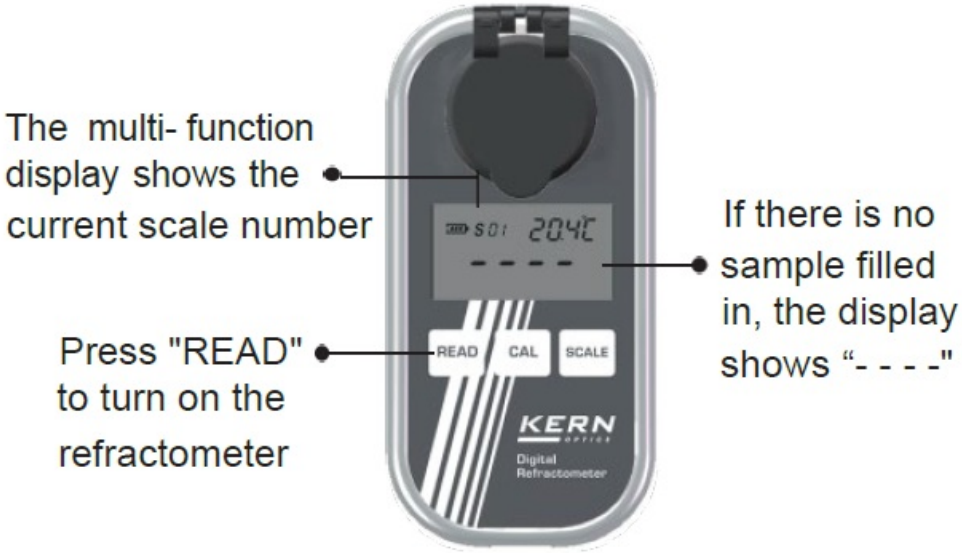
4. Preparing before operating

4.1 Install the battery



5. Turn on & measure

5.1 Turn on

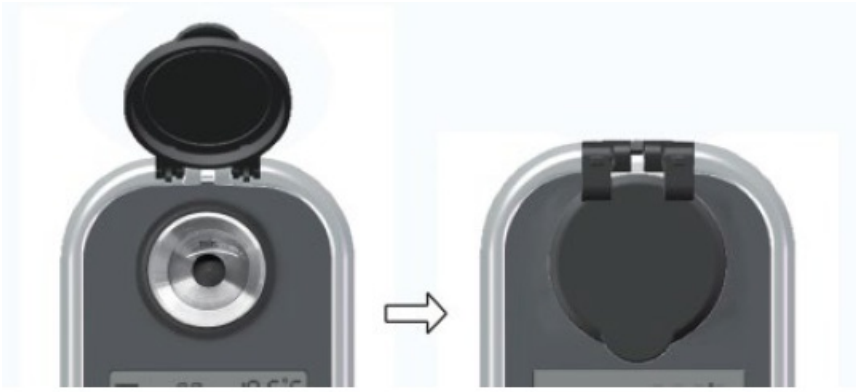


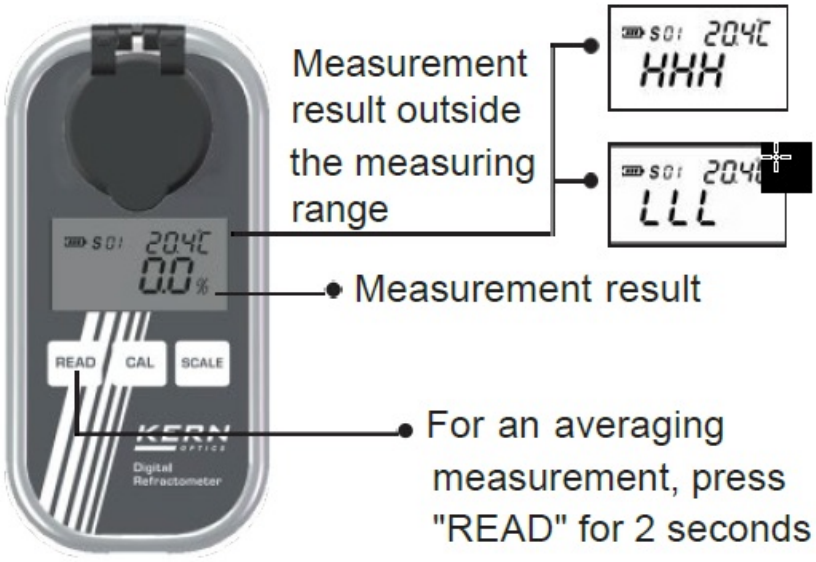
Note :

1. When used outdoors, please avoid strong light so as not to affect the measurement accuracy.
2. Please keep the instrument in a stable and still statement and position.

5.2 Measure

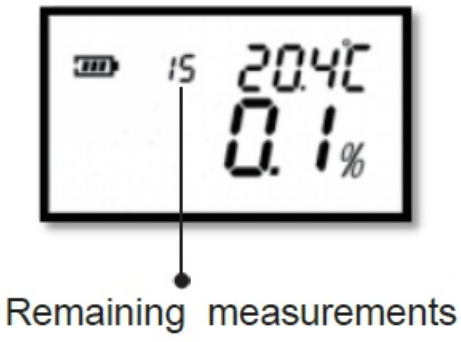
After turning on, clean the sample tank with distilled water and then dry it. Now fill the sample up to the mark, close the cover and press ” READ”.





5.3 Average value measurement

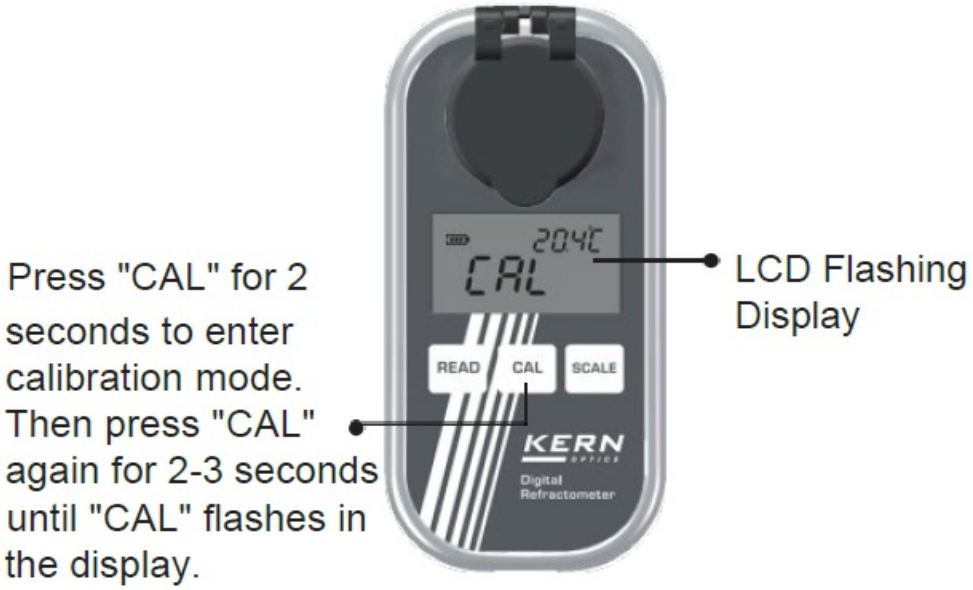
Press “READ” for 2 seconds. The device starts an automatic measurement series of 15 mea- surements and shows the average value. After- wards, the device automatically turns back to the normal measuring mode.



6. Calibration

The refractometer can only be calibrated with distilled water. To do this, fill the sample tank with distilled water up

to the mark and close the cover.



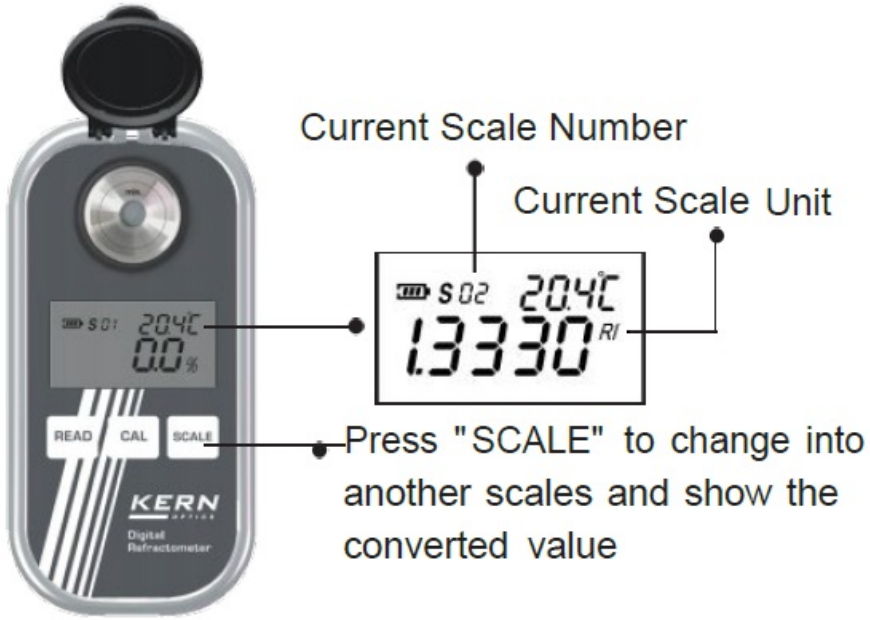
While “CAL” is flashing in the display, press “CAL” again to start the calibration. When the calibration is finished, the display shows “End”. After approx. 10 seconds, the device automati- cally returns to normal mode.

If the calibration was not completed successfully, an error code appears in the display. Here, for example, A01.

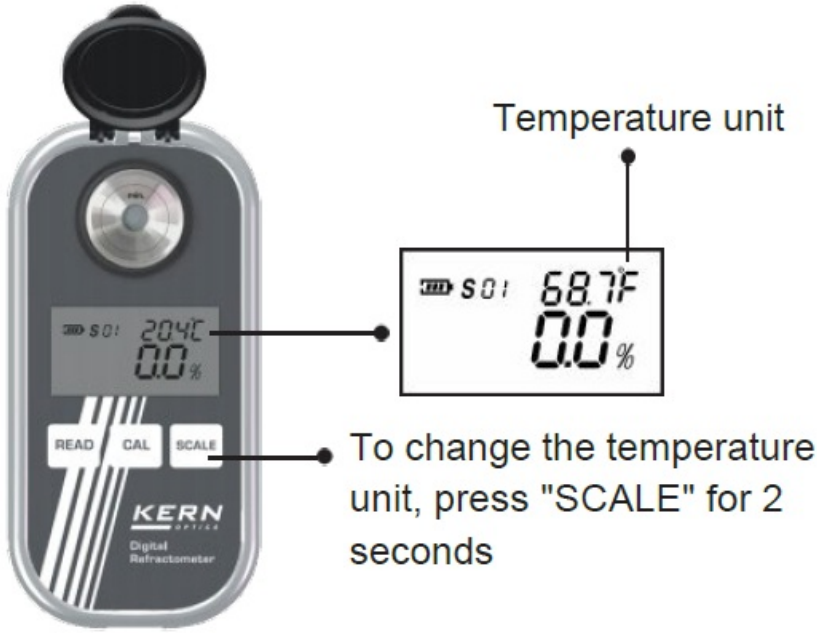
Further error codes can be found in the appendix.

7. Changing scale & termperature unit

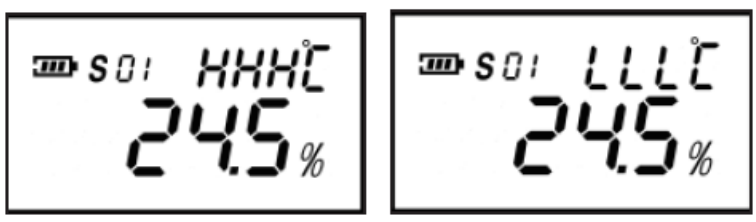
7.1 Changing scale



7.2 Changing termperature unit



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



8. Turning off

If without any operations for 1 minute, the instrument would be automatically turned off.

9. Cleaning & maintenance

1. To avoid damages to the prism and the sample tank, clean them with distilled water after each use.

2 . Dry it with a soft cloth afterwards.
3 . Do not use hard or abrasive objects for cleaning.

4 . Do not leave any residue in the sample tank.

5. If the refractometer is not going to be used for a longer time, remove the battery and store it at a cool and dry place.

10. Disposal

The packaging consists of environmentally friendly materials which can be disposed of via local recycling facilities.

The device and storage box should be disposed of by the operator in accordance with applicable national or regional regulations at the place of use.

NOTE: In accordance with the Battery Ordi- nance (BattV), batteries must not be disposed of in householdwaste. The end user is legally obliged to return them.

11. Technical data

Scale + accuracy + resolution	Depents to the model
Temperature	0,0 – 40,0 °C / 32,0 – 104,0 ° F
Automatic Temperature Compensation	Yes
Minimum sample volume	0.2 – 0.3 ml (Marking ring)
AUTO-OFF	60 seconds
Averaging measurement	15 measurements
Battery	1 × AAA 1.5 V
Lifetime of the battery	Approx. 10.000 measurements
Overall dimensions L×W×H	125×65×30 mm
Net weight	140 g (without battery)

12. Error codes

Code	Instructions
A01	Beyond the scope of calibration temperature. (0.0℃~40.0℃)
A02	During calibration, no solution or solution wrong.
A03	This instrument has a hardware failure.

13. Models and scales

	Model	Scale	No.	Range	Unit	Resolution	Accuracy
	ORM 50BM	Brix	S01	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S02	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
	ORM 1RS	Brix	S01	0.0~90.0	%	0.1%	±0.2%
		Refractive Index	S02	1.330~ 1.5177	nD	0.0001nD	±0.0003nD
Fructose	ORM 1SU	Fructose	S01	0.0~68.9	%	0.1%	±0.2%
		Glucose	S02	0.0~59.9	%	0.1%	±0.2%
		Brix	S03	0.0~90.0	%	0.1%	±0.2%
		Refractive Index	S04	1.3330~ 1.5177	nD	0.0001nD	±0.0003nD
	ORM 2SU	Lactose	S01	0.0~ 16.5	%	0.1%	±0.2%
		Maltose	S02	0.0~ 15.6	%	0.1%	±0.2%
		Dextran	S03	0.0~ 10.6	%	0.1%	±0.2%
		Brix	S04	0.0~50.0	%	0.1%	±0.2%
Honey	ORM 1HO	Honey Water	S01	5.0~38.0	%	0.1%	±0.2%
		Honey Baume	S02	33.0~48.0	°Bé	0.1	±0.2
		Brix	S03	0.0~90.0	%	0 .1%	±0 .2%
		Refractive Index	S04	1.3330~ 1.5177	nD	0.0001nD	±0.0003nD
Salinity	ORM 1NA	Salinity (NaCl) %	S01	0.0~28.0	%	0.1%	±0.2%
		Salinity (NaCl) ‰	S02	0~280	‰	1‰	±2‰
		Specific Weight	S03	1.000~ 1.220	-	0.001	±0.002
		Brix	S04	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S05	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
	ORM 1SW	Salinity Seawater	S01	0~ 100	‰	1‰	±2‰
		Chlorinity Seawater	S02	0~57	‰	1‰	±2‰
		Specific Weight	S03	1.000~ 1.070	-	0.001	±0.002
		Brix	S04	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S05	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
Alcohol	ORM 1AL	Alcohol Mass.	S01	0~72	%	1%	± 1%
		Alcohol Vol.	S02	0~80	%	1%	± 1%
		Brix	S03	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S04	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
Beer	ORM 1BR	Plato	S01	0.0~30.5	°P	0.1	±0.3
		SG Wort	S02	1.000~ 1.130	-	0.001	±0.002
		Brix	S03	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S04	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
Wine	ORM 1WN	Oechsle	S01	0~ 150	°Oe	1	±2
		Vol%	S02	0.0~22 .0	%	0.1%	±0.2%
		KMW (Babo)	S03	0.0~25.0	-	0.1	±0.2
		Brix	S04	0.0~50.0	%	0.1%	±0.2%
	ORM 2WN	Oechsle France	S01	0~230	°Oe	1	±2
		Vol%	S02	0.0~22.0	%	0.1%	±0.2%
		KMW (Babo)	S03	0.0~25.0	-	0.1	±0.2
		Brix	S04	0.0~50.0	%	0.1%	±0.2%

Coffee	ORM 1CO	Coffee TDS 1	S01	0.0~25.0	-	0.1	±0.2
		Brix	S02	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S03	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
	ORM 2CO	Coffee TDS 2	S01	0.00~25.00	-	0.01	±0.20
		Brix	S02	0.00~30.00	%	0.01%	±0.20%
		Refractive Index	S03	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
Urine	ORM 1UN	Urine Human	S01	1.000~ 1.050	-	0.001	±0.002
		Serum Protein	S02	0.0~ 12.0	g/100ml	0.1	±0.2
		Brix	S03	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S04	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
	ORM 2UN	Urine Cat	S01	1.000~ 1.060	-	0.001	±0.002
		Urine Dog	S02	1.000~ 1.060	-	0.001	±0.002
		Brix	S03	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S04	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
Car / Industry	ORM 1CA	Cleaner	S01	(-60.0)~0.0	°C	0.1℃	±0.5℃
		AdBlue®	S02	0.0~51.0	%	0 .1%	±0 .2%
		Battery Fluid	S03	1.000~ 1.500	-	0.001	±0 .005
		Brix	S04	0.0~50.0	%	0.1%	±0.2%
		Refractive Index	S05	1.3330~ 1.4200	nD	0.0001nD	±0.0003nD
		Ethylenglycol (%)	S01	0.0~ 100.0	%	0.1%	±0.5%
		Ethylenglycol (°C)	S02	(-50.0)~0.0	℃	0.1℃	±0.5℃
		Propylenglycol (%)	S03	0.0~ 100.0	%	0.1%	±0.5%
	ORM 2CA	Propylenglycol (°C)	S04	(-60.0)~0.0	°C	0.1℃	±0.5℃
		Brix	S05	0.0~90.0	%	0.1%	±0.2%

Specifications

- Material: Stainless steel
- Display: LCD Multi-function display
- Power: 1x AAA Battery 1.5 V
- Accessories: 1x Storage box, 1x Pipette, 1x Screwdriver

Product Usage Instructions

1. General Information

The refractometer is intended for determining the refractive index of transparent substances in liquid or solid states. Any other use is not recommended and may be hazardous.

2. Introduction

The digital refractometer comes with a stainless steel sample tank, LCD display, operating buttons, and removable housing protection for durability.

3. Display & Operating Buttons

The display shows temperature, scale number, measurement results, refractive index, and battery capacity. Use the operating buttons for functions like calibration and measuring.

4. Preparing Before Operating

Install the provided AAA battery by opening the battery hatch and placing the battery correctly.

5. Turn On & Measure

5.1 Turn On: Press the READ button to turn on the refractometer. Ensure the sample tank is clean and filled up to the mark before pressing READ for measurement.

5.2 Measure: After turning on, clean the sample tank with distilled water, fill the sample up to the mark, close the cover, and press READ for measurement.

5.3 Average Value Measurement: Press READ for 2 seconds to start an automatic series of 15 measurements and display the average value.

FAQ

Q: Can this refractometer measure highly corrosive liquids?

A: This digital refractometer cannot measure liquids highly corrosive to metal or glass. Be cautious with liquids corrosive to plastics as they may damage the shell if spilled.

Q: How do I calibrate the refractometer?

A: To calibrate, follow the instructions in the manual.
Typically, it involves adjusting to a known reference standard.

Q: What should I do if the measurement result is outside the range?

A: Ensure that the sample is prepared correctly and that the instrument is clean. If issues persist, refer to the error codes section in the manual.

Documents / Resources

	KERN OPTICS ORM-2CO Digital Refractometer [pdf] Instruction Manual ORM-2CO Digital Refractometer, Digital Refractometer, Refractometer

References

- User Manual