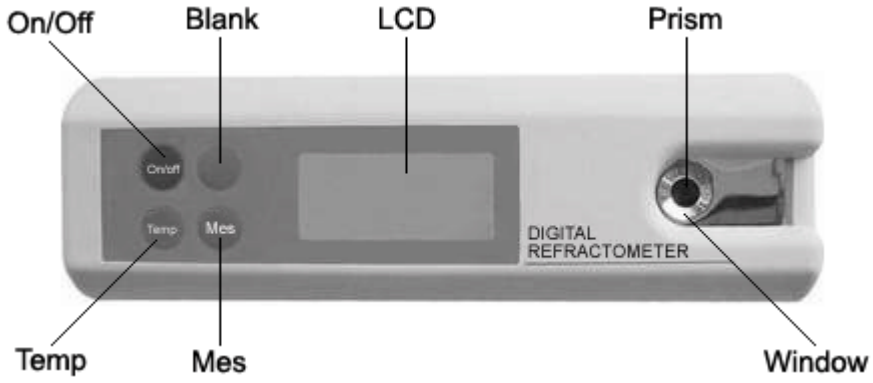
Operation Manual

DREF/UP320 (DR303) Portable Digital Refractometer

The Brix concentration, Refractive index or other parameters are always needed in lab or our life. Optical refractometer is very popular used to measure these parameters. The Digital refractometer with a digital readout and LCD display will eliminate uncertainties and is more convenient to use. Just about 0.3ml-0.5ml sample was needed. All our digital refractometers have the following characters:

- Automatic Temperature Compensation
- Automatic Shut Off after 3 minutes
- Conversion between Centigrade and Fahrenheit Degree
- Alarm of Low Voltage & Low power consumption
- Temperature Measurement Range：0℃－40℃（32℉－104℉）
- Precision of Measurement temperature：±0.1℃(2℉)
- Measurement temperature Resolution：0.1℃(2℉)
- Operation Temperature：0℃－40℃（32℉－104℉）
- Storage temperature：-10℃－50℃ （14℉－122℉）
- Dimension ：185×59×45mm
- Weight：230g
- Power Supply：1battery（9v）
- Operating Time：More than 1500 times per battery

Ⅰ Parts:



Ⅱ Installation Battery:

In the case of no battery or low battery with alert of “(((“ on the upper left of LCD, you should install or replace the battery. Open the battery cover on the back of the instrument, install a battery or replace the old battery with a new one.

Ⅲ Power On and Off:

Press the “On/Off” button to turn it on or off. Temperature in Centigrade will display when power on. The instrument will turn off automatically if there is no any operation in three minutes.

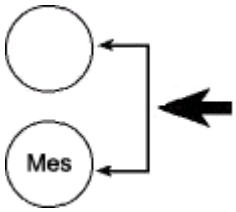
Ⅳ Measurement of Temperature:

Temperature can be displayed at any time by press the “Temp” button during measurement. The conversion between Fahrenheit and Centigrade can be made by pressing “Temp” button.

Ⅴ Conversion of Status of Scales:

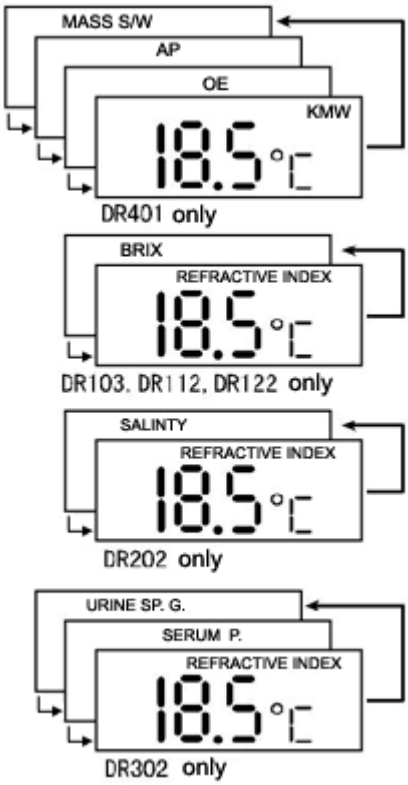
1. Turn it off: Press the “On/Off” button to turn refractometer OFF.

2. Synchronously hold “Blank” button and “Mes” button.



3. Turn it on: Press the “On/Off” button to turn refractometer ON.

4. Repeat step 1-3 to set other scale.



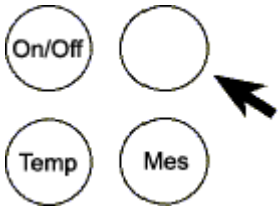
Please be NOTICED: *The chosen status of scale will be stored no matter if power off.*

Ⅵ Original Point Setting:

1. Completely clear prism window

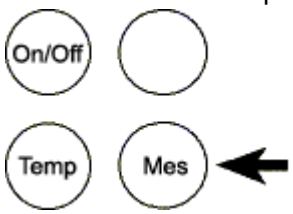
2. Drop standard solution to fill the prism window

3. Hold “Blank” button for Five seconds till it twinkles “rEF” on LCD



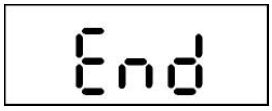
Hold *5 seconds*

4. Within 10 second after display “rEF”, press “Mes” button and hold it for Five seconds.



Hold *5 seconds*

5. The instrument start to set Original Point. After Original Point, Setting is finished. “End” will be displayed on LCD.



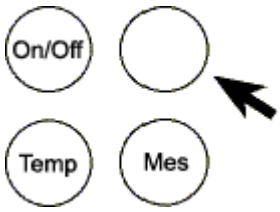
Please be NOTICED: Be sure power of battery is sufficient and environment temperature is between 10-30 Centigrade degree. 18-22 Centigrade degree is better to get high zero precision after Original Point Setting. Original Point setting can be operated under any scale status. Please find Original Point List in last page.

Ⅶ Zero Checking: (This function is not available for DR101/201/301.)

1. Completely clear prism window.

2. Drop standard solution, which temperature is same as the tested solution, to fill the prism window.

3. Press “Blank” button for Zero Checking. “zero check” will be displayed on middle right side of LCD.



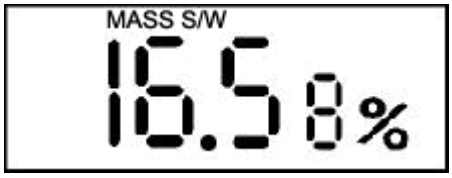
Please be NOTICED: *If the test result exceeds the rang of accuracy, glint will be showed on LCD. Press any key to exit status of zero-checking.*

Ⅷ Measurement Procedure:

1 Completely clear prism window.

2 Drop one or two drops of solution which we want to measure to fill the prism window.

3 Press “Mes” button.



Ⅸ Precaution:

1) Don’t expose the instrument to low, high temperature and sunlight for long time, to avoid LCD losing effectiveness.
2) Because the instrument is very precise, it prohibited from violent shock.
3) To avoid damage, don’t disassemble and assemble the instrument or change the inner circuit and parts.
4) Zero-setting should be implemented strictly according to instrument.
5) Be sure to clean the prism surface and window of stage before and after every measurement.
6) To avoid that accuracy is affected by evaporation, be sure to implement measurement immediately after dripping solution on window of stage.
7) It can cause worry result if keep measuring under low voltage.
8) Don’t use it under the strong light (as sunlight, lamp etc.) and don’t use the instrument in the humid and corrosive environment.
9) Prevent from liquid into battery house.

Ⅹ Model List:

MODEL	SCALES	RANGE	DIVISIONS	ACCURACY	Original
DR103	BRIX	0-35%	0.1	±0.1	0.0
	REFRACTIVE INDEX	1.3330-1.3900	0.0001	0.0003	1.3330
DR103L	BRIX	0-45%	0.1	±0.1	0.0
	REFRACTIVE INDEX	1.3330-1.4098	0.0001	0.0003	1.3330
DR112	BRIX	28-65%	0.1	±0.1	30.0
	REFRACTIVE INDEX	1.3800-1.4535	0.0001	0.0003	1.3812
DR122	BRIX	60-92%	0.1	±0.1	60.0
	REFRACTIVE INDEX	1.4400-1.5230	0.0001	0.0003	1.4419
DR203	SALINITY	0-28%	0.1	±0.1	0.0
	REFRACTIVE INDEX	1.3330-1.3900	0.0001	0.0003	1.3330
DR303	URINE SP.G	1.000-1.050	0.001	±0.001	1.000
	SERUMP.	0-12	0.1	±0.1	-0.9
	nD	1.3330-1.3900	0.0001	0.0003	1.000
DR401	MASS S/W	0-35%	0.1	±0.1	0.0
	AP	0-22	0.1	±0.1	0.0
	Oe	0-150	1	±1	3
	KMW	0-25	0.1	±0.1	0.0
DR501	SALINITY	0-28%	0.1	±0.1	0.0
	BRIX	0-35%	0.1	±0.1	0.0
	REFRACTIVE INDEX	1.3330-1.3900	0.1	0.0003	1.3330
DR701	Propylene Glycol	32 (-50)℉	0.1	±0.5	32℉
	Ethylene Glycol	32 (-50) ℉	0.01	±0.5	32℉
	Battery Acid	1.10 ~ 1.30sg	0.1	±0.01	1.10
	Cleaner	14 (-40) ℉	0.1	±0.5	32℉
DR702	Propylene Glycol	0 (-50) ℃	0.1	±0.2	0.0
	Ethylene Glycol	0 (-50) ℃	0.1	±0.2	0.0
	Battery Acid	1.10 ~ 1.40sg	0.01	±0.01	1.10
	Cleaner	14 (-40) ℃	0.1	±0.2	0.0