

DIGITAL REFRACTOMETER INSTRUCTION MANUAL



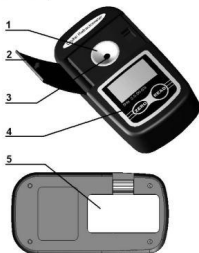
Specifications & Features

MODEL	SCALES	RANGE	DIVISIONS	ACCURACY
LH-DR101	Brix	0-65%	0.1%	±0.2%
LH-DR102	Brix	0-65%	0.1%	±0.2%
	RI(nD)	1.3330-1.4535	0.0001	±0.0003
LH-DR111	Brix	40-95%	0.10%	±0.2%
LH-DR112	Brix	40-95%	0.10%	±0.2%
	RI(nD)	1.3990-1.5320	0.0001	±0.0003
LH-DR151	Brix	0-95%	0.10%	±0.2%
LH-DR152	Brix	0-95%	0.10%	±0.2%
	RI(nD)	1.3330-1.5320	0.0001	±0.0003
LH-DR201	SALINITY	0-28%	0.10%	±0.2%
LH-DR202	SALINITY	0-28%	0.10%	±0.2%
	RI(nD)	1.3330-1.4098	0.0001	±0.0003
LH-DR301	URINE SP.G	1.000-1.050	0.001	±0.002
LH-DR302	URINE SP.G	1.000-1.050	0.001	±0.002
	SERUM P.	0-12	0.1	±0.2
	RI(nD)	1.3330-1.3900	0.0001	±0.0003
LH-DR401	BRIX	0-35%	0.10%	±0.2%
	VOL AP	0-22%	0.10%	±0.2%
	Oe	0-150	1	±2
	KMW	0-25	0.1	±0.2

- affect readings. If this occurs, the prism should be cleaned with a weakened detergent or similar solvent.
- Do not use an instrument unless you have personal knowledge of calibration.

Automatic Temperature Compensation (ATC)

Automatic-temperature-compensation insure that concentration reading of aqueous (water-based) solution will be accurate with respect to the sample's temperature. This digital refractometer is able to automatically correct for differences in the temperature of the sample to a reference temperature, usually 20°C. It is well know that substantially all materials expand when heated (become less dense) and contract when cooled (become more dense). The speed of light in a liquid increases with temperature, and the refractive index therefore decreases. Although this thermal effect is small for solids, the change in density for liquids is substantial. For example, the reading for a sucrose solution will change by approximately 0.5 Brix for each 10°F (5°C) change in temperature. So a 10 Brix solution read at 42°C (108°F) would read 8 Brix on a non-temperature compensated instrument. Many hand-held refractometers are not temperature compensated and require the user to manually take temperature measurements and apply a correction. Other hand-held refractometers offer only rudimentary compensation in the range of 18°C (65°F) to 35°C (95°F). This digital refractometer can automatically compensate for temperature differences within the range 5°C to 40°C. For the most accurate possible readings the instrument, the ambient temperature and the fluid should be in equilibrium within this temperature range. When testing a sample with a temperature that deviates a great deal from the temperature of the instrument. It may be necessary to put the instrument and the fluid in the same environment for some time. A good rule is to wait approximately 30 minutes for each 10°F (5°C) difference in temperature in order to conduct measurement after keeping the instrument, fluid to be tested and environment in the same temperature.



- 1----- Stainless steel sample plate
- 2----- Prism Cover
- 3----- Prism
- 4----- Keypad
- 5----- Battery Cabin

Confirmation of Package

Please confirm the following contents of the package immediately when the Unit is unpacked.

- ▶ bottle of distill water 1 (this is optional item)
- ▶ battery (1.5 v) 1 (this is optional item)
- ▶ burette 1

MODEL	SCALES	RANGE	DIVISIONS	ACCURACY
LH-DR501	BRIX	0-35%	0.10%	±0.2%
	SALINITY	0-28%	0.10%	±0.2%
	RI(nD)	1.3330-1.3900	0.0001	±0.0003
LH-DR601	WATER	38%-5%	0.10%	±0.2%
	Be'	33-48	0.1	±0.4
	RI(nD)	1.4400-1.5320	0.0001	±0.0003
LH-DR602	BRIX	60-92%	0.10%	±0.2%
	WATER	38%-5%	0.10%	±0.2%
	Be'	33-48	0.1	±0.4
LH-DR701	RI(nD)	1.4400-1.5320	0.0001	±0.0003
	PROPYLENE G.	(32)≈(-50)°F	0.1°F	±2.0°F
	ETHYLENE G.	(32)≈(-50)°F	0.1°F	±2.0°F
	BATTERY	1.00-1.50 sg	0.01sg	±0.01sg
LH-DR702	CLEANER	(14)≈(-40)°F	0.1°F	±2.0°F
	PROPYLENE G.	(0)≈(-50)°C	0.1°C	±1.0°C
	ETHYLENE G.	(0)≈(-50)°C	0.1°C	±1.0°C
	BATTERY	1.00-1.50 sg	0.01sg	±0.01sg
LH-DR702	CLEANER	(0)≈(-40)°C	0.1°C	±1.0°C

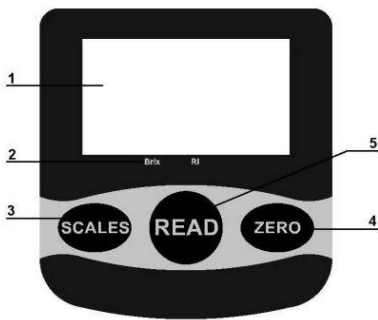
SIZE	WEIGHT	POWER
118×62×32mm	130 g	7# BATTERY

- Automatic Temperature Compensation (ATC).
- All series of zero calibration function with distilled water.
- Automatic shut off after 30 seconds
- Instantaneous reading
- Stainless steel sample plate
- Operation humidity: lower than 90%.
- Operation sea level: lower than 2000m.
- Operation temperature: 0 °C (32 °F) - 40 °C (104 °F).
- Storage temperature: -10 °C (14 °F) - 50 °C (122 °F)
- Power supply: a 1.5V Alkaline Battery
- Operating time: more than 8000 times per battery.
- Weight: 130 g
- Dimensions: 118mm×62mm×32mm

Precautions

- This refractometer is an electronic instrument, it can become damaged if dropped or handled in a rough manner.
- The prism is made of optical glass and is susceptible to scratches, do not apply any rough or abrasive material and take care when cleaning the prism.
- After each use, clean the prism & prism assembly with a soft cloth or tissue soaked in water and wipe off with a dry cloth or tissue.
- Do not hold the refractometer under a stream of water from a faucet. Do not splash it with or dip it in water.
- If the surface of the prism becomes coated with an oily solution or similar, it will repel test sample and

LCD Keypad Components



1 --- LCD 2 --- Scale's Name 3 --- Scale Key 4 --- Calibration Key 5 --- Read Key

Operations:

Item		Functions	Remarks
READ Key	READ	Power: The instrument is powered on by pressing the READ Key. At the same time, the Temperature displays on the LCD.	The refractometer will be powered off after 20 seconds of non-use. When the alarm of battery display on the LCD, replace with a new battery.
	READ	Measurements: Apply approximately 1.0ml (or more) of sample to the prism surface. Press the READ key. Within 1 second, the value is shown on the LCD display.	For the best results, gently clean and wipe the prism with distilled water and tissue paper.
ZERO Key	ZERO	Zero-Check: Pressing Zero key quickly to perform Zero-Check function.	Displays the nD value of the solution.
	ZERO	Calibration: Pressing Zero key to perform a zero calibration. To eliminate accidental calibrations, the key must be pressed for 3 seconds.	
SCALES Key	SCALES	Active Scale: The scales can be switched between Brix, Refractive Index, and other scales by press the Scales Key until the desired scale is shown by the scale indicator at the bottom section of the LCD display.	

Calibration

- Calibration should be performed on a daily basis for optimum results and accuracy. For the best results, perform calibration in a controlled environment of 20 C (68 F) using distilled water of the same temperature. It's recommended to allow the instrument and the distilled water to reach temperature equilibrium with the controlled environment before calibration takes place.
- Apply approximately 1.0 ml (or more) of distilled water to the prism surface. Press the ZERO key for 3 seconds. When calibration is complete, "CAL" will be shown on the LCD display. To check the nD value of the zero setting for the distilled water, press the ZERO key, quickly, once. This data can be viewed at any time to show the last calibration value.
- When calibration is complete, gently wipe the prism using tissue paper.