

# Gammon Technical HB/2D Digital Refractometer User Guide



## INTRODUCTION:

Gammon Technical Products Inc. would like to extend our appreciation to you for purchasing this instrument. It is our mission to provide a quality product at a very competitive price to our end users and we feel this instrument will prove its value to you.

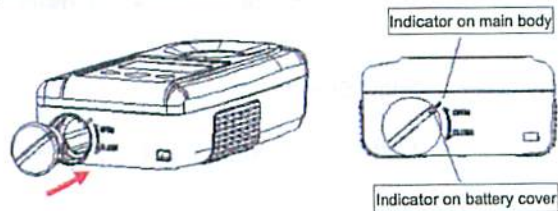
## FEATURES:



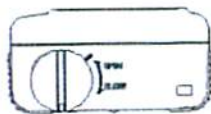
## SIMPLE SET UP:

### Install Batteries

1. Remove battery door by rotating it counter clock wise until it stops and then lift it off. Be careful not to apply excessive force.



2. Install batteries, negative side into cavity first, positive facing outward.
3. Re-install battery door by rotating the cover in the clock wise direction until it is in the position shown below.



## CALIBRATION:

1. Be sure that the measuring surface and well are clean as outlined under the "Cleaning" section.
2. Apply distilled water to the measurement surface.
3. Allow time for the distilled water sample to temperature equilibrate to that of the instrument.
4. Press and hold the "CAL" key until CAL is displayed. While still holding the "CAL" key press the "READ" key and then release both keys.
5. A series of dashed lines will appear and successful calibration will be indicated when the word END is displayed.

## SAMPLE ANALYSIS:

Before analyzing a sample it should be noted that to attain the greatest accuracy the refractometer should be calibrated at the same temperature as the environment that it will be used in. As an example if the environment that the instrument is being used in changes by five degrees then the instrument should be re-calibrated.

1. Extract the sample per ASTM method D 5006-03.
2. Clean and dry the Refractometer sample well and glass surface and apply adequate sample to the sample well to completely cover the glass measuring surface. Minimum sample size is 0.3 mL.
3. Allow sample time to temperature equilibrate to the temperature of the instrument.
4. Press the "READ" key and note displayed values of Percent DiEGME.

## Displaying Actual Temperature:

To display the temperature at the measuring surface, momentarily press the "CAL" button while the sample value is displayed.

## SCALE:

The HB/2D digital refractometer is provided with one scale. This scale measures %DiEGME only. Since the ASTM standard references all measurements in %DiEGME, samples will always be read in the %DiEGME scale.

## CLEANING:

Cleaning of the measurement surface and well should be performed immediately after each sample reading. Never immerse the instrument in any liquid. When the measurement surface and well have been completely cleaned no residue should be present.

Properly clean the sample well and glass measurement surface, using a mild soap and water solution or isopropyl alcohol followed by a distilled water rinse and then thoroughly dry with a soft lint and residue free cloth or a product such as Kimwipes.

Clean the refractometer body using a soft cloth with a mild cleaning solution such as window cleaner. Never use any harsh cleaning agents or solvents that will adversely affect the material that the instrument is made from.

## AUTOMATIC TEMPERATURE COMPENSATION:

Automatic temperature compensation corrects readings over a range of temperatures. As an example: Samples taken within the working temperature range of the instrument (15-30 Deg C) are corrected to a reference temperature of 20 degrees C. Temperature correction is essential because refractive index varies inversely with temperature. This feature is used in lieu of temperature control of the prism and sample. For this feature to be effective however it is necessary to allow the sample to temperature equilibrate to the ambient temperature of the prism.

Finally, for the most accurate and consistent results, readings should be taken within +/- 4 Degrees C of the CALIBRATION temperature.

## PRECAUTIONS:

1. Do not use acetone, acetone based products or other harsh solvents when cleaning the body or it's components.
2. Using strong solvents such as N-Dimethylacetamide, cresols, phenols and other tar acids should be avoided, Tetrahydrofuran or some other lacquer thinners and their components will deteriorate the prism seal and should not be used.

## ERROR CODES:

- Err01 - No sample present. Add sample.
- Err02 - Inadequate sample. Add additional sample.
- Err03 - Sample exceeds the refractive index reading range.
- Err04 - Sample temperature has not equilibrated. Allow more time for temperature equilibration.
- Err05 - Excessive ambient light. Cover sample well when reading.
- Err06 - Excessive ambient light. Cover sample well when reading.
- Err07 - Positive calibration error. Re-calibrate with distilled water.
- Err08 - Negative calibration error. Re-calibrate with distilled water.
- Err09 - Poor sample condition. Sample may not be able to be read.
- Err10 - Sample type may not be able to be read.
- Err12 - Index of sample is out of range of instrument.
- Err5X - For any errors in this series contact Gammon Technical Products Inc. for assistance.

## BATTERY CONDITION:

The following display examples represent either a low battery condition or an extremely low battery condition where the instrument will no longer operate properly. In either case the batteries should be promptly replaced.



Battery condition low.  
Replace Batteries.



Battery condition extremely low.  
Replace Batteries.

## SPECIFICATIONS:

Percent DiEGME Range by Volume - 0 - 0.260%

Resolution - 0.001%

Accuracy - +/- 0.003% DiEGME

Auto Temperature Compensation - 20 Deg C

Calibration - Distilled Water

Prism - Glass

Illumination - 589nm LED

Dimensions - 54 x 27 x 100 mm / 2.13 x 1.06 x 3.9 inches

Power - 2 AAA Batteries, included.

Battery Life - 10,000 readings, Auto Off Sleep Mode.

Ratings - IP65 Dustproof/Water Resistant, CE, RoHS, and WEEE compliant.

Reading Mode = Percent DiEGME by volume.

Warranty - One year against manufacturing defects. Evidence of tampering voids warranty. Contact Gammon Technical Products Inc. directly for warranty service.



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## Parts List:

Part Number	Description
SC-B/2HB-CD	Complete Kit: 18"x13"x6", ID molded black ABS carrying case, nicked hardware, locks and keys; the refractometer and ancillary equipment listed below. Directions included.
SC-B/2-CA	Carrying case only, as described above, pocketed with foam insert to protect instruments.
SC-B/2HB-2D	Refractometer only, hand held, directions included.
<b>Ancillary Equipment</b>	
SC-B/2-F1	Funnel, separatory, polypropylene* 250 ml.
SC-B/2-SB1	Ring Stand
SC-B/2-D1	Dishes, aluminum foil, (100 ct. Per Tube)
SC-B/2-P1	Pipets, piston style, (3ml. 6per kit).
SC-B/2-B2	Bottle, polypropylene*, 60ml. (With screw sap).
SC-B/2-G1	Graduated Cylinder

\*Vender reserves the right to substitute different plastic materials, as availability provides.