



Leading Edge Associates, LLC

Manual

Version 2.4

April 2011

DropVision®

Product Purpose

DropVision® is a droplet measuring system designed to analyze droplet spectrums through image analysis of most teflon and magnesium oxide coated slides.

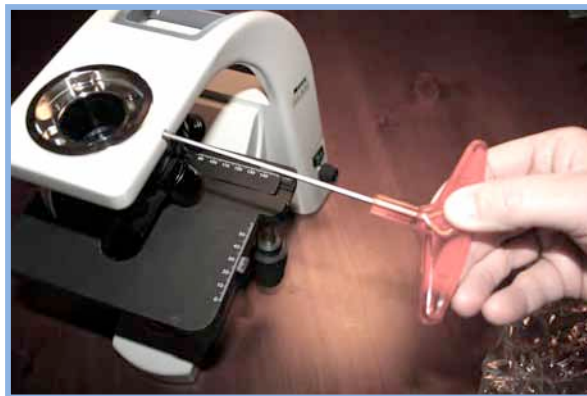
DropVision® consists of a specialized high eye-point compound microscope with a built-in high-resolution digital imaging processor; **DropVision®** Advanced Droplet Image Analysis software; and the **DropVision®** Graphing & Reporting software.

Quick Set-up:

Carefully remove microscope from packaging and place upright on lab bench.



Open and carefully remove the hi-res built-in digital camera assembly and gently place on lab bench on its side without touching lens, located on bottom of assembly.



Using the allen wrench provided, back out locking screw approximately 90% or three quarters of the length of screw until the screw is flush with the housing so that the camera can slide into place.

Carefully place camera assembly on top of Microscope assembly.



Using the allen wrench provided, tighten screw firmly without excessive tension.



Gently pull camera optical shutter lever located on right side of camera assembly out completely.

Microscope & Computer Connection



Simple plug & play USB2.0 connections make it easy to attach the pre-centered and parfocal digital head to either a suitable laptop or desktop computer.



Connect power cable to outlet and USB to back of camera.



Your DropVision® Software as well as the DropVision® manual has been preloaded on your computer.



Microscope and Software Description

This microscope offers users a built-in no hassle professional digital microscope.

With its high-resolution live imaging chip permanently housed in the Seidentopf head, the DMBA300 is an easy to use professional tool that can be connected to a computer for live image analysis.

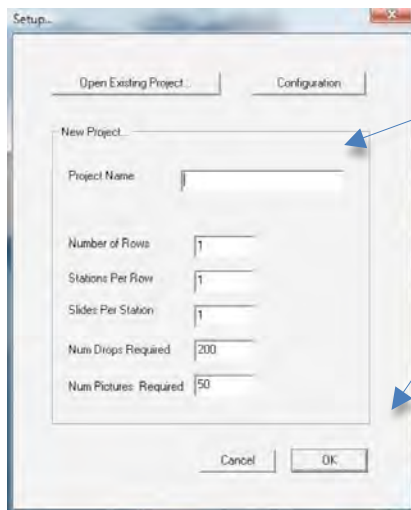
The DMBA300 is a 3.0MP live resolution output digital microscope with powerful optics and a Quartz Halogen Koehler Illumination system

Calibrate the Motic BA300 Microscope

- a. Using the 10x lens, locate the .06 “Dot” in your view finder

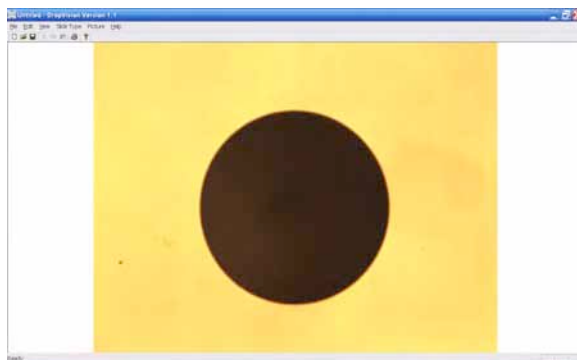


- b. Launch DropVision® Application



- c. Name Project: “Config1”

- d. Click OK

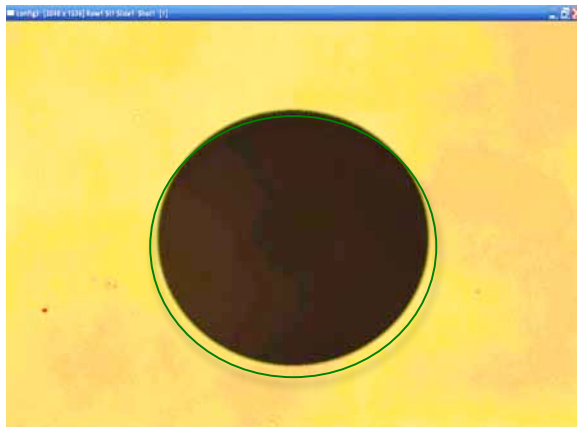


- e. An image of the “Dot” will appear on the screen. Using your light adjustment knob on the lower right corner of the microscope, adjust the light so that the background is near white in color and the dot is near black in color.

f. Press Space Bar to capture configuration image.

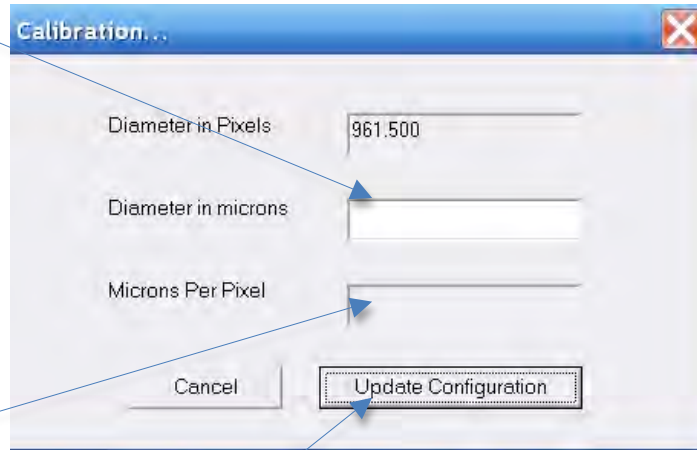


g. You should see the **black** dot image surrounded with a **red** circle. Put your cursor inside the red circle and click your mouse to turn it **green**



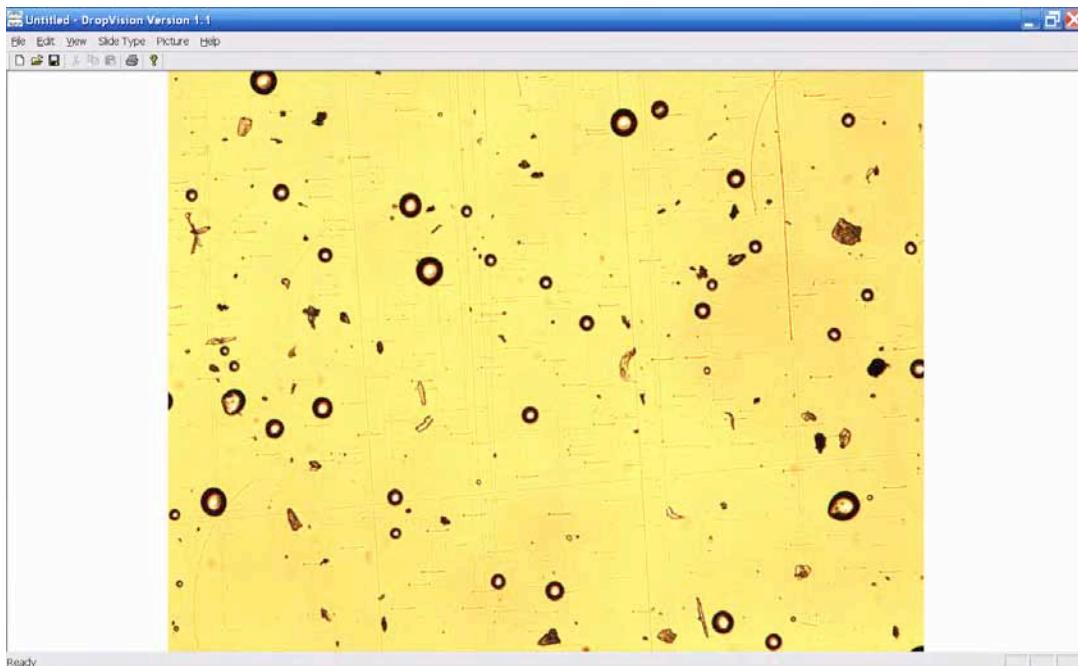
h. Press the “c” key to calibrate.

- i. The Calibration menu will pop up and indicate the number of pixels.
- j. Upon entering 600 in the Diameter in Microns, the Micron Per Pixel will populate.
- k. Upon entering 600 in the Diameter in Microns, the Micron Per Pixel will populate at 0.035
- l. Click the Update Configuration Button



Menu Bar:

File, Edit View, Slide Type, Picture, Help



File – To launch a new project, select File, New, Open and complete the form and select **OK**

- ***You can also Press the Space Bar to begin a new Project.***
- **Exit** – The selection of Exit terminates the program.

Edit - Configuration – These fields influence drop measurements. For example: if the donut is checked, the center of the drop must be white for the drop to be counted. If it is not checked a solid circle will be counted as in the case of evaluating Magnesium Oxide slides

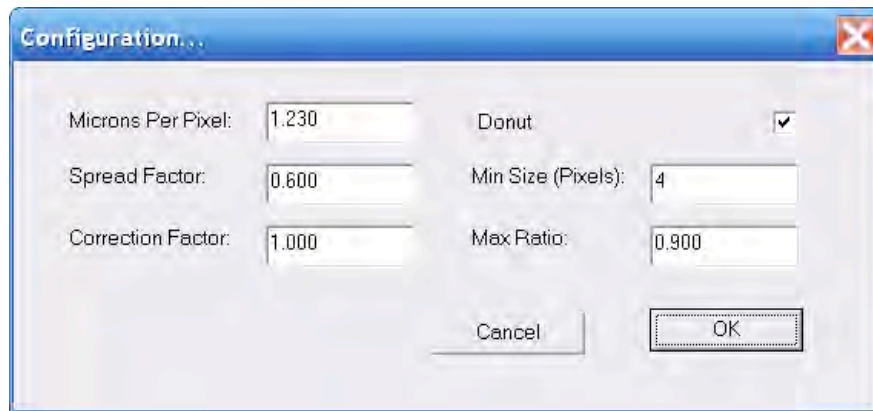
“**Min Size**” defines the size in pixels below which a potential drop is ignored.

“**Max Ratio**” defines the extent to which a drop can be elliptical. (1.0 being a full circle)

“**Microns Per Pixel**” defined by calibration process

“**Spread Factor**” defined by the characteristics of the solution being evaluated

“**Correction Factor**” used to amend and further define physical characteristics of the drop.



View -

- Selecting View allows you to View or Hide the Toolbar and the Status Bar.

Slide Type – This allow you to select either Magnesium Oxide or “Normal” slides for your project.

Picture – The image captured by the camera is converted to black and white before analysis. To see the black and white picture with less clutter, leave this unchecked. To see the real, original image, leave it checked.

Help – Informational

- **About Drops** – provides information about **DropVision®** to include Version and Copyright information.
- **Help** provides you a Legend as outlined in this manual for Key Stroke shortcuts.

DropVision® Key Stroke Guide

“C” Calibrate

“F” Quit & Create Reports

“R” Redo this Picture

“N” Proceed to Next Slide

Space Bar = Capture & Analyze/Accept

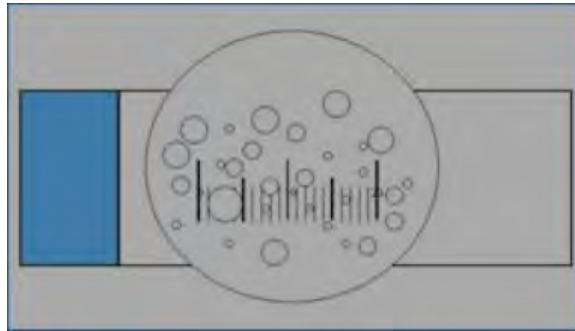
Techniques for Improving Capture of Droplets in Image:

Focus & Lighting Recommendations:

1. Focus the image so that the drops form a “donut” shape, specifically on the smaller droplets,
2. Ensure the edges of the droplets are as crisp and clearly defined as possible,
3. Set the lighting so that the image has an off-white tone or cream/yellow color tint.

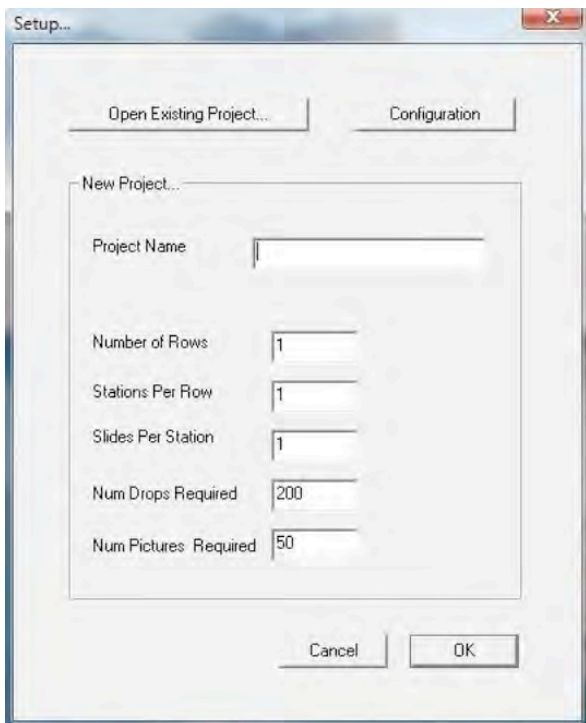
Procedures for Reading Droplets from Slides:

- Start at one end of the slide about ¼” from the long edge with the ocular micrometer in the vertical position.
- Move the slide from one side of the stage to the other, taking image pictures across the slide.
- A minimum of 200 droplets should be measured to obtain an adequate sample. If the minimum number of droplets are imaged, captured and analyzed with one picture, it is highly recommended that the minimum number of droplets DropVision™ reads be substantially increased in order to sample a great portion of the slide (we recommend 1,000-1,500 drops depending on the drop densities on the slide).



DropVision® Advanced Droplet Image Analysis Software

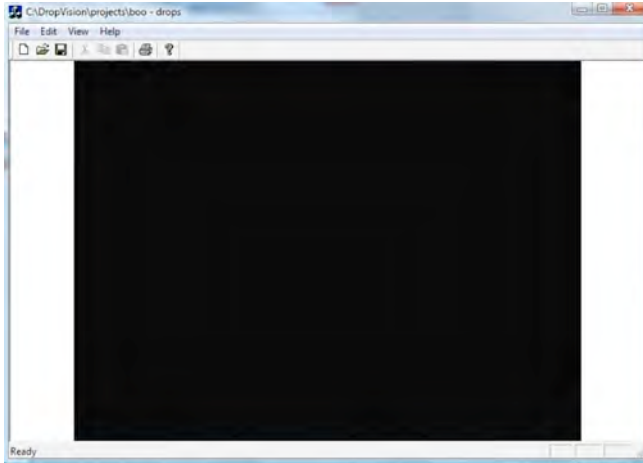
To launch the software, double-click on the **DropVision®** icon.



To analyze one (1) slide:

1. With the cursor in the Project Name box, type the file name.
 - a. Number of Rows: 1
 - b. Stations per Row: 1
 - c. Slides per Station: 1
 - d. Number of Drops Required: 200
 - e. Number of Pictures Required: 20
 - f. Select OK to begin

Note: Depending on droplet density on the slide, either increase or decrease the Number of Drops to be read.



Step 2.

Note: Initially the screen will either be blank or black like the image to the left.

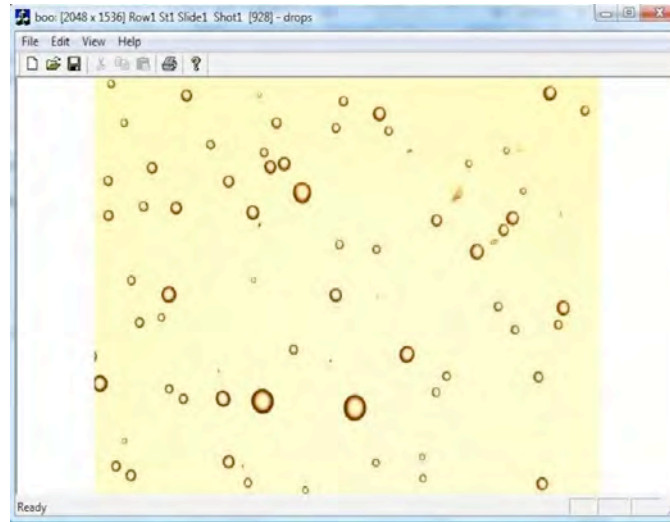


Step 3.

Power ON the Microscope and Camera.

Step 4.

1. Using the Light Intensity Control Knob, located below the **Power On-Off Switch**, adjust the intensity so that the picture looks similar to the image on the left.
2. As the image below reflects, adjust the focus so that the droplets have a “crisp” outer edge, a clear and defined white ring in the center of the droplet. It is recommended to focus on the smaller droplets.
3. With the light intensity and the drops focused, press the Space Bar on the computer to capture the first image.





1. The droplets with green circles have been read properly. Background objects, coalesced droplets, droplets that are located on the borders of the image or non-qualified droplets are outlined with red exclusions.

Note: If the results indicate a significant number of red exclusion, you have two options:

1. Select “r” on your computer keyboard to repeat Step 4, numbers 1-3
2. Adjust focus and light intensity as described in Step 1 and outlined on page 10, **Techniques for Improving Capture of Droplets in Image**

DropVision® Graphing & Reporting Software

Upon completion of the number of images (total droplets counted) in which you defined in Step 1, the **DropVision®** program will run automatically produce the three-page report illustrated below:

Permethrin JB 02-05-09

$Dv_{0.5}$ (VMD): 16.36 microns

$Dv_{0.1}$: 10.46 microns

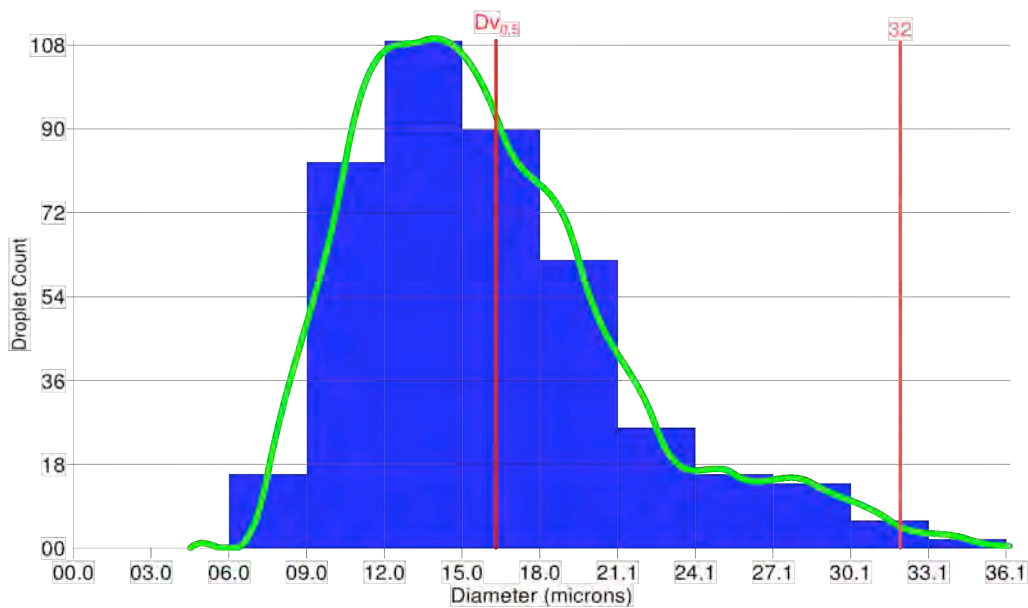
$Dv_{0.9}$: 26.27 microns

Relative Span: 0.97

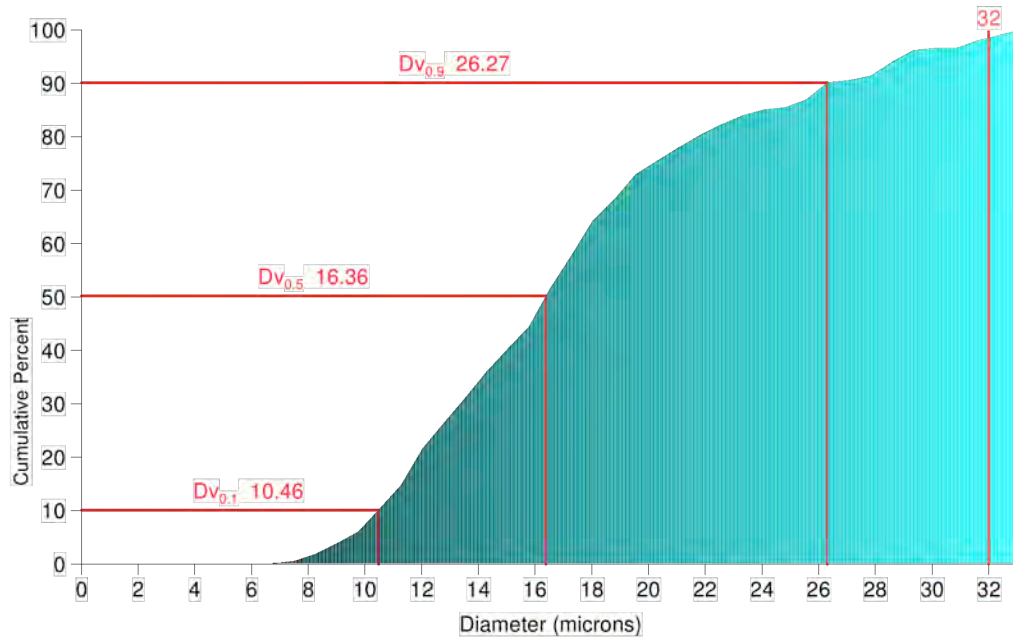
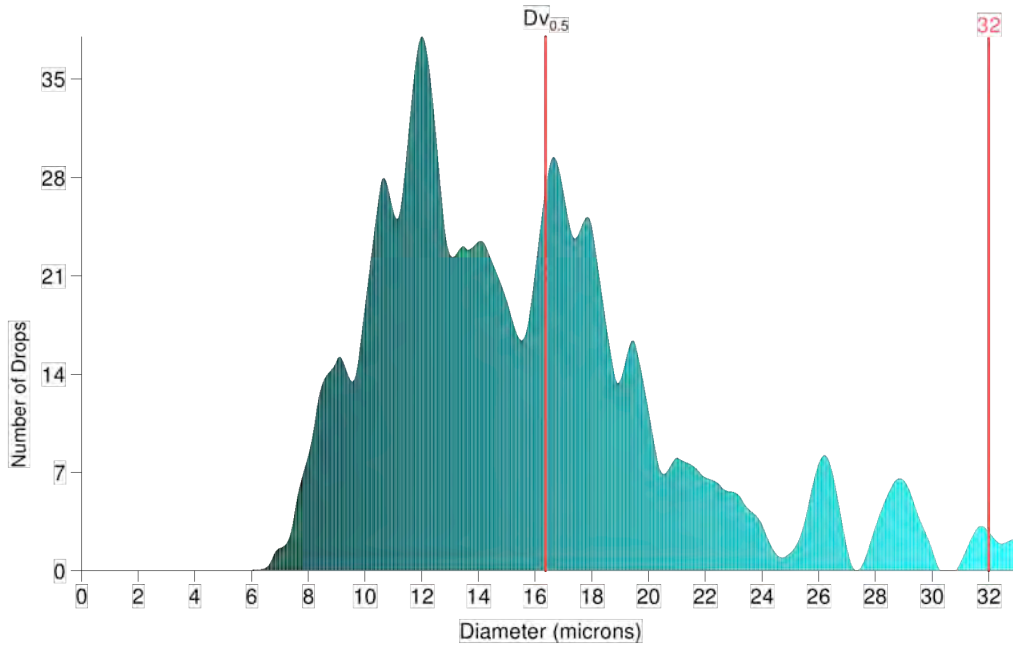
Total Droplets Collected: 424

Droplets over 32 microns: 2

Droplets over 48 microns: 0



Permethrin JB 02-05-09 Page 2



Permethrin JB 02-05-09 Page 3

EPD	Drop D	Number N	D X N	% Vol.	Cumulative
0	0.00	0	0.0	0.0	0.0
1	0.75	0	0.0	0.0	0.0
2	1.50	0	0.0	0.0	0.0
3	2.25	0	0.0	0.0	0.0
4	3.01	0	0.0	0.0	0.0
5	3.76	0	0.0	0.0	0.0
6	4.51	0	0.0	0.0	0.0
7	5.26	0	0.0	0.0	0.0
8	6.01	0	0.0	0.0	0.0
9	6.77	1	6.8	0.1	0.1
10	7.52	4	30.1	0.5	0.6
11	8.27	11	91.0	1.4	1.9
12	9.02	15	135.3	2.0	3.9
13	9.77	15	146.6	2.2	6.1
14	10.53	27	284.2	4.3	10.4
15	11.28	26	293.2	4.4	14.8
16	12.03	38	457.1	6.8	21.6
17	12.78	25	319.5	4.8	26.4
18	13.53	23	311.2	4.7	31.1
19	14.28	23	328.5	4.9	36.0
20	15.04	19	285.7	4.3	40.3
21	15.79	18	284.2	4.3	44.6
22	16.54	22	479.7	7.2	51.7
23	17.29	24	415.0	6.2	57.9
24	18.04	24	433.0	6.5	64.4
25	18.80	14	263.1	3.9	68.3
26	19.55	16	312.8	4.7	73.0
27	20.30	8	162.4	2.4	75.5
28	21.05	8	168.4	2.5	78.0
29	21.80	7	152.6	2.3	80.3
30	22.55	6	135.3	2.0	82.3
31	23.31	5	116.5	1.7	84.0
32	24.06	3	72.2	1.1	85.1
33	24.81	1	24.8	0.4	85.5
34	25.56	4	102.2	1.5	87.0
35	26.31	3	210.5	3.2	90.2
36	27.07	1	27.1	0.4	90.6
37	27.82	2	55.6	0.8	91.4
38	28.57	6	171.4	2.6	94.0
39	29.32	5	146.6	2.2	96.2
40	30.07	1	30.1	0.5	96.6
41	30.82	0	0.0	0.0	96.6
42	31.58	3	94.7	1.4	98.0
43	32.33	2	64.7	1.0	99.0
44	33.08	2	66.2	1.0	100.0

File Naming Description:

1. All of the files saved for each PROJECT named are stored under
c:\programfiles\leadingedge\dropvision\projects.
2. Below are the field names for each column of data:

Size-the size of the droplet is defined in pixels

Num Drops This Size- this is the number of droplets in the pixel diameter

Actual Diameter- this is the size of the droplet in microns

% Volume- this is the volume in the micron size listed

Acc % Volume- accumulation of the collective volume

Microscope Specifications

Eyepieces:	WF10X/20mm on Siedentopf head with diopter control
Nosepiece:	Reversed Mounted Quintuple revolving with positive click-stops
Standard Objectives:	CCIS EF-Plan 4x, 10x, 40x(S), 100x (S, Oil)
Stage:	Built-in Mechanical Stage with low-position coaxial controls with tension adjustment
Condenser:	Rack & Pinion focusable 0.9N.A. Condenser
Illumination:	6V/30W Quartz-Halogen Koehler with dimming control
Power Supply:	Built-in Variable Voltage Transformer 110V-240V Camera
Chip Configuration:	Built-in 1/2" Live 3.0 Megapixel Imaging Chip
Data Output:	Hi-Speed USB2.0
Power Supply:	Through USB Cable from Computer
Included Software:	Motic Images Plus 2.0ML for Windows & Motic Images Plus 2.0 for Macintosh OSX
Included Accessories:	Calibration Slide for accurate measurements; Dust Cover; immersion Oil

Minimum Operating System Specifications

Windows: XP or higher 256MB RAM; P4; Built-in USB2.0

Contact Information

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Service, Parts, Warranty - Motic Customer Service

If you have any need for troubleshooting, maintenance questions, problems or need parts, replacements, accessories concerning your Motic product please send an email to: Digital Products: info.digital@motic.com

Please remember to register your Digital Product upon receipt at www.motics.com

