

# DropMaster



## Dynamic Contact Angle Meter

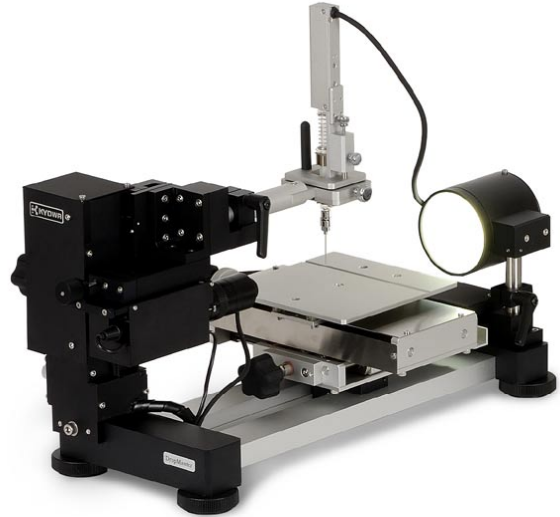
Contact Angle, Liquid Surface Tension, Solid Surface Free Energy

## ■ Product Lineup

### DM-701

#### Fully automated contact angle measuring system performed by computer commands

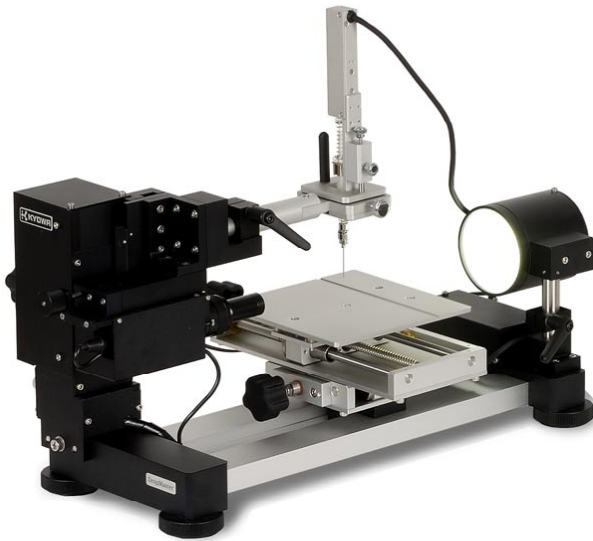
- Measuring process of contact angle; discharging a droplet ~ deposition ~ analysis ~ stage movement, is repeated automatically by pre-set commands in the screen.
- The optional multi dispenser with surface free energy system enables to perform probe liquid selection and solid surface free energy analysis automatically with single click of command.
- Droplet deposition is automatically recognized by software, and no adjustment of stage height in advance is needed.



### DM-501

#### Static to dynamic contact angle can be performed with automatic analysis.

- Automatic dispenser performs discharging regular volume of droplet by pre-set in the screen.
- Even manual operation, the recognition of deposition can be done automatically to execute accurate time measurement after depositing droplet.
- The optimized user-friendly designs for manipulation of stage traveling, droplet deposition, and liquid replacement.
- Possible to upgrading to the DM-701 later.

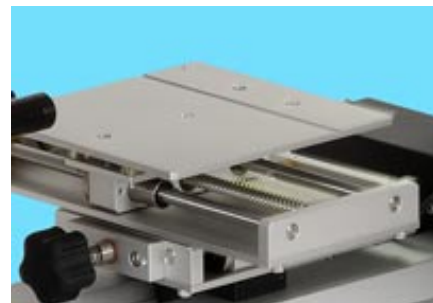


### Features in common for DM-501 & 701

- Fast image capturing system for time function measurement. 60 fps is equipped in the standard unit, and optional 1000 fps is available.
- Focus aid helps operators to adjust optimize focus with index graph and value in the image screen.
- Movie converter makes the continuous data to MPEG-1 movie.
- Not only contact angle results, but also droplet information on volume, absorbing rate by volume change, height and basement radius are obtained.
- Measured results are displayed in the table of spread sheet like for easy reference and comparison.

## ■ Sample Stage

- All model equips the wide stage 150 x 150mm to measure samples up to 150mm x ∞.
- Operations: X-axis 150mm, Y-axis 75mm
  - \* DM-701 operates X-axis by motor.
- Mounting temp control stage possible.
  - \* Applicable sample size for temp control stage is 80 x 40mm.



## ■ Standard Components

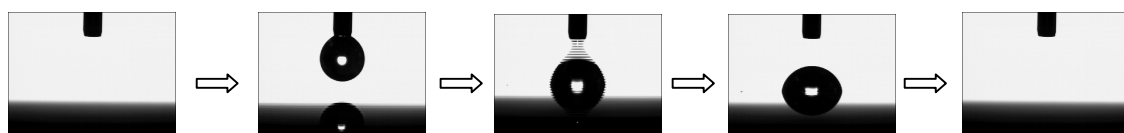
DM-701	DM-501	Accessories of each model in common
<ul style="list-style-type: none"> <li>• Main body</li> <li>• Control box (DM)</li> <li>• Camera/stage drive motor assembly</li> <li>• Single dispenser AD-31</li> <li>• Laptop PC</li> <li>• Image converter</li> </ul>	<ul style="list-style-type: none"> <li>• Main body</li> <li>• Single dispenser AD-31S</li> <li>• Laptop PC</li> <li>• Image converter</li> </ul>	<ul style="list-style-type: none"> <li>• Standard droplet sample (Standard view)</li> <li>• Dispenser</li> <li>• Syringe set 22G (5 ea/set)</li> <li>• Teflon coated needle 18G, 22G (2 ea)</li> </ul>

## ■ Specifications

	DM-701	DM-501
Measure system	Image analysis through CCD camera	
Measure method	Sessile drop Extension/Contraction	
Analysis method	$\theta/2$ method, tangent method curve fitting (ellipse, circle)	
Measure range	0 - 180°	
Resolution	0.1°	
*Accuracy	0.2°	
Lens system	3 step zoom (width 6.6mm, 11.8mm, 17.0mm)	
Max sample size	150mm x 150mm, thickness 35mm, weight 400g	
Stage operation	automatic-motor drive	manual
	X: 150mm Y: 75mm (manual)	X: 150mm Y: 75mm
Z-axis operation	Camera: 35mm	
Dimensions / Weight of main body	297 <sup>W</sup> x544 <sup>D</sup> x249 <sup>H</sup> mm 8.5 kg	288 <sup>W</sup> x544 <sup>D</sup> x249 <sup>H</sup> mm 7.5 kg
Electric power	AC100-240V, 3A, 50/60 Hz	AC100-240V, 1A, 50/60 Hz

\*Accuracy is repeatability described in standard deviation on manufacturer's standard.

## ■ Measuring Process



DM	(1) positioning 1 <sup>st</sup> measure point	(2) discharging droplet	(3) deposition control / recognition	(4) analysis of contact angle	(5) positioning next measure point
701	▲ by command button	●	● / ●	●	●
501	▲ by manual adjust	●	▲ / ●	●	▲

● Automatic    ▲ Manual

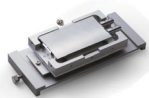
## ■ Optional Accessories

### JACKET TYPE STAGE

Temp. range: about +10 ~ 70°C

A hot/cold water circulator is needed for temp. control.

A surface thermometer is needed to measure temperature of liquid sample surface.



### HEATER TYPE STAGE PACKAGE

Temp. range: ambient ~ 380°C

Temp. controller 401 (PID control system) is included.



### HOT/COLD WATER CIRCULATOR 4VT



### SURFACE THERMOMETER ST-5



### HEATER TYPE DISPENSER PACKAGE

Temp. range: ambient ~ 380°C

Mainly use for hot melt polymers

Temp. controller 401 (PID control system) is included.



## FAMAS ADD-IN SOFTWARE AND ACCESSORIES



### [Extension/Contraction method]

measures advancing/receding angles of a captive droplet on the needle tip, by increasing or decreasing the droplet volume. Auto dispenser AD-31 is needed.



### [Surface free energy analysis]

analyzes surface free energy of solid sample. 2 or 3 components system by geometric mean, 2 components system by harmonic mean, acid-base analysis, interactions of 2 phases (work of adhesion, interfacial free energy), Young-Dupré analysis, Zisman plot are included.



### [Sliding method]

Coupling with tilt base attachment, a tilt angle (sliding angle), advancing/receding angles when a droplet starts sliding are measured. Adhesive energy is analyzed.

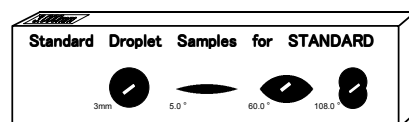


### [Pendant drop method]

measures surface or interface tension of liquid material by pendant drop method

## ■ Standard Droplet Sample

- Standard tool made of glass printed with 3 droplet images for inspection, and a circle image for calibration
- Usable for routine maintenance by user
- Design registered, all models include as standard accessory

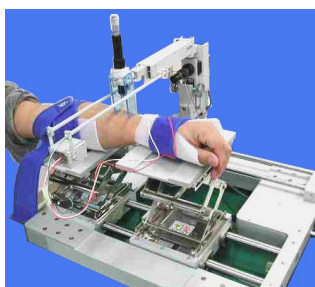


## ■ Customized Items

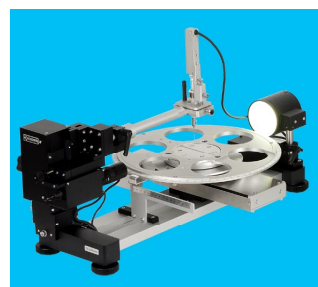
For cylindrical samples



For arms and legs



DropMaster R series  
For wafers up to  $\phi 300\text{mm}$



\* The specifications and designs are subject to change without notice.

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