

**KIBRON EZ-Pi+**

# TENSIOMETER FOR THE ANALYTICAL LABORATORY



Surface tension – precisely

  
**Kibron**



**KIBRON EZ-Pi+**  
**SURFACE AND INTERFACIAL**  
**TENSION THE EASY WAY**

# KIBRON EZ-PI+

## HIGH PRECISION INSTRUMENT FOR CHALLENGING APPLICATIONS

Kibron EZ-Pi+ is a compact, an easy-to-use, high precision instrument for measuring surface tension and interfacial tension of liquids with built-in temperature compensation and stirring. EZ-Pi+ connects to a water bath to keep the samples at a constant temperature.

- A reliable, high precision instrument for challenging applications; eg. surface tension of viscous materials
- An easy-to-use tensiometer for advanced research in surface chemistry
- A robust tensiometer for educational purposes, no special training needed

Kibron EZ-Pi+ delivers accurate and precise surface tension and interfacial tension data for surfactants and detergents, emulsifiers, cosmetic ingredients, adhesives and printing inks, chrome plating baths, etc. with minimal maintenance. For the first time an affordable, high precision tensiometer is available for researchers so they can concentrate on their applications and generate reliable data instead of making difficult measurement.

## THE METHOD OF CHOICE

All Kibron instruments uses the best, most sensitive and most precise method for the measurement of surface tension: a combination of the Du Nuoy-Padday et al. 'Maximum Pull Force Technique' and Kibron's proprietary sensor, a Unique Ultrasensitive (1,6 micrograms) microbalance. This technique is unmatched in its performance and yields accuracy far better than obtained using filter paper or platinum Wilhelmy plates or du Nuoy ring, which are used in the tensiometers and Langmuir-troughs made by our competitors. The correction for buoyancy is unnecessary as at the point of maximal pull no part of the probe is immersed into the liquid. The method also works for highly viscous liquids: oils, polymers, paints and the like.

"Our mission is to convert sophisticated surface chemistry techniques into cutting-edge R&D tools for industry as well as academia, yielding better, safer and more ecological products, from oil industry to pharmaceuticals, inks and agrochemicals, to cosmetics, paints, surfactants and detergents."

## TECHNICAL DATA

### Measurement types

- Wilhelmy and du Noüy - Padday

### Measuring range

- 1-350 mN/m

### Resolution

- 0.001 mN/m

### Accuracy/Sensitivity

- 0.01 mN/m

### Precision

- CV < 0.1 % (water at 20°C)

### Data collection

- Every 50 ms

### Average time per measurement

- ~30 seconds (du Noüy)

### Cuvette volume

- 0.3 – 3 ml

### Cuvette material

- Polypropylene, glass, PTFE

### Measurement probe

- DyneProbe, diameter 0.51 mm
- Wilhelmy plate

### Probe cleaning

- Butane torch

### Sample thermostation

- Circulating water  
(ext. water bath required)

### Temperature measurement

- Pt-100

### Stirrer speed

- 20-1200 rpm

### Electrical supply

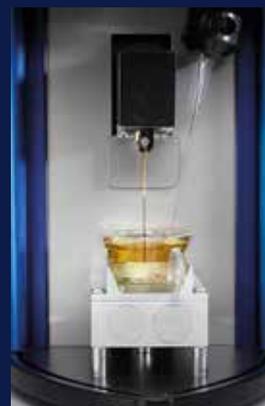
- USB

### Maximum Viscosity

- 60 000 mPas

### Measurement standards

- ASTM D1131-14



# FOR EASE OF USE AND REPRODUCIBILITY THE KIBRON EZ-PI+ ACCESSORIES HELP YOU TO GET THE MAXIMUM OUT OF YOUR MEASUREMENTS

## REQUIRED ACCESSORIES, SPECIFICATIONS & BENEFIT

### DyneProbe

#### Microsize du Noüy probe

- Inert metal alloy  $\varnothing$  0.51mm
- Allows for small sample volumes
- Easy to clean, economical to use



### DyneCup

#### Sample cuvette

- Borosilicate glass
- For interfacial tension measurement
- Washable and reusable



### DyneCup Sample cuvette

- Polypropylene
- Chemically resistant
- Disposable and recyclable

## OPTIONAL ACCESSORIES, SPECIFICATIONS & BENEFIT

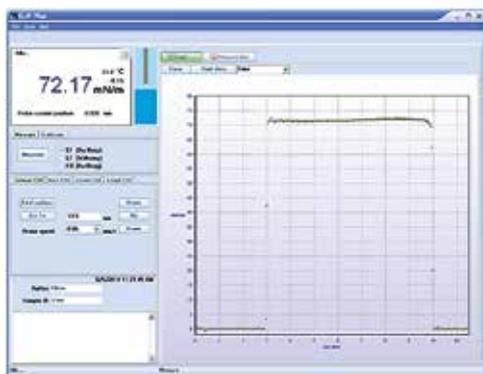


### ProbeHandler

- Mounting / demounting tool for the DyneProbe
- Provides ease of use and helps protect the microbalance

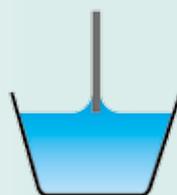
### ProbeStation

- Station for the ProbeHandler, and for the spare DyneProbes
- Ease of use and avoid contamination



- Single window interface
- Large, clear readout of the measured data
- Automate complex tasks
  - Fully programmable experiments; add your own scripts
  - Including variable rates of probe immersion and withdrawal
- Automate routine work
  - Automatic replicate measurements with built-in statistical analysis
- Export graphs and data
  - Excel, PDF and HTML export of graphs and data

## TWO MEASUREMENT METHODS WITH KIBRON DYNEPROBE



### WILHELMY

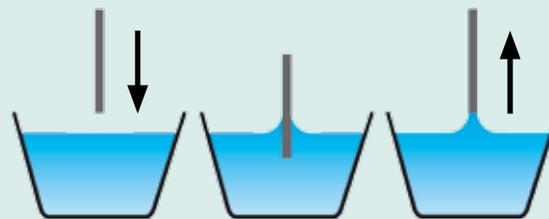
#### Surface tension

- Surface tension at varying surface age
- For high viscosity samples
- No edge effects as found in plates

### DU NOÛY-PADDAY\*

#### Surface tension and interfacial tension

- eg. for aqueous samples, solvents, inks
- Recommended viscosity < 100cp
- No correction factors as with rings



\*Padday, J. F., Pitt, A. R., Pashley, R. M., 1975, Menisci at a free liquid surface: surface tension from the maximum pull on a rod J. Chem. Soc., Far. Trans. I, 71(10), 1919-1931 (1975)



Kibron Inc. manufactures state-of-the-art tensiometers, langmuir-blodgett troughs and gravimetric balances as well as customer specified surface chemistry equipment and screening technology to overcome today's challenges in chemical industry. Since its founding, 1994, Kibron has focused on innovation, user benefits and dependable service.

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