

Ultra Micro droplet dispenser

femto-Spotter™

FS-100M

Overview

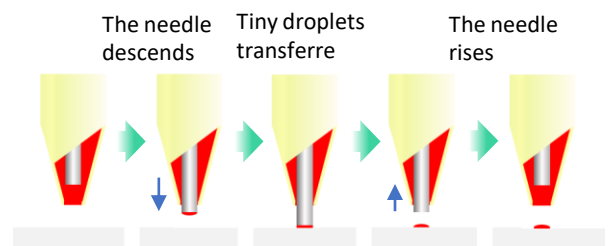
- ✓ Dispensing and transferring ultra-fine droplet volumes
- ✓ Wide range of fine dispensing volume : fL ~ nL
- ✓ Wide range of viscosities from low to high viscosity
- ✓ Transfer diameter : 5 μm ~ 1 mm
- ✓ Compatible with liquids containing filler
- ✓ High application position accuracy
- ✓ No clogging
- ✓ Resistant to temperature changes
- ✓ No dead volume
- ✓ Compact design
- ✓ Customized support



Specifications

Method	Needle transfer method
Volume to be dispensed	fL ~ nL *
Transfer diameter	5 μm ~ 1 mm *
Viscosity available	1 ~ 200,000 mPa · s
Dimension	36 mm × 36 mm × 170 mm **
Weight	approx. 200g

Mechanism Overview



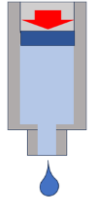
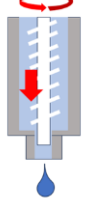
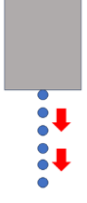

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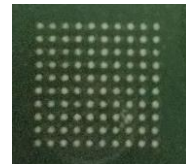
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Comparison with Other Methods

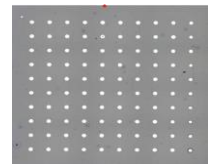
	Tube type	Screw type	Jet type	femto-Spotter
				
Droplet size	$\Delta > 0.1\text{mm}$	$\times > 0.2\text{mm}$	$\times > 0.2\text{mm}$	$\odot > 0.005\text{mm}$
Viscosity	$\Delta 1,000 \text{ mPa} \cdot \text{s}$	$\Delta 3,000 \text{ mPa} \cdot \text{s}$	$\times 100 \text{ mPa} \cdot \text{s}$	$\odot 100,000 \text{ mPa} \cdot \text{s}$
Positioning Accuracy	$\times \pm 30\mu\text{m}$	$\times \pm 30\mu\text{m}$	$\times \pm 100\mu\text{m}$	$\odot \pm 5\mu\text{m}$
Dispense speed per second	–	$\Delta 1 \text{ time} \sim$	$\odot \sim 1,000 \text{ times}$	$\circ \text{ several times} \sim$

Coating Example

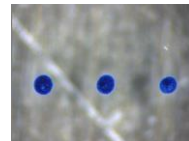
- ✓ Solder paste, flux
- ✓ Conductive metal nano ink
- ✓ Microbeads
- ✓ Ink, glue, paint
- ✓ Nanodispersed particles
- ✓ Optical Resin Materials
- ✓ High-cost biomaterials
- ✓ Adhesive
- ✓ Organic Materials
- ✓ Resist



Solder paste
(Dia. $\phi 200\mu\text{m}$)



Ag nano ink
(Dia. $\phi 120\mu\text{m}$)



Glue
(Dia. $\phi 100\mu\text{m}$)



Flux
(Dia. $\phi 60\mu\text{m}$)

Equipment Configuration

Micro-droplet dispensing basic
type FS-100M



- ✓ Simple and basic dispensing head
- ✓ Only small volume of liquid is needed for operation
- ✓ Simple operation and big benefit

Micro-droplet long-life dispensing
type FS-100M-LL



- ✓ Suitable for long-life processing
- ✓ Stable operation in long-run
- ✓ The best solution for process development

High precision dispensing type
FS-100M-sysDA



- ✓ Integration of high precision vision system
- ✓ Good alignment for precise spotting
- ✓ Automatic dispense-sensing feature
- ✓ Excellent dispensing result with versatile program software



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