microdrop
TECHNOLOGIES

Microdrop Microdispenser System, MD-E-3000

ADVANTAGES

- Touch Panel Control
- Droplet Diameter:
  standard mode: ~35µm to 120µm
  waveform mode: ~15µm to 120µm
- Usable with a wide range of fluids,
  viscosity range 0.4 ... 10000mPas
- Drop on Demand Technology

Control Unit

The function selection and control of the dispenser head can be chosen manually at the touch panel control or via a TTL-interface from an external location.

Options of droplet emission for Standard (MD-E-3..0) and Waveform Modes (MD-E-3..1):

- A single droplet by push button or external start signal
- Single droplets at regular, determinable time intervals (max. 6000Hz)
- Adjustable number of droplets at regular, determinable time intervals

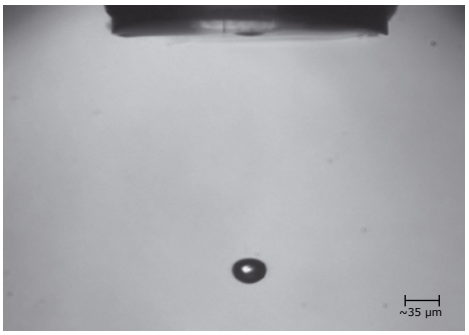
The new Waveform Mode enables - beside the Standard Mode - also the generation of even smaller droplets starting from the droplet size of approx. 15µm*. A droplet size of approx. 35µm* will be achieved by Standard Mode with rectangular pulse.

Dispenser Head

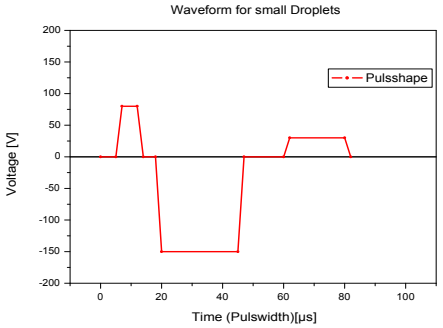
Microdrop dispenser heads are suitable for liquids with viscosities from 0.4 to 20mPas (depending on liquid used). For more viscous liquids (up to 10000mPas), dispenser heads with temperature-controlled nozzle heating and fluid leading parts are available to reduce viscosity.

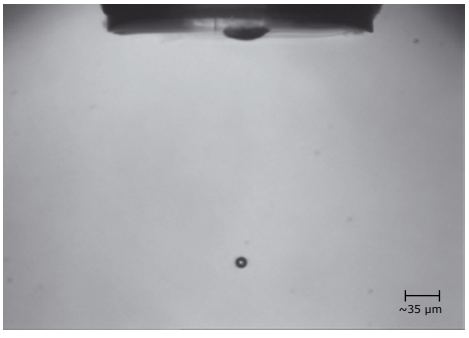
The liquid only has contact with the high inert materials glass, PTFE and PEEK. The emitted droplets are placed with high reproducibility levels.

Microdrop dispenser heads have no mechanical moving parts and are therefore free of wear and maintenance.



Droplet performance with MD-K-130 by Standard Mode (MD-E-3..0)





Droplet performance with MD-K-130 by Waveform Mode (MD-E-3..1)

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Technology

Microdrop dispenser heads function according to the same principle as an inkjet printer with a piezo-electrical print head.

The liquid is fed through a capillary tube. To emit a droplet, a mechanical impulse is imparted to the liquid column by a piezo ceramic. At the nozzle tip a micro fine droplet is generated, which departs from the dispenser head at high speed. The size of the drop (15-120µm) depends on the capillary opening and driving mode.

Electronic control of the dispenser heads ensures a high level of dispensing precision as to volume, timing and placement. The procedure can be observed with the help of an integrated stroboscopic LED.

TECHNICAL DATA

Control Unit (MD-E-3...) - Standard mode: MD-E-3..0; Waveform Mode: MD-E-3..1	
Operating modes	• selected dosing or blocks at control unit • single droplets at periodic time intervals (max. 6000 Hz) • droplet release via control input (external trigger)
Displays	• Touch Screen handling and adjustment for all parameter like waveform parameter, droplet rate, stroboscope delay, nozzle temperature
Connections	• power supply AC 100 ... 240 V, max. 100 W • external trigger • stroboscope LED • connection of the dispenser head
Dimensions	w: 225 mm / h: 178 mm / d: 315 mm
Weight	~ 3 kg
Dispenser Heads (MD-K-130, MD-K-140)	
Permissible liquid viscosity	• standard: 0.4 ... 20 mPas * • with heated nozzle and fluid parts: 10 ... 10000 mPas *
Inner nozzle diameter	30 ... 100 µm *
Dispensed volume	• single droplet: 17 ... 900 pl * • max. liquid throughput: 1 µl/s *
Variation of dispensed volume	approx. 1 % *
Maximum drop rate	1 ... 6000 Hz *
Drop range of flight	< 20 mm, depending on droplet size *
Drop velocity	< 2.5 m/s *
Environmental temperature	10 ... 80°C
Dimensions	Ø: 10 mm / h: 38 mm
Life time	> 10^{10} dispenser cycles
Basic Components	
MD-K-...	micro dispenser head
MD-E-3...	drive electronic
MD-H-7...	vertical holder, length 70 mm
MD-V-...	storage bin with PEEK top, 4 ml, 8 ml or 12 ml

* depending on liquid used

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