

# Fluid metering

## fDD

### PULSELESS NANOLITER PUMP



Patent Pending

The fDD Pulseless Nanoliter is a compact, linearly driven ceramic piston pump capable of dispensing less than 1 microliter with both precision and accuracy.

Comprised of three moving components with a vastly optimized driving mechanism providing ZERO mechanical backlash, the unique properties of the fDD Pulseless Nanoliter negates the need for software compensation to deliver repeatable, consistent performance and process reliability.

Through the use of Fluid Metering's CeramPump® technology, the fDD Pulseless Nanoliter provides microfluidic control solutions to accelerate product development suited for a wide range of OEM and Life Sciences applications.

## FEATURES & BENEFITS

- CeramPump® technology simplifies fluidic architecture with three moving parts
- Internal sapphire-hard ceramics are chemically inert, dimensionally stable, and abrasion resistant
- Linear anti-backlash mechanisms
- Rotary encoder with over 4000 pulses/rev for accurate positional feedback with 0.02° resolution
- High precision, fine pitch lead screw
- Proper and repeatable indexing
- Consistent volumes even when switching direction
- Pulseless "smooth" flow with up to 98% stability
- Extreme accuracy and precision down to less than 1µL
- Maintains < 1% precision for millions of cycles without maintenance or recalibration
- Reduces system total cost of ownership compared to alternative technologies

REV-C



Fluid Metering's facility is certified to the ISO 9001:2015 international standard. Product components are manufactured to meet EU RoHS and REACH compliance requirements.



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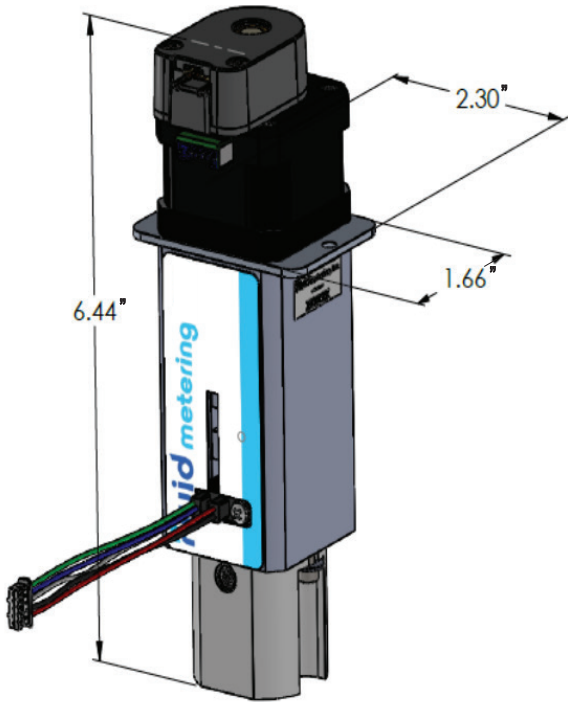


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### POSITIVE DISPLACEMENT ADJUSTABLE DISPENSING PUMP

#### PUMP SPECIFICATIONS



#### WETTED MATERIAL OPTIONS:

Ceramic: Alumina, Zirconia  
Pump Housing: PVDF, UHMW-PE, FKM

#### SEAL MATERIAL OPTIONS:

UHMW-PE, FKM, FFKM

#### PORTS:

1/4-28 UNF Threaded Ports

#### DISPENSE VOLUME:

For 3 $\mu$ L

Accuracy of  $\pm 2\%$   
Precision (CV)  $< \pm 1\%$

For 150 $\mu$ L

Accuracy of  $\pm 0.1\%$   
Precision (CV)  $< 0.1\%$

#### TYPICAL ACCURACY:

1 $\mu$ L  $< \pm 2\%$

#### DISPENSE RESOLUTION:

0.031 $\mu$ L/Full Step

#### PRESSURE RATING:

100 PSI (6.89 Bar)

#### FLOW RATE:

Minimum: 0.105 $\mu$ L/sec @ 1 RPM

Maximum: 62.8 $\mu$ L/sec @ 600 RPM

#### MOTOR/DRIVER SPECIFICATIONS

**RATED CURRENT:**  
1.5A

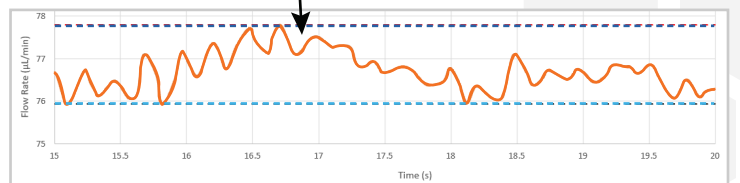
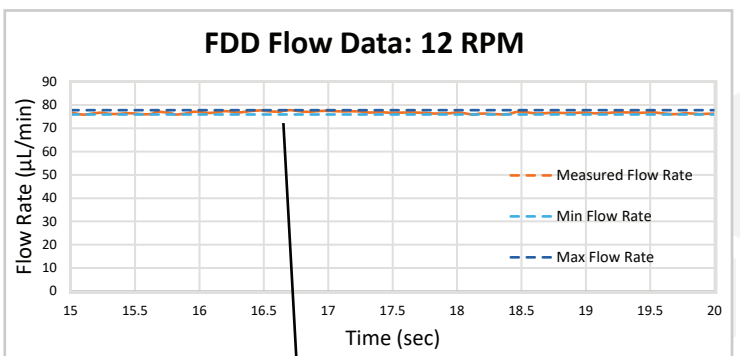
**MOTOR FRAME:**  
Linear: NEMA 17 (43mm)

**STEP ANGLE:**  
1.8° Full Step

**MOTOR SPEED:**  
Up to 2000 step/sec

**MOTOR DIRECTION:**  
Aspirate: Clockwise  
Dispense: Counterclockwise

**OPERATING TEMPERATURE:**  
-20°C to 50°C



#### CUSTOMIZED FLUIDIC SOLUTIONS

Be it a small tweak to existing technology or a full development project, our pumps and dispensers can be customized to accommodate dispense volume, flow rate, temperature, pressure, materials, and more.

**Contact Us Today!**

Rapid prototyping available within 10 business days\*

\*Prototype requests are subject to availability of parts and materials. Fluid Metering will confirm availability within 2 business days and provide an estimated shipping date.