

S17 PDP

“Precision Dispense Pump”

Full size, fully customizable pump for the most demanding applications

The S17 PDP is a key product in Sapphire’s line of products. These full-size, fully customizable Precision Dispense Pumps offer a longer life and improved performance at a greatly reduced cost of ownership over competing products. While accurately dispensing volumes from less than 1µL up to 5mL, these pumps boast a guaranteed life of five million cycles (for a typical diagnostics application). Available in a variety of sizes and materials, all pumps can be customized to meet the OEM customer’s specific needs.

Features:

- ▶ Fully customizable for your applications
- ▶ Dispense accuracy within ± one percent
- ▶ Pump / seal life of up to 5 million cycles
- ▶ Dispense repeatability less than one percent CV
- ▶ Constructed of HPLC-grade components by the industry leader in high-quality pump components
 - Pump head material choices include stainless steel, PEEK™, PPS and acrylic¹
 - Standard piston materials include sapphire and zirconia or alumina ceramic¹
 - Standard seals are made of UHMWPE¹
- ▶ Long seal life through proprietary guided-piston technology
- ▶ Optical end-of-stroke detection — standard on all models
- ▶ Displacement volumes and port configurations can be customized for specific applications
- ▶ Bipolar and unipolar motors available. Other motors available upon request
- ▶ Optional components upon request:
 - Optical encoders for feedback
 - Motor drivers and pump software
 - Seal wash ports for longer seal life with difficult fluids
 - Pump-in-manifold and integrated solenoid valve designs
 - Custom tubing, fittings, integrated valves and other accessories available



See specifications and performance data.

¹ Alternative pump head, piston and seal materials are available to meet specific customer material requirements. Configurations available where all wetted surfaces are manufactured from inert materials.

IDEX® is a Registered Trademark of IDEX Corporation
 PEEK™ polymer is a Trademark of Victrex plc
 Sapphire Engineering™ is a Trademark of Sapphire Engineering
 Torlon™ is a Trademark of Solvay Advanced Polymers, LLC

Subject to change without notification.

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S17 PDP SPECIFICATIONS & PERFORMANCE DATA

PUMP HEAD SIZES AND SPECIFICATIONS

Total Pump Volume	Volume Dispersed — Full Step (µL) ¹				Piston Specifications
	3500 and 6500 Series Motors				
	1/4-40 Thread Pitch	1/4-32 Thread Pitch	1/4-16 Thread Pitch	1/4-16, 2S Thread Pitch	
50 µL	0.0083	0.0104	0.0208	0.0417	0.0720" x 0.750"
100 µL	0.0167	0.0208	0.0417	0.0834	0.1018" x 0.750"
250 µL	0.0416	0.0521	0.1041	0.2082	0.1609" x 0.750"
500 µL	0.0833	0.1042	0.2083	0.4167	0.2276" x 0.750"
750 µL	0.1250	0.1562	0.3124	0.6248	0.2787" x 0.750"
1.0 mL	0.1667	0.2084	0.4168	0.8335	0.3219" x 0.750"
1.5 mL	0.2500	0.3125	0.6250	1.2500	0.3942" x 0.750"
2.0 mL	0.3334	0.4167	0.8334	1.6668	0.4552" x 0.750"
3.0 mL	0.3334	0.4167	0.8334	1.6668	0.4552" x 1.125"
5.0 mL	0.5555	0.6943	1.3887	2.7774	0.5876" x 1.125"
Motor Linear Resolution ²	0.000125"	0.00015625"	0.0003125"	0.000625"	

HOME SENSOR & ENCODER SPECIFICATIONS

Optical End-of-Stroke Switch Specifications

Operating Voltage:	5 VDC (+10%)
Output:	Open collector
Polarity:	Output pulled low when in retracted position
Output Voltage:	5 VDC nominal, 30 VDC maximum
Sink Capacity:	50µA nominal (10K pull up), 5 mA maximum (1K pull up)

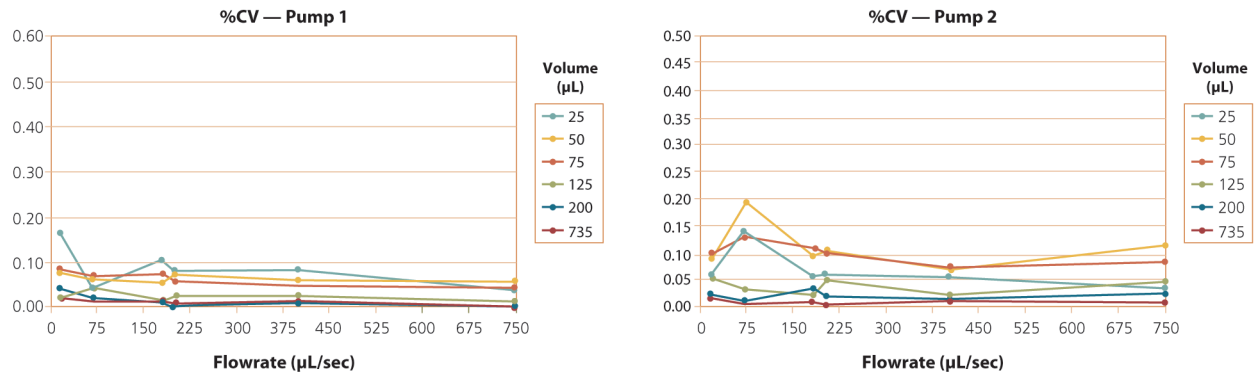
Optional Optical Encoder Specifications³

Resolution:	400 pulses per revolution
Operating Voltage:	5 VDC
Outputs:	Quadrature plus index signals

BIPOLAR STEPPER MOTOR SPECIFICATIONS⁴

Pump Series	Specifications	Motor Resolution	Max Speed	Linear Actuator
Series 3500	DC 3.8V, 1.0 A/phase, 3.8 ohms/phase, 4.8 mH/phase	200 steps/rev.	3,000 full steps/sec	Internal Torlon™ Nut
Series 6500	DC 4.7V, 1.0 A/phase, 4.7 ohms/phase, 9.1 mH/phase	200 steps/rev.	3,000 full steps/sec	Internal Torlon Nut

TYPICAL PRECISION EVALUATIONS (FROM CUSTOMERS)



¹ Higher accuracy step resolutions are available with half and micro stepping.

² Inches of linear travel/full step.

³ Alternative encoders are available upon request.

⁴ Alternative motors are available upon request.