

120 Drive With 400DM2 Pump Head System

100 Series Cased Pump

Features and Benefits

- Smooth, wipe-down case with no sharp edges to tear gloves and no bug traps; IP31 ingress protection
- Superior speed control up to 2000:1, $\pm 1\%$ set speed accuracy, repeatable flow
- Efficient and intuitive to use, requiring minimal key presses
- Compact footprint requires minimal benchtop space
- Maintenance-free, brushless DC motor
- Two-channel pump head
- Automatic variable speed, manual variable speed options
- Three-year warranty



Performance

400DM2 (twin channel) pump head for manifold tubing — Tube bore and flow rates per channel (mL/min)						
	Speed rpm	0.13 mm	0.19 mm	0.25 mm	0.38 mm	0.50 mm
120S	1 to 100 rpm	0.001 to 0.1	0.002 to 0.2	0.004 to 0.4	0.008 to 0.8	0.014 to 1.4
120U	0.1 to 100 rpm	0.0001 to 0.1	0.0002 to 0.2	0.0004 to 0.4	0.0008 to 0.8	0.001 to 1.4
	Speed rpm	0.64 mm	0.76 mm	0.89 mm	1.02 mm	1.14 mm
120S	1 to 100 rpm	0.022 to 2.2	0.031 to 3.1	0.043 to 4.3	0.055 to 5.5	0.070 to 7.0
120U	0.1 to 100 rpm	0.002 to 2.2	0.003 to 3.1	0.004 to 4.3	0.006 to 5.5	0.007 to 7.0

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*Inquiries from Germany and France are now handled in our St. Neots office by native-speaking experts.

Performance (continued)

400DM2 (three channel) pump head for manifold tubing — Tube bore and flow rates per channel (mL/min)						
	Speed rpm	1.30 mm	1.42 mm	1.52 mm	1.65 mm	1.85 mm
120S	1 to 100 rpm	0.089 to 8.9	0.110 to 11	0.120 to 12	0.140 to 14	0.180 to 18
120U	0.1 to 100 rpm	0.009 to 8.9	0.011 to 11	0.012 to 12	0.014 to 14	0.018 to 18
	Speed rpm	2.06 mm	2.29 mm	2.54 mm	2.79 mm	
120S	1 to 100 rpm	0.210 to 21	0.250 to 25	0.310 to 31	0.360 to 36	—
120U	0.1 to 100 rpm	0.021 to 21	0.025 to 25	0.031 to 31	0.036 to 36	—

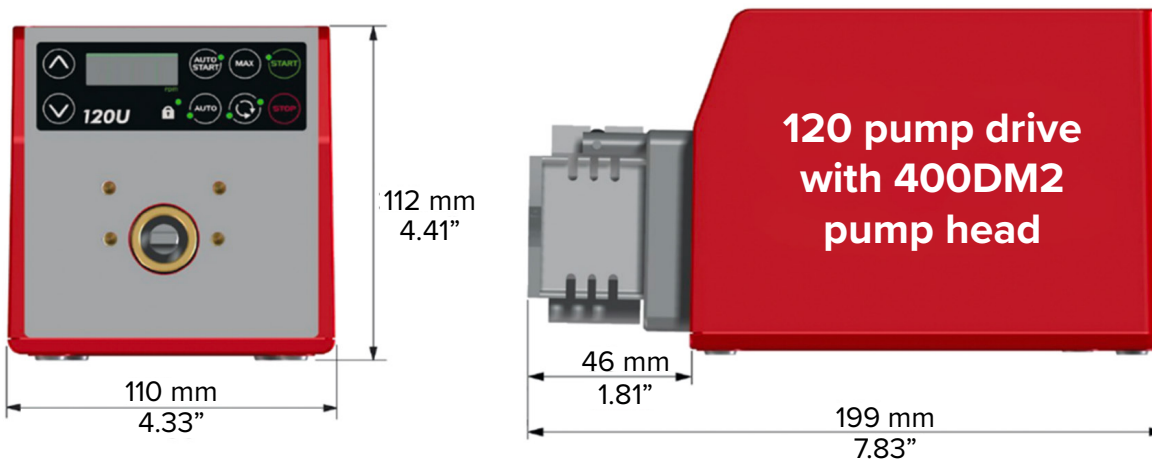
Technical Specifications

Specification	120 drive with 400DM2 pump head
Pump head number of channels	2
Flow rate range	0.0001 to 36 mL/min
Flow rate range	0.000002 to 0.57 USGPH
Max. operating pressure	2 bar (30 psi)
Speed control ratio	100:1, 1000:1
Operating speed range	0.1 rpm to 100 rpm
Operating temperature	5 to 40 °C (40 to 104 °F)
Weight	1.7 kg (3.7 lbs)
Control options	Automatic variable speed, manual variable speed
Drive controls	S, U
Standards	CE, cETLus
Drive ingress protection	IP31, NEMA 2
Drive humidity	(Non-condensing) 80% up to 31 °C (88 °F) decreasing linearly to 50% at 40 °C (104 °F)
Drive noise	<60dB(A) at 1 m
Max. altitude	2000 (6562 ft)
Power supply	Supplied with 24 VDC mains transformer plug (range 90 V to 264 V AC 47 Hz to 63 Hz) which comes with multi-country adaptors

Materials of Construction

Component	Material
Drive shaft	Stainless steel
Drive casework	ABS (acrylonitrile butadiene styrene) plastic
Keypad/HMI	Polyester
Pump head body assembly	Aluminum (anodized), Polyethylene (PETG)
Pump head guard	Polyethylene (PETG)
Pump head roller assembly	Acetal
Pump head rotor assembly	Aluminum (anodized)
Pump head track	Aluminum (anodized)
Spindles	Stainless steel

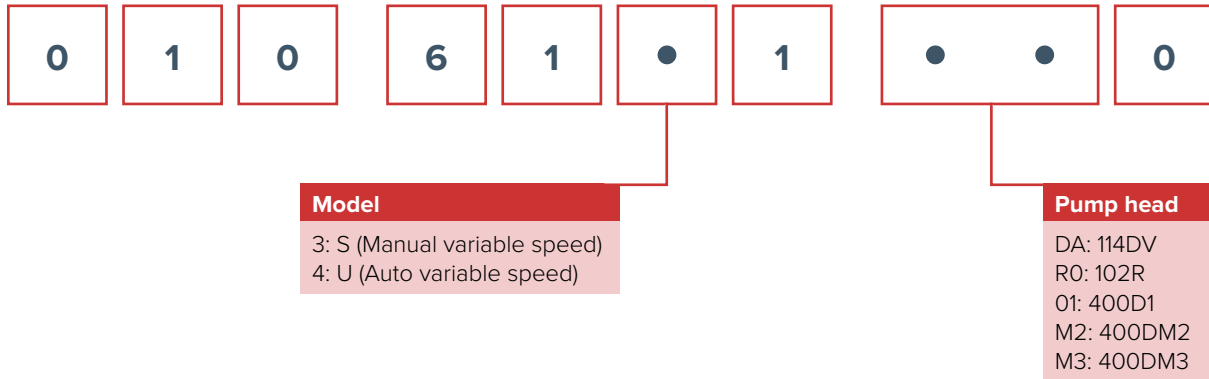
120 DRIVE WITH 400DM2 PUMP HEAD DIMENSIONS



Control Options

Key to pump drive control						
120S			120U			
Manual variable speed			Auto variable speed			
Manual control						
Pump drives		120S		120U		
Fixed speed (CW direction)						
Variable speed 1 rpm increments		✓				
Variable speed 0.1 rpm increments				✓		
Numerical speed display		✓		✓		
Direction change		✓		✓		
Max (prime)		✓		✓		
Auto start		✓		✓		
Remote control and feedback						
Pump drives		120S		120U		
Run/stop, direction change, automatic/manual toggle, alarm				✓		
Analog control						
Pump drives		120S		120U		
Variable speed 0.1 rpm increments				✓		
Analog speed input; 4-20mA, 0-10V				✓		
Tacho speed output; 0-5V				✓		
Security						
Pump drives		120S		120U		
Keypad lock to protect setup		✓		✓		
Control ratio						
120S						
Pump head	102R	114DV	400D1	400MD2	400MD3	
Manual	1 to 32 rpm (32:1)	1 to 200 rpm (200:1)	1 to 200 rpm (200:1)	1 to 100 rpm (100:1)	1 to 100 rpm (100:1)	
Automatic	N/A	N/A	N/A	N/A	N/A	
120U						
Pump head	102R	114DV	400D1	400MD2	400MD3	
Manual	0.1 to 32 rpm (320:1)	0.1 to 200 rpm (2000:1)	0.1 to 200 rpm (2000:1)	0.1 to 100 rpm (1000:1)	0.1 to 100 rpm (1000:1)	
Automatic	0.01 to 32 rpm (3200:1)	0.01 to 200 rpm (20,000:1)	0.01 to 200 rpm (20,000:1)	0.01 to 100 rpm (10,000:1)	0.01 to 100 rpm (10,000:1)	

120S, 120U



Ordering Information

Pump system		
Model	Description	Item number
120S Drive with 400DM2 Pump Head	Variable-Speed Pump System, Manual Control, 1 to 200 rpm, Two-Channel, 4-Roller; 90 to 264 VAC	50141-98

The pump heads are not interchangeable between drive models as they use different shaft designs

Ordering Information (continued)

Tubing for DM2 pump head				
Color code	Bore (mm)	Marpren [®] TPE	PVC	Peroxide-Cured Silicone
Orange/black	0.13	–	50130-52	–
Orange/blue	0.25	50130-35	50130-54	–
Orange/green	0.38	50130-36	50130-55	–
Orange/yellow	0.5	50130-37	50130-56	–
Orange/white	0.63	50130-38	50130-57	50130-71
Black/black	0.76	50130-39	50130-58	50130-72
Orange/orange	0.88	50130-40	50130-59	50130-73
White/white	1.02	50130-41	50130-60	50130-74
Red/red	1.14	50130-42	50130-61	50130-75
Grey/grey	1.29	50130-43	50130-62	50130-76
Yellow/yellow	1.42	50130-44	50130-63	50130-77
Yellow/blue	1.52	50130-45	50130-64	50130-78
Blue/blue	1.65	50130-46	50130-65	50130-79
Green/green	1.85	50130-47	50130-66	50130-80
Purple/purple	2.05	50130-48	50130-67	50130-81
Purple/black	2.29	50130-49	50130-68	50130-82
Purple/orange	2.54	50130-50	50130-69	50130-83
Purple/white	2.79	50130-51	50130-70	50130-84



All flow rates shown were obtained pumping water at 20 °C (68 °F) with zero suction and delivery heads. The information contained in this document is believed to be correct but Cole-Parmer accepts no liability for any errors it contains and reserves the right to alter specifications without notice. It is the user's responsibility to ensure product suitability for use within their application. Watson-Marlow, Pumpsil, and Bioprene are registered trademarks of Watson-Marlow Limited. Please state the item number when ordering pumps and tubing.