

HMD6 Syringe Pump with Solenoid Valve Specification Sheet



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1 Introduction

In today's competitive market environment, how to shorten product development cycles and accelerate time-to-market is a critical issue for every instrument developer. However, the extended periods required for the development, testing, and validation of core microfluidic components often impact final product delivery. From now on, use the HMD6 series syringe pump to comprehensively accelerate your product release cycle.

1.1 Features

- Designed and manufactured to the highest quality standards, compliant with ISO9001, EU RoHS Directive, and CE safety certification, eliminating regulatory.
- Provides fluid applications within the range of 2 μ L~25mL, and offers optional configurations of 1, 2, 3, 4, 6, 8 channels, making it highly suitable for parallel liquid handling tasks with multiple probes, and delivering excellent precision.
- Features excellent characteristics for multi-channel parallel processing applications, including compact size, easy maintenance, long lifespan, and extremely stable driver software.
- Offers a rich range of syringe capacity options: 25 μ L, 50 μ L, 100 μ L, 250 μ L, 500 μ L, 1.0mL, 2.5mL, 5.0mL, 10mL, 25.0mL.
- Integrated valve design, capable of independently completing various complex liquid operations such as pipetting, dispensing, and dilution through a built-in programmable command system.
- Integrated drive control, paired with a powerful command system and automatic operation mode, can even fulfill all your fluid operations without requiring an additional main control board.

Foreach Warranty

Please refer to our General Terms of Sale (GTS)

2 Appearance and Dimensions

Unit:mm

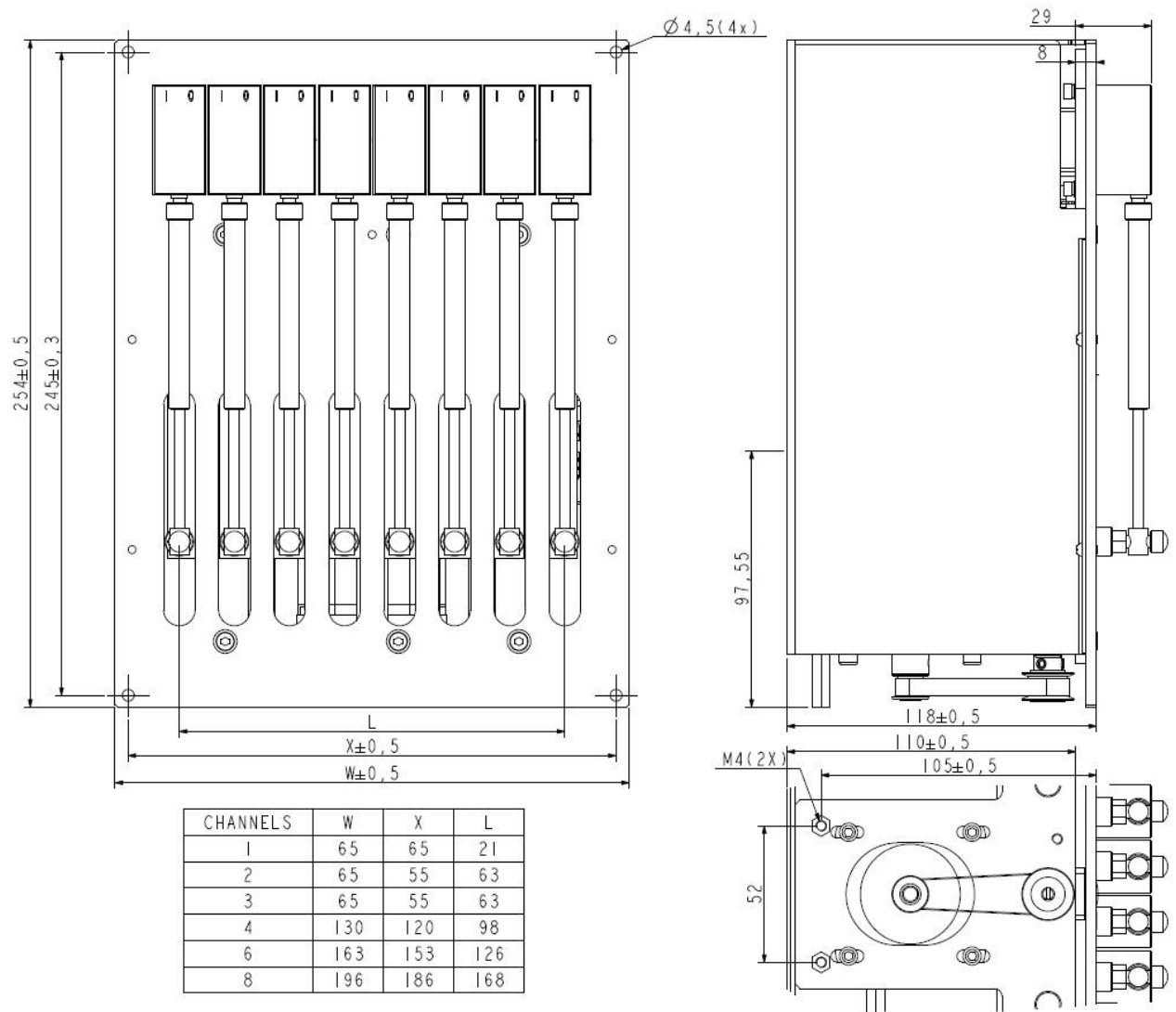


Figure 1 Outline Dimensions

3 Technical Features

3.1 Syringe Piston Drive Assembly

The HMD6 series uses special nut manufacturing materials that are self-lubricating and ultra-wear-resistant. Its specially designed mechanical transmission structure provides extremely stable linear motion performance. The total stroke length is 60mm, driven by a stepper motor equipped with a precision loss-of-step detection device, enabling backlash-free syringe reset and piston motion loss-of-step detection.

3.2 Motion Curve

Capable of full-stroke operation from a fastest time of 1.25 seconds to a slowest time of 160 minutes. Parameters including start speed, acceleration, maximum speed, deceleration, and stop speed can all be custom-set to meet different application requirements.

3.3 Control Interface

Users can freely choose RS-232/RS-485 or CAN to control the HLD3. Via RS-485 networking, users can control up to 15 HLD3 units with a single communication interface. It is equipped with 2 input and 3 output pins to achieve timing synchronization between the HLD3 and other HLD3 units or other devices. Combined with automatic operation mode, fully automated operation without any main controller is achievable.

3.4 Upgrade

Client firmware is upgradeable.

3.5 Maintenance

The software includes built-in run counters for the syringe and valve, providing reliable data for instrument maintenance scheduling.

4 Component Structure

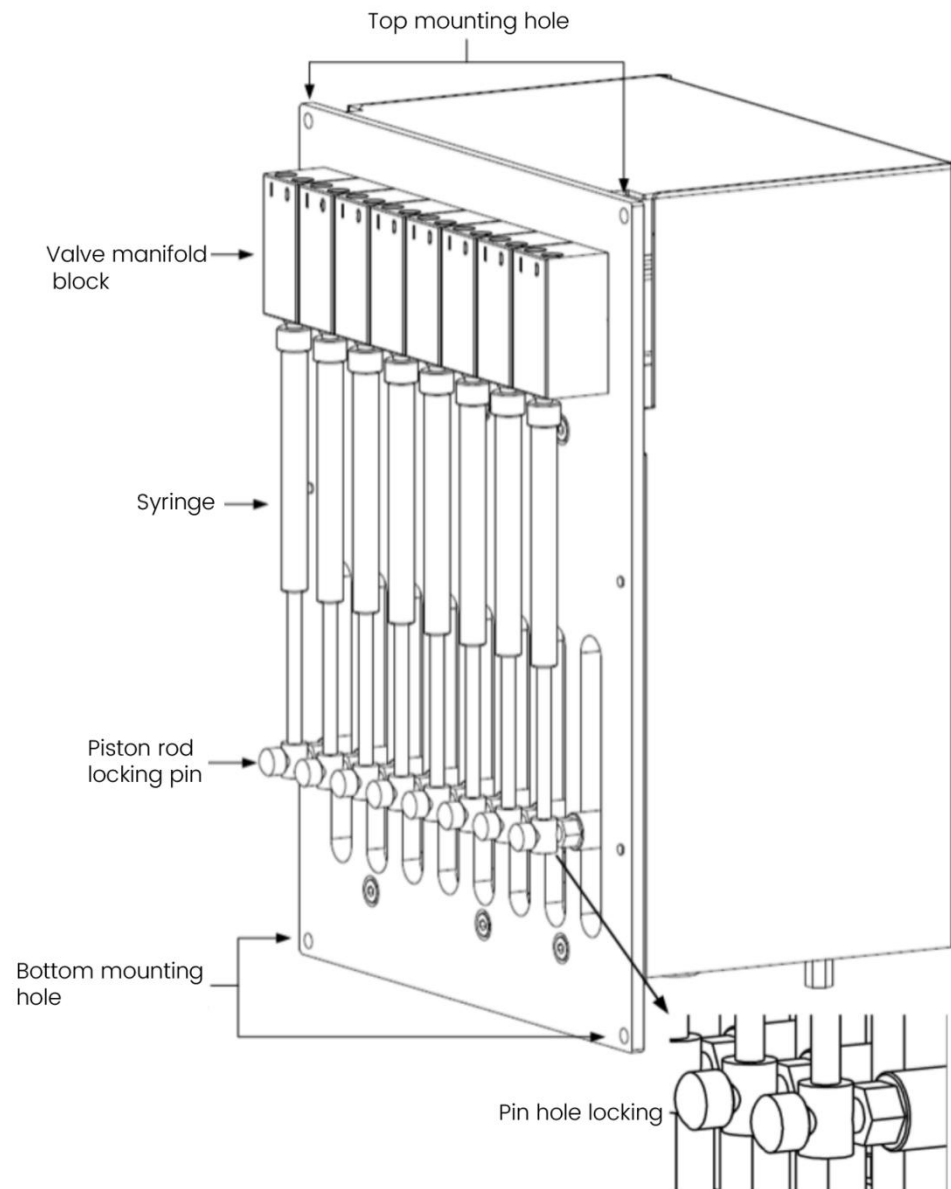


Figure 2 Component Structure

5 Valve Configurations

5.1 2-Port Valve Configuration

Set I command, Port IN connected to Syringe S.

Set O command, Port OUT connected to Syringe S.

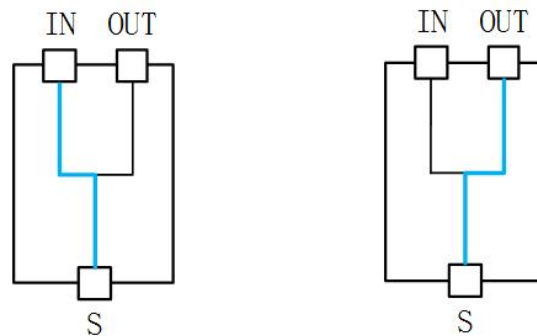


Figure 3 2-Port Valve Configuration

5.2 3-Port Valve Configuration

Set I command, Port IN connected to Syringe S.

Set O command, Port OUT connected to Syringe S.

Set B command, Port Bypass connected to Syringe S.

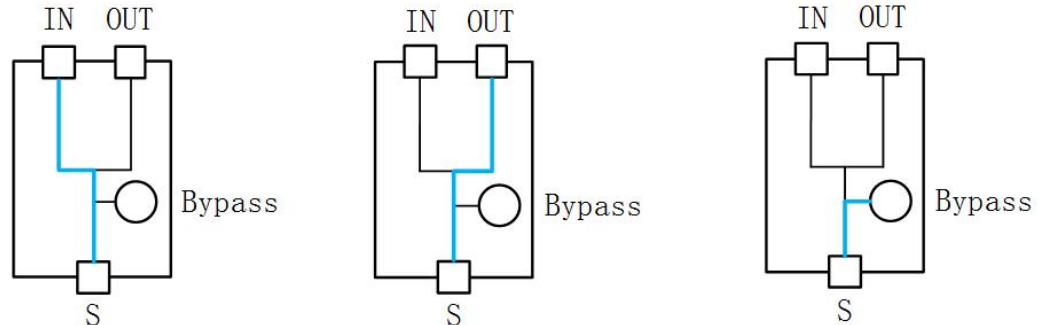


Figure 4 3-Port Valve Configuration

5.3 2-Port Non-Dispensing Solenoid Valve

Valve Command I, Port 1 connected to Syringe S.

Valve Command O, Port 2 connected to Syringe S.

Valve Command B, Port 1 connected to Port 2.

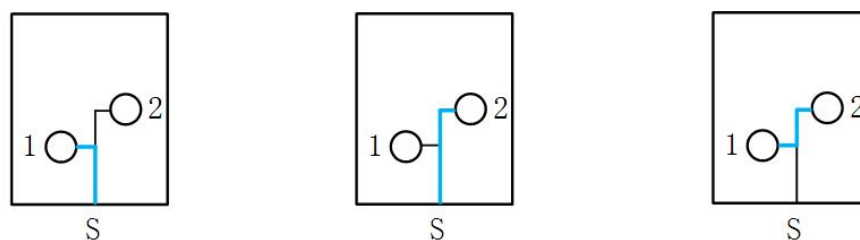


Figure 5 2-Port Non-Dispensing Solenoid Valve

5.4 3-Port Dispensing Solenoid Valve

Valve Command I, Port 1 connected to Syringe S.

Valve Command O, Port 3 connected to Syringe S.

Valve Command B, Port 2 connected to Syringe S.

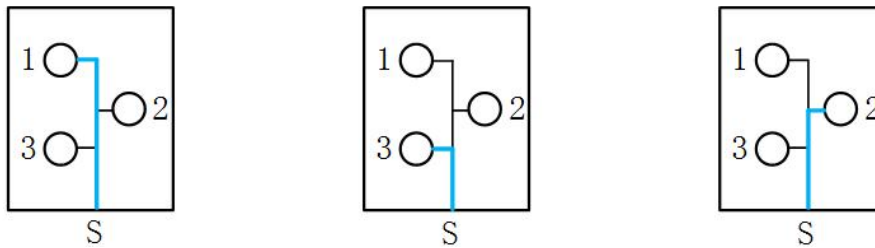


Figure 6 3-Port Dispensing Solenoid Valve

Note:

The 3-port valve configuration uses 2 three-way solenoid valves; the 3-port dispensing valve configuration uses 3 two-way solenoid valves. Due to the characteristics of the two-way solenoid valves, piston movement is prohibited when all solenoid valves in any channel are closed.

6 Specifications

Table 1 Specifications

Specifications			
Specification		Parameters	
Piston	Stroke	60mm	
	Full Stroke Operating Time	1.2-9600s	
	Linear Velocity	0.00625-60mm/s	
	Resolution	Standard Mode: 6000 increments; Microstepping Mode: 48000 increments	
Syringe	Capacity	25μL, 50μL, 100μL, 250μL, 500μL, 1.0mL, 2.5mL, 5.0mL, 10mL, 25mL *10mL and 25mL syringes not supported for channels >1	
	Threaded Connection	1/4-28UNF	
	Pressure Resistance	0.4MPa	
	Accuracy	Accuracy Error ≤1% (rated stroke)	
	Repeatability	Repeatability Error ≤ 0.05% (Rated Stroke, ≥250μL) Repeatability Error ≤ 0.1% (Rated Stroke, ≤100μL)	
Rotary Valve	Valve Configuration	2-Port Solenoid Valve, 3-Port Solenoid Valve	2-Port Non-Dispensing Solenoid Valve, 3-Port Dispensing Solenoid Valve
	Threaded Connection	1/4-28UNF	1/4-28UNF
	Response Time	≤50ms	≤50ms
	Operating Pressure Range	-75Kpa~0.2Mpa	-75Kpa~0.2Mpa
Installation Dimensions	Height	254mm	
	Width	Depends on number of channels, see Ch.2 Dimensions.	
	Depth	118mm	
Power Supply	Voltage	24V±10%	
	Current	2-Port Configuration: 2.0A (Peak); 3-Port Configuration: 2.5A (Peak)	
Interface	Type	RS-232, RS-485, CAN	
	Baud Rate	9600/38400 (RS-232 & RS-485) 100k, 125k, 250k, 500k & 1M (CAN)	
	Specification	Data Bits: 8 Parity: None Stop Bit: 1	
Communications	Address	Up to 15 Individual Addresses	
	Correspond	Data Terminal	
Firmware		Programmable ramps, cutoff speed, backlash compensation, piston speed, delays and loops, termination moves, diagnostics, absolute and relative positions.	
Input		2x TTL Inputs (4.7k Pull-up)	
Output		3x CMOS (HC-level) Outputs	
Environment	Operating Temperature	15°C to 45°C	
	Operating Humidity	20-80%RH at 40°C , Non-condensing	
	Storage Temperature	-20~65°C	

Note:

Parameters subject to change. For details, please consult FOREACH.

7 Ordering Information

Table 2 Order List

Product Model Information List		
Product Code	Model	Description
919005	HMD6-1PKFSU28	Syringe Pump HMD6-1PKFSU28 919005
919006	HMD6-1PKFDU28	Syringe Pump HMD6-1PKFDU28 919006
919009	HMD6-2PKFSU28	Syringe Pump HMD6-2PKFSU28 919009
919010	HMD6-2PKFDU28	Syringe Pump HMD6-2PKFDU28 919010
919013	HMD6-3PKFSU28	Syringe Pump HMD6-3PKFSU28 919013
919014	HMD6-3PKFDU28	Syringe Pump HMD6-3PKFDU28 919014
919017	HMD6-4PKFSU28	Syringe Pump HMD6-4PKFSU28 919017
919018	HMD6-4PKFDU28	Syringe Pump HMD6-4PKFDU28 919018
919021	HMD6-6PKFSU28	Syringe Pump HMD6-6PKFSU28 919021
919024	HMD6-6PKFDU28	Syringe Pump HMD6-6PKFDU28 919024
919023	HMD6-8PKFSU28	Syringe Pump HMD6-8PKFSU28 919023
919031	HMD6-8PKFDU28	Syringe Pump HMD6-8PKFDU28 919031
919048	HMD6-4EIFTU28	Syringe Pump HMD6-4EIFTU28 919048

HMD6	-	1	PK	F	S	U28	N
Series		Channel Count	Valve Seat Material	Diaphragm Material	Valve Configuration	Thread	Other
HMD6		1: 1 Channel 2: 2 Channel 3: 3 Channel 4: 4 Channel 6: 6 Channel 8: 8 Channel	PK: PEEK AC: POM El: PEI MA: PMMA	F: FKM K: FFKM E: EPDM	S: 13(2-Port SV*) D: 23(3-Port SV*) T: 32(3-Port Dispensing SV*) W: 22(2-Port Non-Dispensing SV*)	U28: 1/4-28 M6: M6*1	None (With Drive) N: Without Drive

Figure 7 HMD6 Selection Table

Note:

Not all cross-combination products listed above are available. For standard products, please see "Chapter 8 Ordering Information".

SV*: Solenoid Valve

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