

HLD3 Syringe Pump with Rotary 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 HLD3 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 in the range of 5 μ L~5mL, offers different valve configuration options, and excellent liquid dispensing accuracy.
- Features compact size, easy maintenance, long lifespan, and highly stable drive software.
- Offers a rich range of syringe capacity options: 50 μ L, 100 μ L, 250 μ L, 500 μ L, 1.0mL, 2.5mL, 5.0mL.
- 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

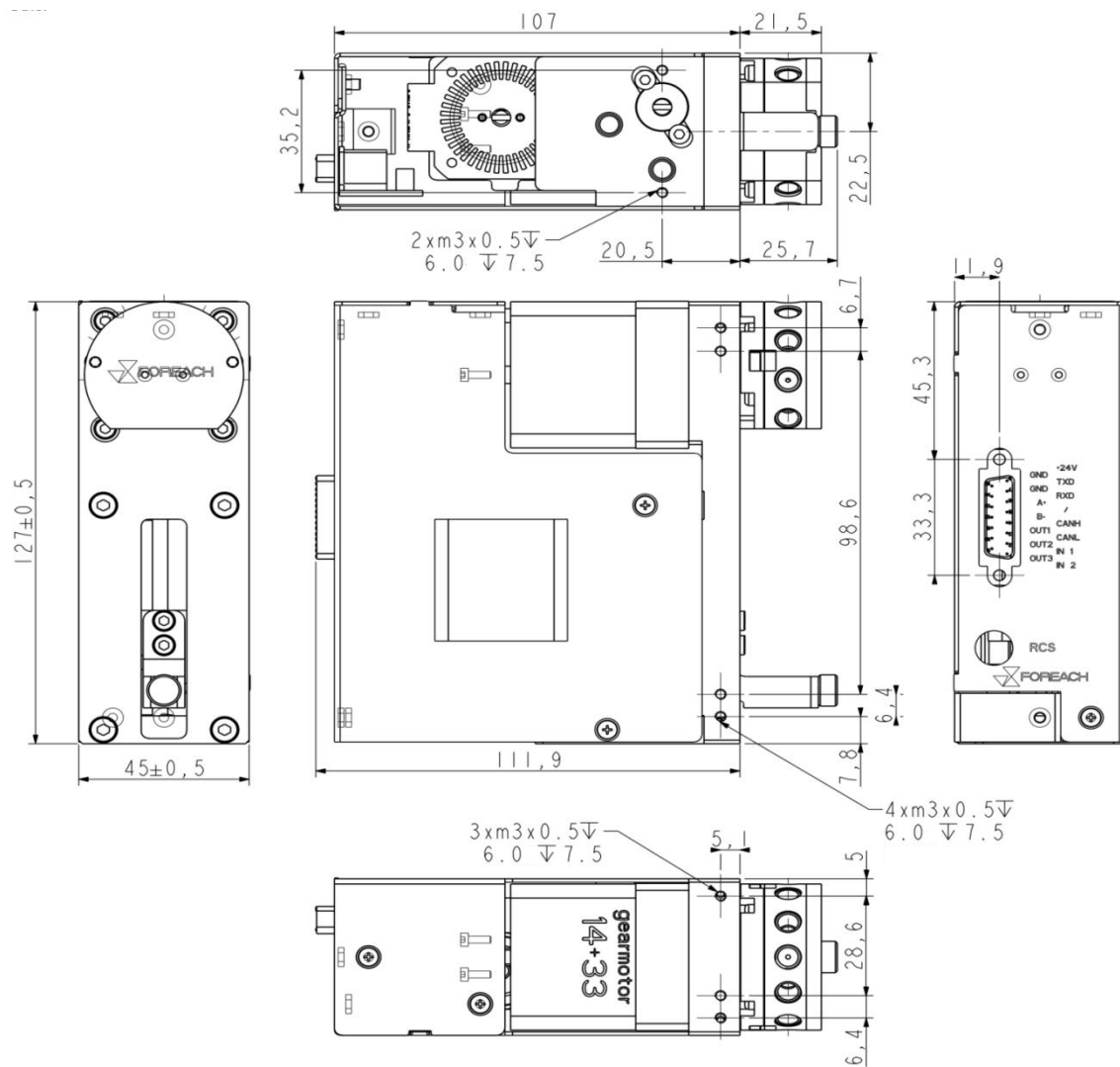


Figure 1 Outline Dimensions

3 Technical Features

3.1 Syringe Piston Drive Assembly

The HLD3 series employs a precision-ground ball screw transmission structure, providing extremely stable linear motion performance. Total stroke length is 30mm, driven by a stepper motor equipped with a precise step-loss detection device, achieving backlash-free syringe reset and piston motion step-loss detection.

3.2 Motion Curve

Capable of full-stroke operation from as fast as 1.2 seconds to as slow as 20 minutes. Parameters including starting speed, acceleration, maximum speed, deceleration, and stopping speed are all customizable to meet different application needs.

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

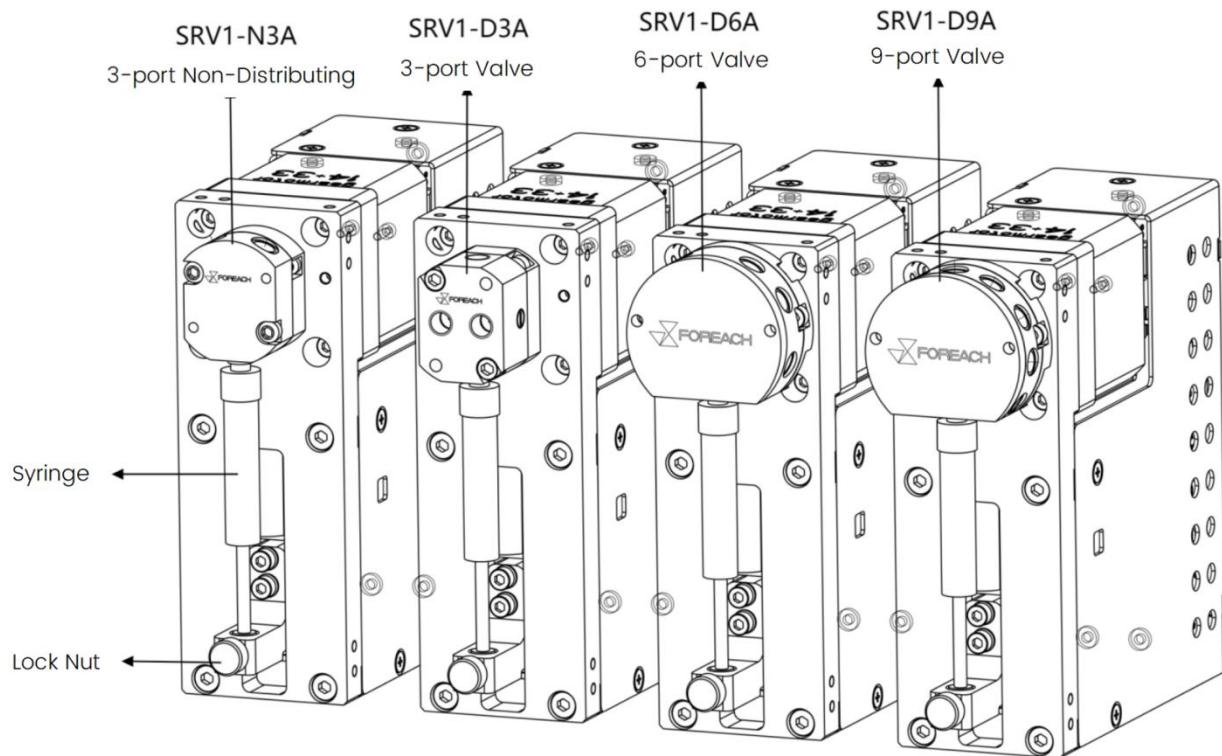


Figure 2 Component Structure

5 Valve Configurations

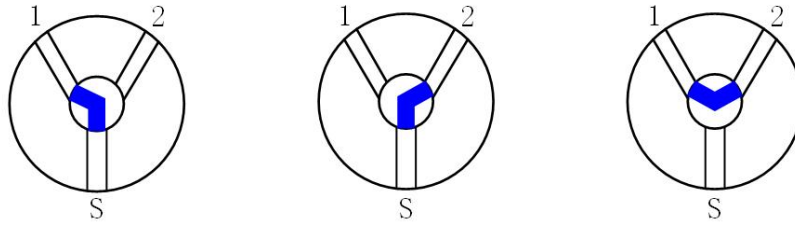


Figure 3 3-Port Non-Distribution Valve

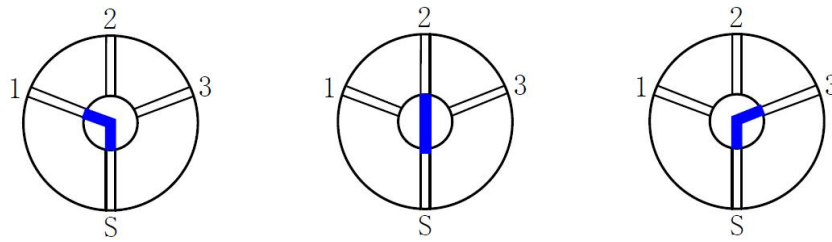


Figure 4 3-Port Distribution Valve

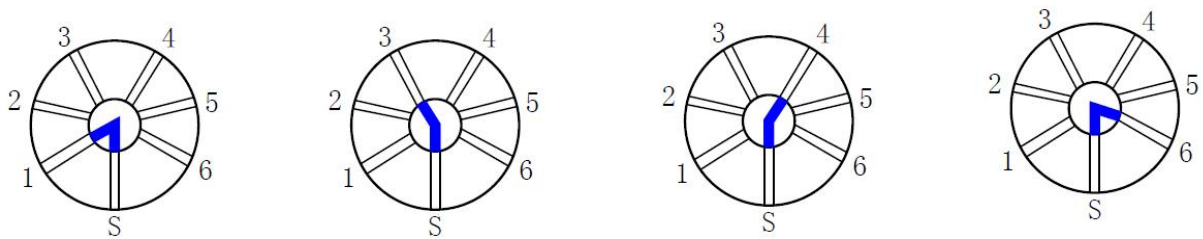


Figure 5 6-Port Distribution Valve

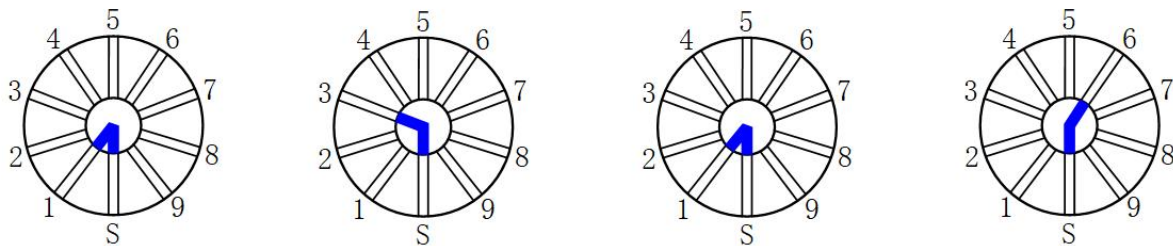


Figure 6 9-Port Distribution Valve

6 Specifications

Table 1 Specifications

Specifications		
Specification		Parameters
Piston	Stroke	30mm
	Full Stroke Operating Time	1.2-1200s
	Linear Velocity	0.025-25mm/s
	Resolution	Standard Mode: 3000 increments; Microstepping Mode: 24000 increments
Syringe	Capacity	50µL, 100µL, 250µL, 500µL, 1.0mL, 2.5mL, 5.0mL
	Threaded Connection	1/4-28UNF-2B
	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	SRV1: 3-Port Non-Distribution Valve, 3-Port Distribution Valve, 6-Port Distribution Valve, 9-ports Distribution Valve
	Threaded Connection	1/4-28UNF-2B
	Response Time	≤250ms
	Pressure Resistance	SRV1: 0.68MPa
Installation Dimensions	Height	127±0.5mm
	Width	45±0.5mm
	Depth	107mm
Power Supply	Voltage	24V±10%
	Current	1.5A
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
Weight		1100g

Note:

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

7 Selection Guide

Table 2 Selection Guide

Selection Guide						
Series	Valve Configuration	Valve Diameter	Wetted Materials	Thread Specification	Pressure Resistance	Valve Type
HLD3	SRV1-N3A	1.2mm	PEEK, FFKM, FKM, Al ₂ O ₃ , ZrO ₂ , Sapphire	1/4-28UNF-2B	0.68MPa	3 Port Non-Distributing Valve
HLD3	SRV1-D3A					3-Port Valve
HLD3	SRV1-D6A					6-Port Valve
HLD3	SRV1-D9A					9-Port Valve

Note:

Not all cross combinations of the above selection options are available as standard products. Please see "**Chapter 8 Ordering Information**" for standard products.

8 Ordering Information

8.1 HLD3 Syringe Pump

Table 3 HLD3 Syringe Pump Order List

HLD3 Syringe Pump Order List		
Product Code	Model	Description
919082	HLD3-SRV1-NYA	Syringe Pump HLD3-SRV1-NYA 919082
919081	HLD3-SRV1-D3A	Syringe Pump HLD3-SRV1-D3A 919081
919086	HLD3-SRV1-D6A	Syringe Pump HLD3-SRV1-D6A 919086
919084	HLD3-SRV1-D9A	Syringe Pump HLD3-SRV1-D9A 919084

8.2 SRV1 Rotary Valve

Table 4 SRV1 Rotary Valve Order List

SRV1 Rotary Valve Order List		
Product Code	Model	Description
489001	SRV1-N3A	Rotary Valve SRV1-N3A 489001
489002	SRV1-D3A	Rotary Valve SRV1-D3A 489002
489003	SRV1-D6A	Rotary Valve SRV1-D6A 489003
489004	SRV1-D9A	Rotary Valve SRV1-D9A 489004

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