

DUAL-SYRINGE SMART PUMP VSP1002-A



Datasheet

VSP is an innovative dual-syringe air displacement pump for customers to automate pipetting, diluting and dispensing with excellent accuracy and precision, as well as the speed. The targeted application includes life science, medical science, chemical science, and others.

Driven by a Nema 14 stepper motor, controlled by a high resolution linear encode system, VSP can provide the stopping accuracy of: +/- 0.5% (stroke >3mm), +/-1% (stroke <=3mm) for the syringe pusher. VSP is able to handle liquid from < 1 μ l to continuous flow.

Featuring an innovative dual-syringe pump design that can deliver wide range of pump volume without compromising high precision and accuracy at low volume, VSP is designed for application requiring microliter to milliliters aspirate and dispense operations. It is also capable of achieving continuous flow rates in the low nanoliters per second to milliliters per second ranges (syringe size dependent).

VSP reduces the complexity associated with having 2 syringe pumps and the associated valving to meet volume range, accuracy and precision you need by replacing with our unique dual-syringe pump. The control algorithm intelligently switches between the 2 syringes based on the pump volume required to maximize accuracy and precision.

VSP can be used as a component or module in a large system, also can be used as a stand-alone quick liquid handling equipment with simple fixtures. By replacing 2 syringe pumps with our unique dual-syringe smart pump saves you money not only from lower pump cost but also savings from associated valves and connections as well as lower assembly costs.

VSP can be mounted both horizontally and vertically, by 3 M3x0.5mm screw. VSP is compact and no bigger than typical syringe pump with a single syringe, it does the work of 2, thereby reducing the space needed in your instrument to achieve the same function.

VSP provides a barb for tubing by default. User can customize by replacing the off the shelf barb for their application.

VSP is an exceptional balance between cost and functionality. This is combined with a compact design to ensure easy integration and cost-effective performance for a wide range of applications.



VSP1002-A Specifications

Plunger Drive	
Principle	Ball screw drive with linear encoder for step loss detection
Travel	30mm
Plunger Speed	1.2 sec to 150 min
Resolution	5,669 increments (standard mode) Up to 192,000 increments (microstep mode)
Life Expectancy	4 million cycles (Per VEST life test protocols)

Accuracy:

Pump Pusher		
Distance (mm)	Allowed Error (±)	Tolerance (± mm)
1	1.50%	0.015
2		0.03
3		0.045
4	1.00%	0.04
5		0.05
6		0.06
7		0.07
8		0.08
9		0.09
10		0.1
11		0.11
12		0.12
13		0.13
14		0.14
15		0.15
16		0.16
17		0.17
18		0.18
19		0.19
20		0.2
21		0.21
22		0.22
23		0.23
24		0.24
25		0.25
26		0.26
27		0.27
28		0.28
29		0.29
30		0.3

Dimensions

Height	140 mm
Width	95 mm
Depth	55 mm
Weight	0.8 kg

Interface

Type	USB
User Interface	High Level Commands (API)
Reset Button	Yes
Calibration	On board EEPROM

Environmental

Operating Temperature	15-40 °C (59-104 °F) (mechanism only)
Humidity	20-80 % RH at 40 °C (104 °F) (non-condensing, mechanism)
Storage Temperature	-20 to +65 °C (-4 to 149 °F)

Supported Syringes (To be added by user)

Size	50 µl, 100 µl, 250 µl, 500 µl, 1.0 ml
Barrel Material	Borosilicate Glass
Plunger Seal Material	PTFE or UHMWPE (most sizes)
Manufacturer	TECAN
Precision	≤ 0.05 % CV within run at full stroke (1 ml syringe) ≤ 0.5 % CV within run at 10 % stroke (1 ml syringe)
Accuracy	≤ 1.0 % (1 ml syringe) at room temperature using deionized water

Tecan MPN

Part No.	Volume	Description
30049416	250 µL	250 µl XC Glass Syringe with UHMWPE plunger tip seal
20733833	500 µL	500 µl XC Glass Syringe with UHMWPE plunger tip seal
20730141	1.0 mL	1.0 mL XC Glass Syringe with UHMWPE plunger tip seal
20725676	50 µL	50 µL XC Glass Syringe with PTFE plunger tip seal
20725682	100 µL	100 µL XC Glass Syringe with PTFE plunger tip seal
20725589	250 µL	250 µL XC Glass Syringe with PTFE plunger tip seal
20725590	500 µL	500 µL XC Glass Syringe with PTFE plunger tip seal
20725591	1.0 mL	1.0 mL XC Glass Syringe with PTFE plunger tip seal

Power Requirements

Supply Voltage	24 VDC ± 10 % (Separate External PS)
Peak Current	1.5 A

Regulatory

CE	IEC 64326-1
RoHS	RoHS 3.0
REACH Compliant	Yes

2D drawing

