

Keyto 垦拓

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Innovation Towards Future

**Expertise in Fluidic,
Precision Machining and
Microfluidic Technology.**



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' Innovation, towards future ' we are in action!

• Main products and application

Keyto is committed to the R&D, production and sales of micro solenoid valves, multi-channel rotary valves, pipetting modules, metering pumps, precision piston pumps, diaphragm pumps and integrated modules, manifolds and microfluidics. We are a high-quality service supplier of precision fluid control components and system solutions.

Keyto products are mainly applied in life science, environmental online monitoring, laboratory analysis, industrial automation, inkjet printing and many more.







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About Us



Keyto focuses on the development of key components and subsystems in the field of IVD medical devices and environmental protection analytical instruments. Keyto is a pioneer in this segment and the manufacturer of key fluid components with advanced technology, attentive services and health mission.

Keyto was founded in Shenzhen in 2010, with a registered capital of 6 million USD, employing more than 500 people worldwide, and the headquarter covers an area of 20,000 m². Keyto is an innovation-oriented enterprise. We received many honors from different areas. Like the specialized and sophisticated "little giant" enterprise in China. The winner of the Nanshan Entrepreneurs Star Competition. We have applied for over 100 patent certifications for our self-developed achievements. We have two subsidiaries, Keyto Precision Technology Co., Ltd. and Chengdu Keyto Medical System Technology Co. Ltd. Also, Keyto has set up offices in Beijing, Nanjing, Jinan, India, and other worldwide regions.



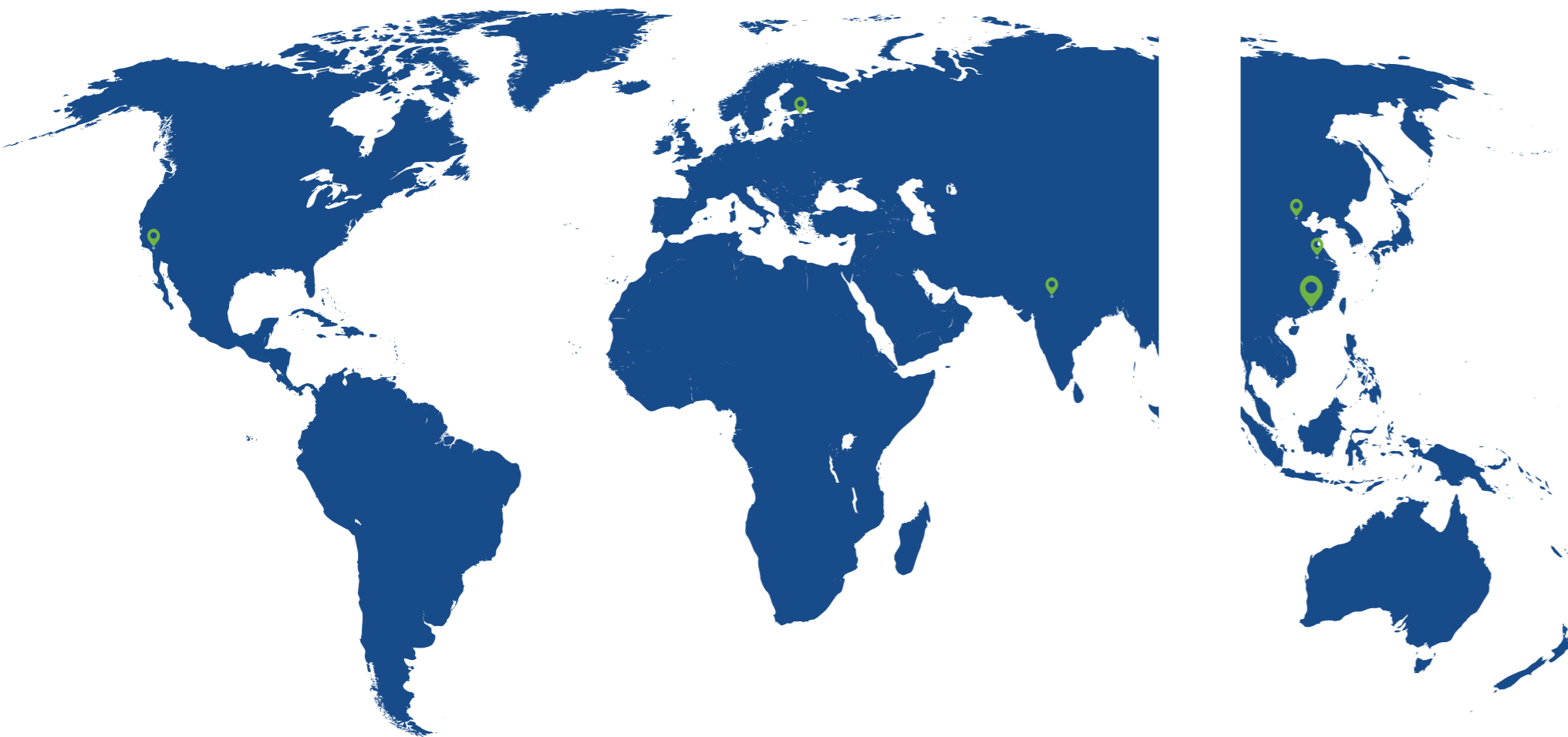
Keyto Fluid focuses on the R&D and domestic production of high-end key components in the medical and environmental protection industries, providing industry-wide solutions. We have initiated numerous major projects for medical devices, encompassing high-end components such as proportional solenoid valves for ventilators, high-end diaphragm solenoid valves, manifolds, multi-channel ceramic rotary valves, flow cell sorting nozzles, flow cells, SADP modules, and more. We have successfully overcome technical challenges in gene sequencing, respiratory anesthesia, single-cell sorting, chemiluminescence, environmental monitoring, chromatography, and mass spectrometry.

History

2010		Keyto official establishment: Focusing on the design and sales of microfluidic precision control components.
2013-2014		Established Keyto machining center for autonomous and controllable precision parts processing; Received the title of national "High tech Enterprise". Passed the ISO9001 quality management system certification. The whole products have passed CE and ROHS certification.
2018		Breakthrough of the Flow cytometry analyzer nozzle, At that time, Keyto entered the life science industry, And sales revenue exceeded 1.37 million USD.
2020		Successfully developed the first proportional valve for ventilators in China. Jointly undertaking a Shenzhen municipal level gene sequencer project with BGI Intelligent Manufacturing, using microfluidic integrated system technology.
2021		Obtained the title of "Little Giant" enterprise with national specialization. Jointly undertook the ventilator technology research project of the Ministry of Industry and Information Technology with the National Research Institute of Medical Devices and other units.
2022		SADP series high-end liquid handling modules entered into the global market. Jointly undertook the Ministry of Science and Technology's emergency transport ventilator research project.
2023		Passed ISO13485 and ISO14001 system certification. Keyto Precision Technology Co., Ltd. is officially operational, achieving breakthroughs in precision injection molded parts such as Microfluidic chips.

Keyto technology exceeds your expectations

Let technology break the barriers and drive Keyto innovation toward the world



@Keyto 垦拓

Customer Review

Advanced Technology

Diverse Categories

Experienced Company

Diversified Applications

Standardized Procedure

Innovation and Tackling Key problems

Serving Customers

20+

Fortune 500

500+

Global Companies

2000

Top companies in different industry

"Excellent Supplier" title awarded by customers





Keyto Fluid Technology Co., Ltd.

Focusing on the R&D, production and sales of fluid system solutions and core components in the fields of medical testing, environmental monitoring equipment, etc., located in Bao'an District, Shenzhen.



Keyto Precision Technology Co., Ltd.

Focusing on microfluidic and precision machining, located in Bao'an District, Shenzhen.



Keyto Medical System Technology Co. Ltd.

Focusing on the integrated development of superb air displacement pipette (SADP) and fluid system, located in Chengdu high-tech development west zone.



Keyto Marketing Global Approach

Responsible for business connection in China, India, Europe, America, etc. Keyto sales network has spread worldwide.



R & D Center

The Keyto R&D Center is a hub for assembling the finest talents in microfluidics, encompassing key components, application technology, and manufacturing processes. This impressive team boasts a strong foundation in scientific research and technology. Comprising the R&D, application, and program departments, the center boasts a collective strength of approximately 150 individuals. With a flexible and pragmatic design approach, the center is dedicated to safeguarding the company's core competitiveness and product technology excellence.

R & D Strength

- We have over 6,000 product categories, underpinned by an annual R&D investment exceeding 15% of the company's total revenue.
- Our team composition is a dynamic blend, with 60% being comprised of experienced senior hardware and software R&D professionals, and 40% consisting of skilled R&D laboratory technicians.
- We employ comprehensive systems for product data management, product lifecycle management, and integrated product development.
- Our substantial experience extends to the application and design of engineering plastics and specialized rubber materials.
- We provide a comprehensive suite of solutions, including liquid path systems and automatic pipetting module systems.
- Our innovation is underscored by the granting of more than 100 patents, representing our full ownership of intellectual property rights.

Strength



Manufacturing Center

Team strength: Our team comprises approximately 240 members, including core members with over 15 years of production management experience from senior Japanese and Taiwanese companies.

Workforce: Our workforce is divided as follows: inspectors (50%), technicians (10%), and operators (40%). Among our inspectors, at least 30% hold the designation of technicians above T3, and among our operators, a minimum of 30% are also technicians above T3. Importantly, all our technicians hold a minimum qualification of T4.

We prioritize customer demands in our value process layout, with a strong focus on swiftly standardizing model changes to enhance the flow of information, personnel, and materials. Our production management seamlessly integrates on-site processes with automation to establish a 'flexible, efficient, and standardized lean production model that caters to customer needs.

- Process control and traceability based on MES system
- Flexible, fast and standardized CELL LINE layout
- Human-machine integrated automatic manufacturing process
- Systematic training plan for multi-skilled worker
- Lean and standardized site management



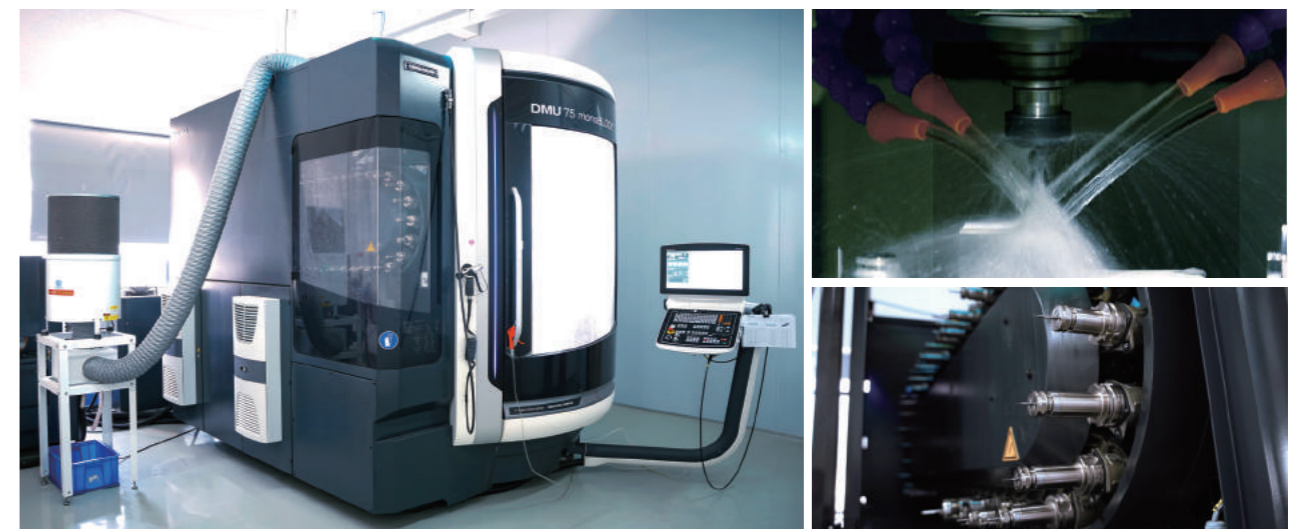
Strength



Machining Center

Established in 2014, the machining center specializes in the processing of special material parts using bonding, ultrasonic welding, and other advanced technologies. It is capable of achieving ultra-deep length-to-diameter ratios, high-finish micro hole processing, ultra-precision micro holes, ultra-thin wall processing, ultra-precision surface processing, non-destructive surface micro processing, and high-transparency part processing.

Keyto Machining Center is well-equipped with an impressive array of resources. This includes an extensive inventory of machinery, featuring over 40 sets of 3-5 axis precision machining equipment and more than 10 specialized professional machining tools. We're supported by a comprehensive range of testing instruments and operate within a spacious 5,000 m² machining facility. Importantly, our technology and machining capabilities are aligned with the highest manufacturing standards, both nationally and internationally.



Quality Assurance



K Quality team

At Keyto, our unwavering commitment to product quality takes precedence. We've dedicated significant resources to this cause, with over 20% of our workforce comprising quality control personnel. Our commitment extends throughout the entire product journey, from supply chain management to product realization and post-sales service. To ensure utmost transparency and accountability, we employ a suite of electronic data platforms, including PDM, ERP, and MES, to record and update every step in real-time.

Our Quality Center boasts a remarkable 12 years of experience in quality management and is home to an independent reliability testing center. Here, we conduct rigorous multi-dimensional reliability verification and type tests, covering mechanical, environmental, and performance assessments. These tests adhere to industry regulations and customer-specific requirements, guaranteeing the safe and reliable use of our products across diverse environments and conditions.

K Equipment support

Inspection equipment: 3D OGP (detection accuracy of 0.01 μm), white light interferometer (surface roughness accuracy of 0.02 Ra), metaloscope (can be magnified to 500 times), 2.5 dimensional projection, three-dimensional, profilometer, cylindricity measuring instrument, salt spray tester, mute test room, constant temperature and humidity chamber, high temperature aging chamber, ROHS testing equipment, laser diameter measuring instrument, high definition digital magnifier, etc.

Special inspection services: super-microporous test, cylindricity test, surface quality inspection and detection, low temperature freezing test, drop/vibration/simulated transportation test platform.

K Product certifications

Keyto's products have undergone rigorous testing and have obtained a variety of certifications from third-party laboratories. Currently, we have a full range of product certifications, including CE and RoHs, and a small number of our products have Reach certifications as well. In the future, we will continue to pursue additional certifications as needed during the product development process.



Products

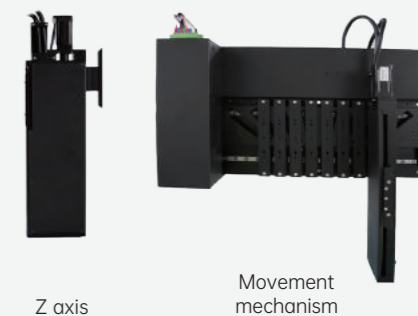


SADP16/SADP18

Superb Air Displacement Pipette

Features:

1. Multi-pipetting units with movement mechanism allow for minimum tip-to-tip spacing of 9mm
2. Offers automatic tips pick-up and ejection, tips presence detection, high-speed liquid level detection, clot detection, error reporting of aspiration of air, and the function of the liquid level following when used with the Z-axis
3. Compatible with the most disposable tips in the market
4. Z axis and movement mechanism are optional



SADP16



SADP18



SADP (Superb Air Displacement Pipette) is a pipetting module developed by Keyto based on pneumatic aspiration and dispense technology, featuring disposable tips for pipetting. It supports automatic aspiration and dispense in the range of 2-1000 μ L with different sizes of tips. Keyto's SADP provides a fast and reliable mechanical transfer module, along with common communication capabilities, making it suitable for integration into pipetting platforms that are sensitive to cross-contamination, as well as pipetting units within inspection equipment. It delivers reliable and high-performance pipetting modules for various equipment requiring liquid handling.

Model	SADP16	SADP18
Maximum displacement	1ml	
Liquid level detection	PLLD(pressure-based liquid level detection)	
Weight	330g	\leq 400g
Tip volume	10 μ l, 50 μ l, 200 μ l, 1ml	
Dimensions	265mm*100mm*16mm	251mm*77.8mm*17mm
Communication	RS232, RS485, CAN	
Drive design	Coreless brushless motor with encoder, integrated with ball screw	Stepper motor without encoder, integrated with ball screw
Working temp.	5 $^{\circ}$ C ~ 40 $^{\circ}$ C	
Voltage	24V DC	
Lifetime	Min. 1 million cycles	
Jet mode (single dispensing)	CV \leq 10%, Accuracy \leq 10% @1ul single dispensing, 10ul tip, DI water	CV \leq 3%, Accuracy \leq 5% @5ul single dispensing, 50ul tip, DI water

ADP20

Air Displacement Pipette

Features:

1. Compact design, compatible probe length: 12mm/40mm/65mm
2. Offers automatic tips pick-up and ejection, tips presence detection, liquid level detection, clot detection, and the function of the liquid level following when used with the Z-axis
3. Unique sealing solution, the lifetime can reach more than 1 million cycles
4. Different displacements are available: 10 μ L, 50 μ L, 200 μ L, 1mL, which facilitates high-speed liquid dispensing of small volume
5. Compatible with most disposable tips in the market



Item	Specification
Maximum displacement	1ml
Liquid level detection	PLLD (pressure-based liquid level detection)
Weight	≤ 400g
Tip volume	10 μ l, 50 μ l, 200 μ l, 1ml
Dimensions	108mm*50mm*28mm
Communication	RS232, RS485, CAN
Drive design	Thru-shaft designed linear stepper motor integrated with guide rail
Working temp.	5°C ~ 40°C
Voltage	24V DC
Lifetime	1 million cycles



ADP28 Air Displacement Pipette

Features:

1. Compatible probe length: 12mm, 40mm, 65mm
2. Three solutions are optional to suit different applications
3. The lifetime can reach more than 1 million cycles
4. Compatible with most disposable tips in the market
5. Different displacements are available: 100 μ L, 250 μ L, 500 μ L, 1mL, which facilitates high-speed liquid dispensing of small volume
6. Two pipette units with movement mechanism allow for minimum tip-to-tip spacing of 9mm or 18mm



Option 1: Tip ejector



Option 2: Tip ejector + Tip sensor



Option 3: Tip ejector + Tip sensor +
Liquid level detection + Liquid level following
+ Clot detection

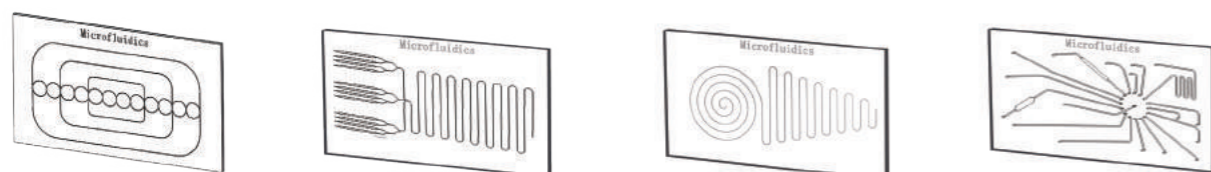
Item	Specification
Maximum displacement	1ml
Liquid level detection	PLLD(pressure-based liquid level detection)
Weight	\leq 500g
Tip volume	Compatible with the most tips in the market, customizable
Dimensions	140mm*33mm*28mm(Option 1 and 2), 140mm*28mm*45.5mm (Option 3)
Communication	RS232, RS485, CAN
Drive design	Stepper motor
Working temp.	5°C ~ 40°C
Voltage	24V DC
Lifetime	1 million cycles

Manifold/Microfluidics

Microfluidics

- The diffusion bonding process, distinct from solvent bonding or laser welding, results in a bright inner wall of the flow path with no residue and a highly effective sealing effect. Additionally, it allows for the pre-packaging of a variety of reagents.
- Our materials, including PMMA, PP, PC, PVC, PS, etc., comply with biological compatibility standards.
- With a minimum aperture size of 200 μm and a minimum of 50 μm , this system integrates sampling, dilution, reagent addition, reaction, separation, and detection to optimize reagent usage and reduce sampling volume.

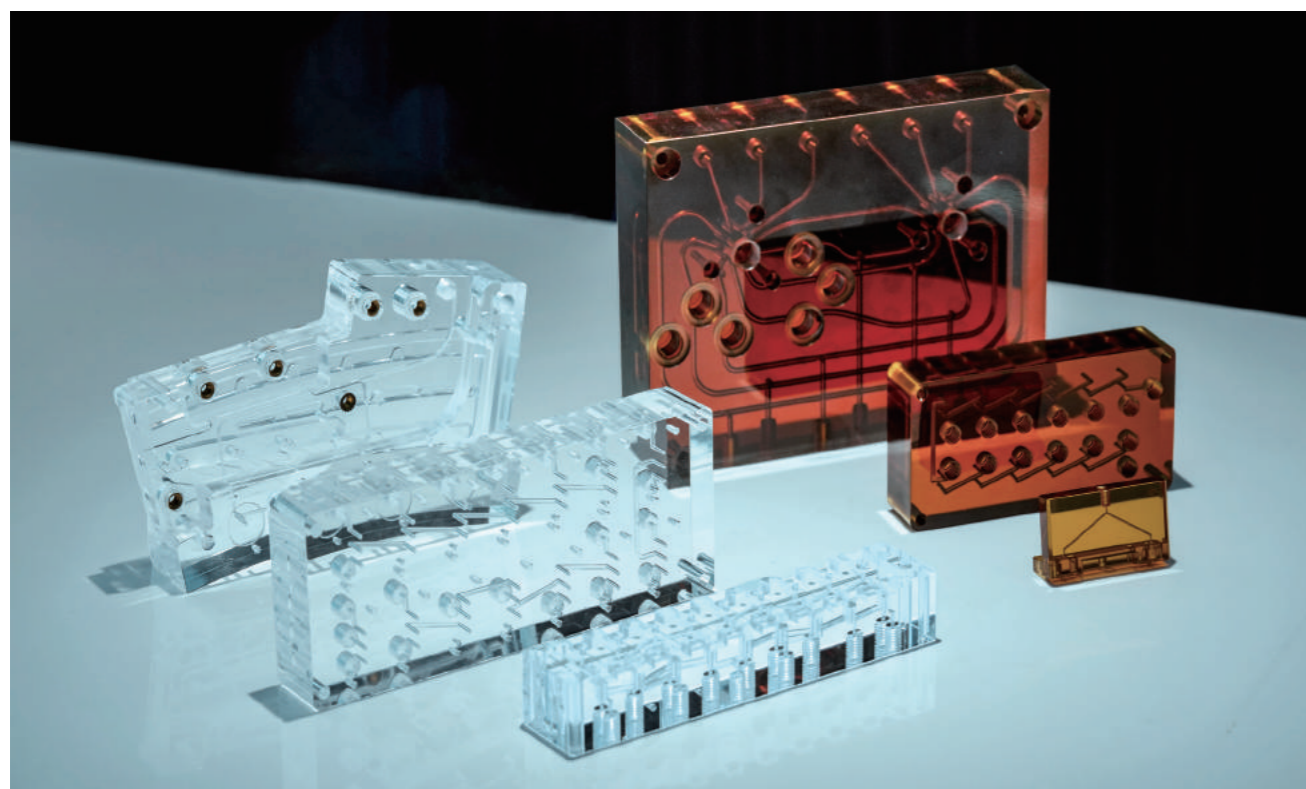
Applications:



Bonded Manifolds

- Manifolds are products created by bonding two or more layers of machined parts using high temperature and high-pressure molecules. This bonding process includes curved liquid paths and layered bonding. Currently, we can bond materials such as PMMA, PEI, and PVC.
- Keyto offers customized services to meet our customers' specific needs. Our products are characterized by high transparency, clean flow paths, non-adhesiveness, absence of contamination, leak resistance, high integration, and excellent biocompatibility.

Applications:



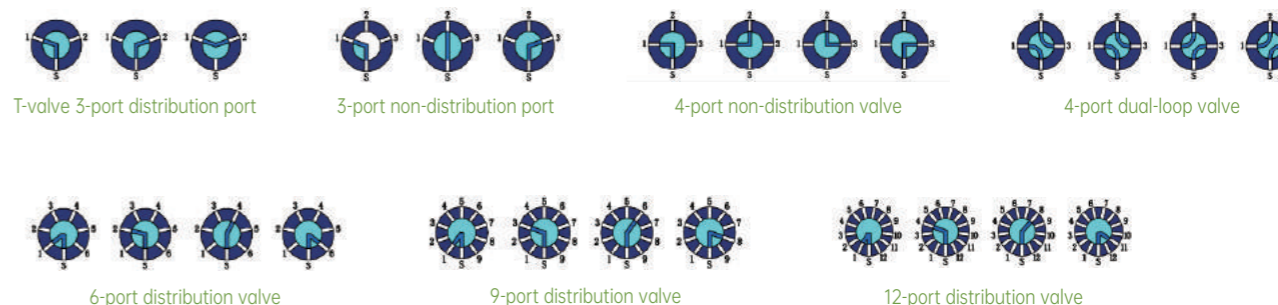
5A Programmable Syringe Pump

Features:

1. High precision, limited dead volume
2. The medium includes water, air and some organic solvents
3. Buld-in programmable platform with flexible and compact structure



Valve types:



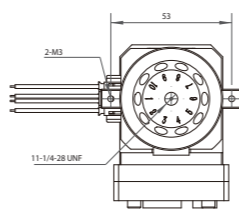
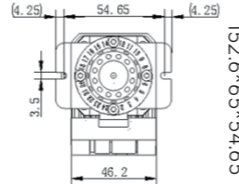
Performance	Specification
Accurary	1% run at full stroke
Coefficient of variation (CV)	CV < 0.5%(run at within 10% stroke), CV < 0.05% (run at full stroke) (Condition: 500ul syringe, DI water)
Total step number at full stroke (step)	3000 or 6000
Total strokes (mm)	30mm or 60mm, optional
Control resolution mm/step	0.01
Optional syringe volumes (μL)	100 μL , 250 μL , 500 μL , 1mL, 2.5mL, 5mL, 10mL, etc.
Valve types	3, 8, 9 ports optional
Wetted part materials	Glass material: Borosilicate; Piston material: PTFE, UPE; Valve body material: PCTFE
Port connection	1/4-28 UNF
Communications	RS232, RS485, CAN Bus
Baud rate	RS232/485: 9600 or 38400; CAN: 100kb, 125kb, 250kb, 500kb, 1Mb
Voltage	DC 24V
Dimensions (mm)	107*127*44 (30 strokes), 148*252*44 (60 strokes)

Multi Channel Rotary Shear Valve


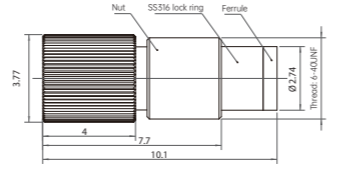
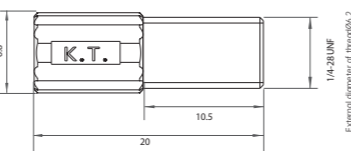
Features:

1. It can be the alternative of the solenoid valve manifold, avoid the heat generated by long-time operation with smaller internal volume of the common flow path
2. Long lifetime and good abrasion resistance
3. Offer a wide choice of wetted part materials. All series products are compatible with various reagents (specific selection needs to be consulted)
4. Various flow path types are optional, such as one position/multi-port, two-position/multi-port, and other special customized flow path types
5. Compatible with almost all common rotary shear valve communication protocols
6. Full inspection of incoming materials, with the ability to detect all surface quality
7. Single side rotor or double side rotor optional
8. It has the quick response time in the market



Type	Channels	Standard model	Port connection	Wetted part	Communication	Dimensions
Distribution	6	31B6-21-IYU/3C3	1/4-28 UNF	PCTFE, sapphire, zirconia, fluororubber	RS232\RS485\CAN	 143.3*68*52
	10	31BB-21-IYU/3C3				
	12	31AD-21-IYU/3C3				
	16	31AH-21-IYU/3C3				
	24	315K-22-KYD/3C5	6-40 UNF	PEEK, sapphire, zirconia, fluororubber		 152.6*65*54.65

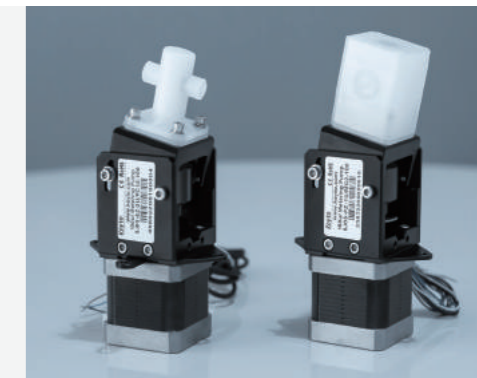
Applicable fittings of rotary valve

 Flangeless fitting	Compatible with 1.6mm O.D. flangeless fitting	6-40 UNF	FJ-XJ-M2/PE1.6	Nut/ferrule: PEEK Lock ring: SS316	
	Compatible with 3.2mm O.D. flangeless fitting	1/4-28 UNF	FJ-XJ-U2/PE3.2φ7	Nut: PP Ferrule: PVDF	
M6		FJ-XJ-M2/PE3.2φ7			

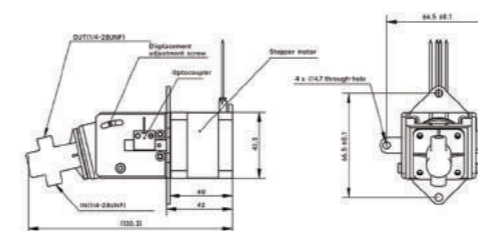
Metering Pump

Features:

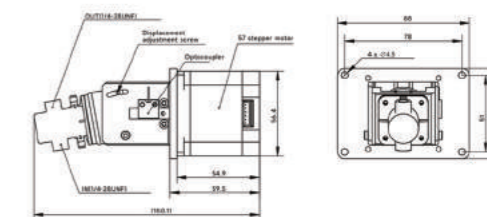
1. Metering pump is driven by a step-motor to ensure the smoothness of movement. The moving pair is an imported joint ball bearing, the quantitative aspiration and dispense of the liquid is realized by driving rotation of step-motor
2. In the life cycle of metering pump, it has extremely high and stable quantitative liquid aspiration and dispense accuracy
3. Angle adjustment range: 0.5-20 °
4. Suction lift: 4m
5. Long life, high-performance 1.8 ° two-phase stepping motor



Drawings:



5J05/5J07



5J10

Item	Specification		
Displacement (μL)	0-170	0-300	0-700
Plunger diameter (mm)	5	7	10
Stroke (mm)	8.9	7.8	8.9
Rotational speed (rpm)	5-600	5-600	5-300
Stepper motor (1.8 °)	42 stepper motor		57 stepper motor
Maximum suction lift (m)	4		24
Lifetime (cycle)	30 million cycles		
Coefficient of variation (CV)	0.5%		
Plunger material	Zirconia, Alumina		
Cylinder/piston material	POM, PVDF, PPS		
Port connection	1/4-28UNF		
Maximum placement angle (°)	20		

PV Proportional Valve

Features:

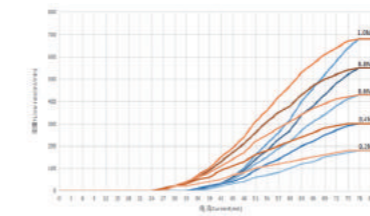
1. Wide range of flow control
2. It can be automatically adjusted for closed-loop control
3. Precise and stable flow control
4. Long lifetime



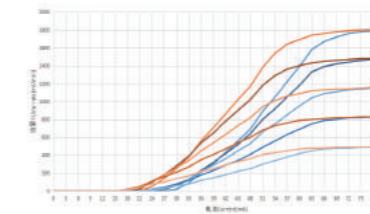
Item	Standard model	Orifice	Voltage & power	Max. working differential pressure/MPa	Max. flow rate	Dimensions
PV02	PV02-221/C2	0.15mm	12V, 1W	1MPa	1600mL/min (1MPa)	 15.5*17.3*44.3
	PV02-221/C3	0.3mm			8L/min (1MPa)	
	PV02-221/C4	0.5mm			10L/min (1MPa)	
	PV02-221/C5	0.76mm			25L/min (1MPa)	
	PV02-221/C7	1.27mm	0.7MPa	52L/min (0.7MPa)		
	PV02-221/C9	1.6mm	0.35MPa	35L/min (0.35MPa)		
PV03	PV03-222/CA	2.3mm	12V, 2.5W	0.3MPa	18L/min (0.05MPa)	 14.6*14.6*39.7
	PV03-222/CB	4.5mm			120L/min (0.2MPa)	
	PV03-222/CD				180L/min (0.2MPa)	

(PV02) current-flow curve, DC12V voltage series

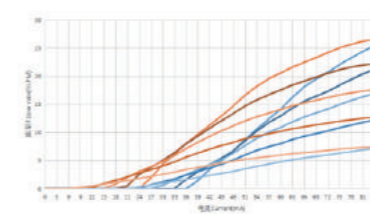
φ0.08mm orifice (power 1W)



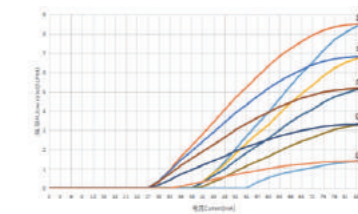
φ0.15mm orifice (power 1W)



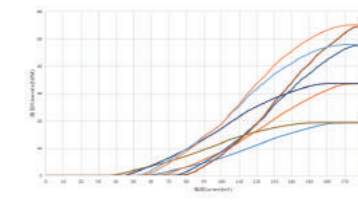
φ0.76mm orifice (power 1W)



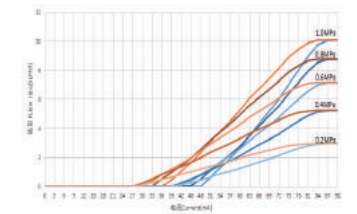
φ0.3mm orifice (power 1W)



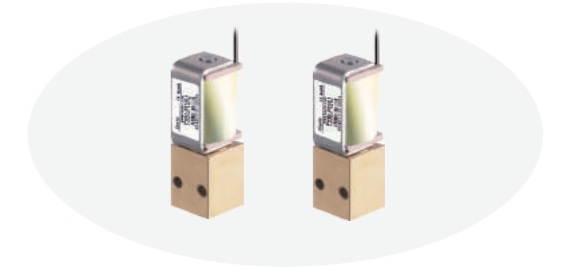
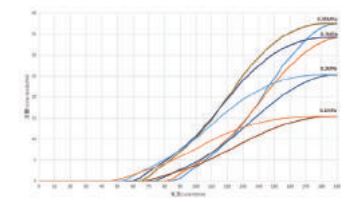
φ1.27mm orifice (power 2.5W)



φ0.5mm orifice (power 1W)

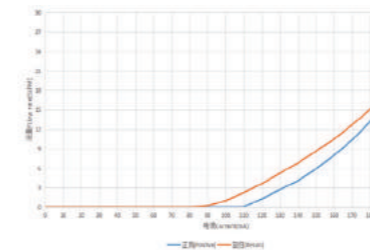


φ1.6mm orifice (power 2.5W)

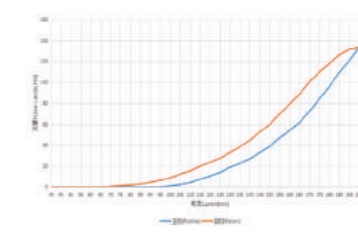


(PV03) DC12V voltage series

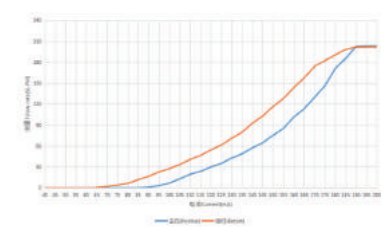
PV03-22*-CA current-flow curve (φ2.3mm, 18L/min, 0.05MPa)



PV03-22*-CB current-flow curve (φ4.5mm, 120L/min, 0.2MPa)

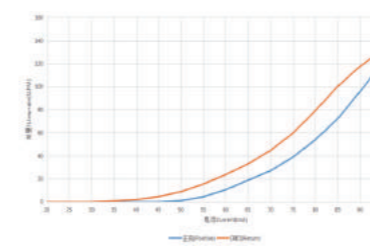


PV03-22*-CD current-flow curve (φ4.5mm, 180L/min, 0.2MPa)

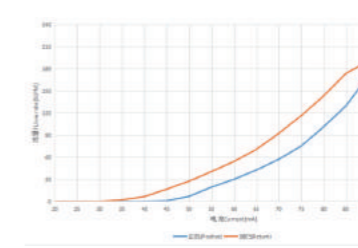


(PV03) DC24V voltage series

PV03-24*-CB current-flow curve (φ4.5mm, 120L/min, 0.2MPa)



PV03-24*-CD current-flow curve (φ4.5mm, 180L/min, 0.2MPa)



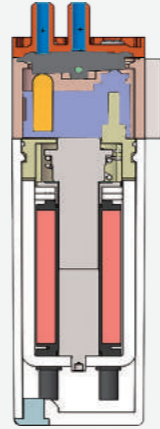
1013 Rocker Solenoid Valve

Features:

1. Compact structure, small internal volume, limited dead volume, high precision, long lifetime, micro volume of pump interaction
2. Medium including water, air, acid and alkali and organic solvents
3. Suitable for applications with strict requirements on installation space, precision sampling and integrated manifold

Instructions:

1. Tubing valve: compatible with 1.5-2 mm inner diameter PVC tube or silicone tube (shore hardness: 55-75 degrees)
2. Threaded valve: compatible with thread to barbed adapters (converted according to hose connector outer diameter) or the flangeless fitting (use of nut depends on flangeless fitting outer diameter)
3. There are two types of 1013 series 2-way solenoid valve: N.O. and N.C.



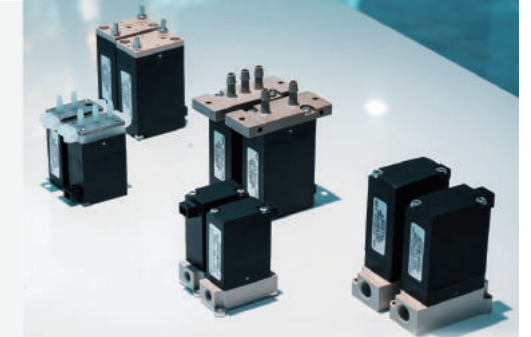
Specification	Orifice	Flow rate	Pressure	Power (optional)
	1.5mm	5.1g/s	-70kPa~0.25MPa	24V:2.8W/1.5W; 12V:3.2W/1.8W

Image	Standard model	Body (optional)	Diaphragm (optional)	Dimensions
	1013-22-EPN/5N 1013-32-EPN/5N	PEEK	EPDM, FKM, FFKM	13*16.5*64.2
	1013-22-ELB/5N 1013-32-ELB/5N	PEEK, PVDF		13*24.5*58
	1013-22-EMU/5N 1013-32-EMU/5N	POM, PVDF, PTFE, PEEK		19*24.5*73.5
	1013-32-TKU/5NC135	POM, PEEK		13*40.5*72.4

1033/1033 Plus Rocker Solenoid Valve

Features:

1. Isolated structure. The coil is separated from the solenoid valve body
2. Strong corrosion resistance, fast response
3. Multiple product models optional
4. Liquid volume fluctuation is slight
5. Long lifetime



Model	Standard model	Body (Optional)	Diaphragm (Optional)	Dimensions	
1033	 Tubing valve	1033-22-FCN/5N4S 1033-32-FCN/5N4S	PEEK, PVDF	EPDM, FFKM	 39*16*58
	 Base-mounted valve	1033-22-EKB/5N4S 1033-32-EKB/5N4S			 27*16*53
	 Threaded valve	1033-22-EKU/5N4S 1033-32-EKU/5N4S			 35.2*16*50.5
1033 Plus	 Tubing valve	Please contact us for the model details.	PEEK	EPDM, FFKM	 54*21.5*76.85
	 Base-mounted valve				 33*21*60
	 Threaded valve				 40.8*19*71.5

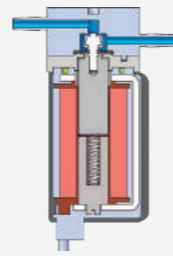
Model	Orifice	Flow rate	Pressure range	Power
1033	1.6mm	7.5g/s	-70kPa~0.3MPa	3.5W
1033 Plus	2mm	18g/s	-70kPa~0.5MPa	5W
1033 Plus	3mm	29g/s	-70kPa~0.2MPa	5W

1021

Assembled Diaphragm Type Solenoid Valve

Features:

1. High pressure resistance, long lifetime. The waterproofing solution is available, and the structure of N.O. and N.C. is optional
2. The medium includes water, air and some organic solvents
3. It is suitable for the application with more impurities and crystals



	Standard model	Body (optional)	Diaphragm (Optional)			
 <p>Tubing valve</p>	1021-21-EPN/5N5C365	PPS	EPDM, FKM, FFKM	 <p>20.5*38.5*64.9</p>		
	1021-31-EPN/5N5C365	PPS				
	1021-41-EPN/5N5C365	PPS				
 <p>Tubing valve</p>	Standard model	Body (optional)		EPDM, FKM, FFKM	 <p>20.5*42.5*61.7</p>	
	1021-21-EHN/5N	PVDF				
	1021-31-EHN/5N	PVDF				
 <p>Threaded valve</p>	Standard model	Body (optional)			EPDM, FKM, FFKM	 <p>20.5*26.9*64.1</p>
	1021-22-EMU/5N	POM				
 <p>Base-mounted valve</p>	Standard model	Body (optional)				EPDM, FKM, FFKM
	1021-21-EPB/5N	PPS				
	1021-41-EPB/5N	PPS				

Instructions

1. Tubing valve: it is compatible with 2 mm inner diameter PVC tube or silicone tube (shore hardness: 55~75)
2. Threaded valve: It is compatible with thread to barbed adapters (converted according to hose fittings outer diameter) or the flangeless fitting (use of nut depends on flangeless fitting outer diameter)

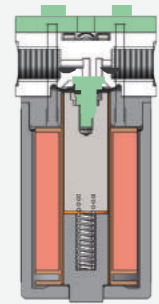
Specification	Orifice	Flow rate	Pressure range	Power
	2mm	8.5g/s	-70kPa~200kPa	4.2W


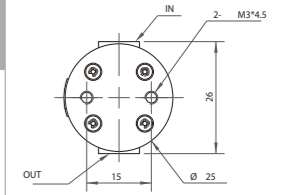
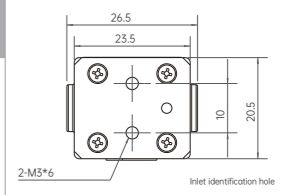


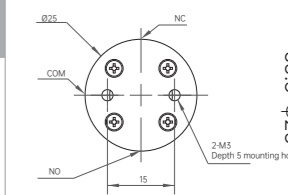
1011/1012

Temperature and Pressure Resistance Valve

Features:

1. Long lifetime
2. High temperature resistance (Max. 220°C)
3. Super limit dead volume
4. Multiple wetted part materials are available
5. Excellent acid and alkali resistance
6. Low liquid path resistance



		Standard model	Body (optional)	Diaphragm (Optional)	
1012		1012-22-DZU/5N	PFA, PVDF	FFKM	 <p>52.1*φ25</p>
		Standard model	Body (optional)	Diaphragm (Optional)	 <p>24*25*53.2</p>
1011		1012-22-DCU/5N	PTFE, PVDF	FFKM	
		Standard model	Body (optional)	Diaphragm (Optional)	
		1011-22-CAU/5N	PFA	FFKM	
1011		Standard model	Body (optional)	Diaphragm (Optional)	 <p>63.5*φ25</p>
		1011-32-PFU/5N	PTFE	PTFE	

Model	Orifice	Flow rate	Pressure range	Power
1012	1.3mm	5.1g/s	0 ~ 1.5MPa	3.5W ~5.2W
1011-2	1.5mm	5.1g/s	0 ~ 0.8MPa	5.2W
1011-3	1.5mm	3g/s	-70kPa~0.2MPa	5.2W

1022/1032/1042

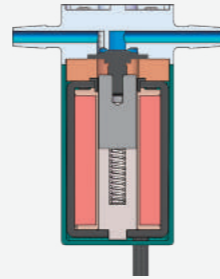
Direct Operated Solenoid Valve

Features:

1. A large flow, high-pressure resistance, a long lifespan, a small internal volume, and minimal dead volume.
2. Handles various media, including water, air, organic solvents, and acid-base reagents, among others.
3. Suitable for various applications, such as sampling modules, cleaning modules, dilution modules, and waste liquid dispensing modules.

Instructions:

1. The inlet end shall be the pressure end with positive and negative pressure applied
 2. The silicone tube shall be inserted or removed in the direction of the tubing valve barb.
- Avoiding angled insertion and removal and gravity collision to prevent the nozzle from breaking
3. Reagent resistance is mainly concern in the valve body and diaphragm material.



Various Options Precision Technology



Keyto 垦拓

Series	Orifice	Flow rate	Pressure range	Power
1022	2mm	2-way 6.8g/s	-70kPa~0.3MPa	3.5W
	1.6mm (3-way threaded)	3-way 6.0g/s	-70kPa~0.27MPa	4.2W
1032	2.5mm	8.5g/s	-70kPa~0.2MPa (2-way) -70kPa~0.15MPa (3-way)	3.5W
1042	4~5mm	17~34g/s	-70kPa~0.25MPa	6W (2-way) 7W (3-way)

Series	Image	Standard model	Body (optional)	Diaphragm (optional)	Dimensions (mm)
		1022-22-EPN/5N	PPS	EPDM, FKM	
1022 series	Image	Standard model	Body (optional)	Diaphragm (optional)	20.5*26.5*53.7
		1022-22-ECU/5N	POM, PVDF, PTFE	EPDM, FKM, FFKM	
	Image	Standard model	Body (optional)	Diaphragm (optional)	56.6*φ23
		1022-32-EPN/5N	PPS	EPDM, FKM	
Image	Standard model	Body (optional)	Diaphragm (optional)	56.6*φ31	
	1022-32-TCU/5N	PVDF, POM, PTFE	EPDM, FKM, FFKM		
1032 series	Image	Standard model	Body (optional)	Diaphragm (optional)	20.5*23.5*51.2
		1032-22-EPN/5N	PPS	EPDM, FKM	
Image	Standard model	Body (optional)	Diaphragm (optional)	42*30.5*57.3	
	1032-32-EMN/5N	POM	EPDM, FKM		
1042 series	Image	Standard model	Body (optional)	Diaphragm (optional)	67.8*φ30
		1042-22-EPN/5N	PPS, PVDF	EPDM, FKM	
	Image	Standard model	Body (optional)	Diaphragm (optional)	65.3*φ30
		1042-32-EPN/5N	PPS, PVDF	EPDM, FKM	
	Image	Standard model	Body (optional)	Diaphragm (optional)	60*45*35
		1042-22-EMB/8NC7	PPS	EPDM	
Image	Standard model	Body (optional)	Diaphragm (optional)	34*40*64	
	1042-22-THG/5NC164	PVDF	EPDM, FKM		

1224/1213/1269 Pinch Valve

Features:

1. Avoid cross-contamination
2. The medium exists in the tubing only
3. Suitable for the applications with many impurities and particles



Series	Image	Standard model			Number of ways	Fixing method	Dimensions (mm)
		Model	Number of ways	Fixing method			
1224		1224-22-B1C/5NC1	2-way N.C.	Base mounted	58*φ25		
		1224-12-D1C/5N	2-way N.O.	Bracket mounted			
1213		1213-32-B1C/5N	3-way	Base mounted	60.7*φ22		
		1213-32-D1C/5N		Bracket mounted			
1269		Standard model			Bracket mounted	102.5*73*36	
		1269-22-Z1C/ONS	2-way N.C.				
		1269-32-Z1C/ONS	3-way				

Series	Flexible tube specification shore hardness 60	Flow rate	Pressure range	Power
1224	2*4mm	8.5g/s	N.O. : 250kPa N.C. : 150kPa	12V:5.1W 24V:5.4W
1213	1.5*3mm/ 1.6*3.2mm	5.1g/s	-75kPa~200kPa	3.5W
1269	6*9mm	85g/s	0kPa~80kPa	12W

13XX Valve Manifold/Valve Group

Features:


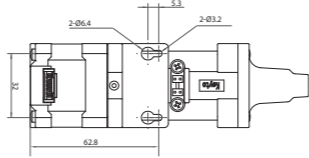

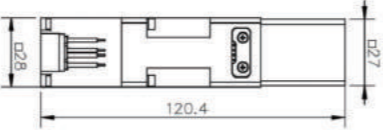

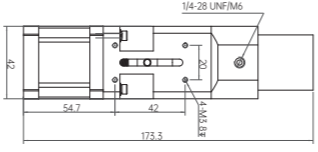

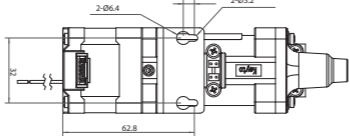

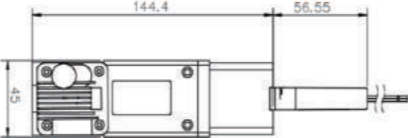
1. It offers the flexibility of multi-inlet with one outlet or one inlet with multi-outlet configurations, with individual control for each valve.
2. It is suitable for various media, including water, air, organic solutions, strong acids, and bases.
3. The solenoid valve manifold is highly integrated, compact, lightweight, easy to install, and well-suited for multi-reagent sampling applications.
4. The manifold can be customized to meet specific customer flow path requirements.

Instructions:

1. Flow rate test environment: 25°C, 50kPa, pure water condition
2. Please refer to the technical specification for dimension
3. Threaded port number=2+1+X, X=1,2,3,4...12, etc.
- 2 COM ports +1 optional COM port +optional branch port

Series	Image	Standard model		Orifice	Flow rate	Power	Pressure
		Model	Specification				
Direct-operated valve manifold		1384-22-MHU/5N	1384-22-MHU/5N	1.6mm	5.1g/s	3.2W	COM-N.C.: -70kPa~150kPa N.C.-COM: 50kPa
		Body material (optional)	PTFE, PVDF				
		Diaphragm material (optional)	FFKM				
Direct-operated valve manifold		1351-22-MFU/5N	1351-22-MFU/5N	2mm	5.1g/s	4.2W	-70kPa~200kPa
		Body material (optional)	PTFE, PVDF, POM				
		Diaphragm material (optional)	EPDM, FFKM				
Direct-operated valve manifold		13A2-12-FHU/5N	13A2-12-FHU/5N	1.5mm	3g/s	2.8W	-70kPa~250kPa
		Body material (optional)	PTFE, PVDF				
		Diaphragm material (optional)	FFKM				
Rocker valve manifold		1385-32-FHU/5N	1385-32-FHU/5N	1.5mm	3g/s	2.8W	-70kPa~250kPa
		Body material (optional)	PTFE, PVDF				
		Diaphragm material (optional)	FFKM				
Rocker valve manifold		1321-52-TVU/5N	1321-52-TVU/5N	1.5mm	4g/s	2.8W	-70kPa~250kPa
		Body material (optional)	PMMA, POM, PTFE, PVDF				
		Diaphragm material (optional)	EPDM, FFKM				

50 Piston Pump

Item	Standard model	Piston	Chamber	Dimensions
Standard piston pump 	5005-12-BUP/64C	Zirconia	PMMA, PCTG, POM	 136*42*60
Small volume piston pump 	5010-11-BUA/44	Zirconia, 316L	PMMA, PCTG	 120.4*28*33
Large volume piston pump 	50F0-69-BU/65C	Zirconia	PMMA, PTFE, POM	 173.3*42*54
Piston pump integrated 2-way valve 	5010-12-BUP/64C-018	Zirconia	PCTG	 136*42*60
Piston pump integrated 3-way valve 	5010-12-EU/64C-012	Zirconia	PMMA, PTFE	 196*45*61

Parameter / volume	Standard piston pump									
	100μL	250μL	500μL	1mL	2.5mL	5mL	50μL	10mL	20mL	
Volume	100μL	250μL	500μL	1mL	2.5mL	5mL	50μL	10mL	20mL	
Piston diameter(mm)	3.17	5.01	7.08	10.01	15.84	22.39	2.24	22.39		
Volume per stroke(μL/step)	0.05	0.125	0.25	0.5	1.25	2.5	0.025	2.5		
Stroke(mm)	12.7							25.4	50.8	
Motor rated current(A)	1.2							2		
Piston height(mm)	120.4				136			173.3	217.7	
Dispense accuracy CV	CV < 1.2% (above 2% stroke) CV < 1% (above 10% stroke)									

Specification	Motor step angle	Lead of screw	Stroke/step	Port connection	Lifetime
	1.8°	1.27mm	0.00635mm	M6, 1/4-28 UNF	5 million cycles




Syringe/Syringe Module

Features:

High precision, maintenance free, unique sealing solution and advanced processing quality assurance



Series	200C-60	2001-60	2002-6	2005-60	2010-60	2025-60	2050-60	201A-60
Volume	50μL	100μL	250μL	500μL	1mL	2.5mL	5mL	10mL
Stroke(mm)	60	60	60	60	60	60	60	60
Piston diameter(mm)	1.02	1.45	2.3	3.25	4.6	7.3	10.3	14.6
Piston material	SUS316				Zirconia			
Lifetime	3 million cycles				2 million cycles			
Dispense precision	2%							
Dispense accuracy CV(Coefficient of variation)	1.5%							
Operating pressure(MPa)	0.3							

	Item	Specification	Volume	Stroke (mm)	Dispense precision	Displacement CV
Single syringe module 	Standard model	7266-32/33N-608	10mL	60	2%	CV < 1.5% (above 2% stroke)
	Piston material	Zirconia/316L				
	Motor Rated Current	1.2A				
Multi-channel syringe module 	Standard model	5F66-32/63N-487	1mL*5	60	2%	CV < 1% (above 10% stroke)
	Piston material	Zirconia/316L				
	Motor Rated Current	2A/2.3A optional				
Syringe integrated valves 	Standard model	5436-32/33N-486-012	2.5mL*2	30	2%	CV < 1% (above 10% stroke)
	Piston material	Zirconia/316L				
	Motor Rated Current	1.2A/2A/2.3A optional				

Specification	Motor step angle	Lead of screw	Stroke per step	Volume per stroke (μL/step)	Port connection	Lifetime
	1.8°	6mm	0.03mm	0.0005*V	1/4-28 UNF	2 million cycles

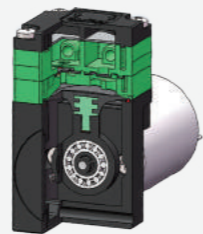
Features:



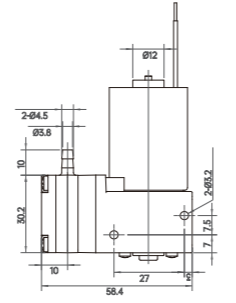


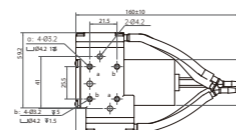
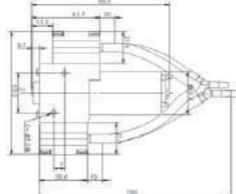

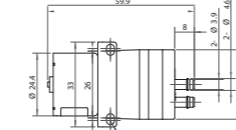


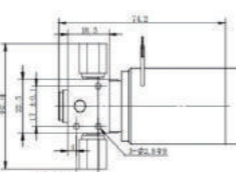
1. It supports extremely high accuracy and precision of liquid aspiration and dispensing.
2. The drive of the syringe module is designed with a double guide rod structure, which drives the movement of the screw nut and the slider by driving the step-motor to ensure accuracy.

71 Diaphragm Pump/Rolling Pump

Features:

1. Low noise, long lifetime
2. The excellent sealing solution ensures no back-flow when the motor is powered off
3. Large flow makes it suitable for cleaning, dispensing waste, setting up vacuum and other applications



	Standard model	Medium	Flow rate	Operating pressure	Lifetime	Dimensions
 <p>Single-head diaphragm pump</p>  <p>Double-head diaphragm pump</p>	7121-31-ELA	Liquid	300mL/min	Pressure \geq 200kPa Vacuum \leq -80kPa	Brush: 3000 hours Brushless: 10000 hours	 <p>67.3*57.8*30.2</p>
	7121-62-ELA		600mL/min			
	7121-31-ELN		300mL/min			
	7121-62-ELM		600mL/min			
 <p>Double-head diaphragm pump</p>  <p>Double-head diaphragm pump</p>	7102-52-EAN	Gas	8L/min	Pressure \geq 120kPa Vacuum \leq -70kPa	Brushless 10000 hours	 <p>78.4*78*38</p>
	7122-92-ELA	Liquid	1.2L/min	Pressure \geq 200kPa Vacuum \leq -80kPa	Brush 10000 hours	 <p>150*31*83.2</p>
 <p>Rolling pump</p>	7421-32-ELN	Liquid	300mL/min	Pressure \geq 90kPa Vacuum \leq -40kPa	Brushless 3000 hours	 <p>60*27*33</p>
	7401-41-ELN	Gas	1.4L/min	Pressure \geq 120kPa Vacuum \leq -50kPa		
 <p>Single-head air pump</p>	7101-A2-EAN		Gas	5L/min	Pressure \geq 130kPa Vacuum \leq -70kPa	Brushless 10000 hours
 <p>High pressure diaphragm pump</p>	7521-31-EPD	Liquid	\geq 0.30L/min	Output \geq 600kPa Suction negative pressure \leq -0.08kPa Air negative pressure \leq -0.03kPa	Brush 10000 hours	 <p>74.2*32*52.5</p>
	7521-32-EPD					

Integrated Module Series

Chemiluminescent Substrates Module



Functions:

- a. Integrated valve with no tube connection
- b. Visual fluid path in light-free conditions
- c. Highly integrated reagent dispensing

Digestion Module



Functions:

- a. Modular function management for the convenience of maintenance
- b. High-pressure valve integrated module supports configurations on demand
- c. Optimize fluid path details

8-Channel Tip Module



Functions:

- a. Automatic tip ejection
- b. Improve the efficiency of sampling and consistency of data

Flow Cytometer (FCM) Fluid Pat



Functions:

- a. Cleaning device with filtering function
- b. Integrated pressure chamber, flow control detection

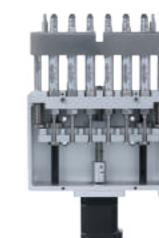
96-Channel Pipette Assembly



Functions:

- a. Automatic tip ejection
- b. It can aspirate and dispense 96 groups of samples simultaneously and improve efficiency of sampling and consistency of data

6-Channel Tip Module




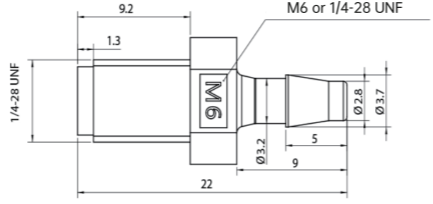

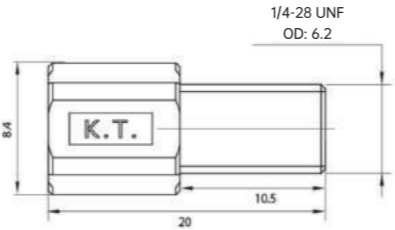

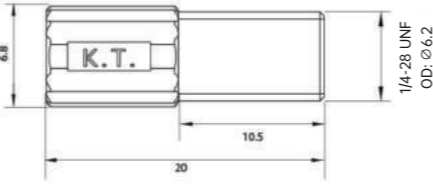

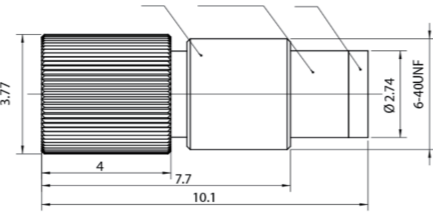
Functions:

- a. Automatic tip ejection
- b. Improve the efficiency of sampling and consistency of data


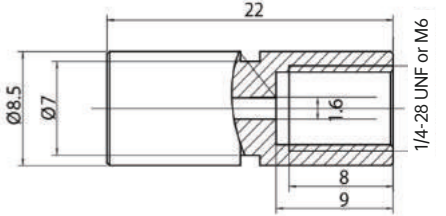

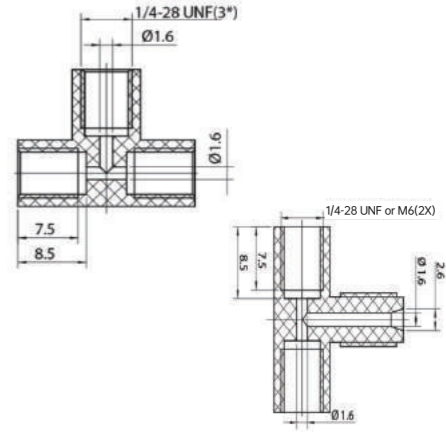

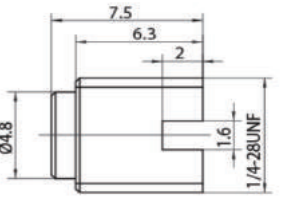
Special Precision Machined Parts and Processing Techniques:

1. Special Material: PMMA, PTFE, PVDF, PEEK, PPS, PEI, etc.
2. Molecular bonding techniques and manifold with precision integrated flow path.
3. Ultra-deep micro-hole machining, high finish, length-diameter ratio >50 times.
4. Ultra-precision micro-hole, orifice diameter >0.005mm.
5. Ultra-thin wall machining, non-metallic material wall thickness is 0.2mm.
6. Ultra-precision surface machining, roundness, cylindricity, flatness.
7. Non-destructive surface micro-machining, machining depth <0.003mm.
8. Highly transparent parts (PMMA, PEI etc.) machining.

Fittings & Consumables

Picture	Type	Model	Material	Dimensions	
 <p>Thread to barbed adapters</p>	1/4-28 UNF	FJ-XJ-U1/PX	PP		
	M6	FJ-XJ-M1/PX			
 <p>Flangeless fittings</p>	1.6mm O.D. rigid tube	UNF	FJ-XJ-U2/PE1.6φ9.3		
		M6	FJ-XJ-M2/PE1.6φ9.3		
	2mm O.D. rigid tube	UNF	FJ-XJ-U2/PE2φ9.3		Nut: PP Ferrule: ETFE
		M6	FJ-XJ-M2/PE2φ9.3		
	2.5mm O.D. rigid tube	UNF	FJ-XJ-U2/PE2.5φ9.3		
		M6	FJ-XJ-M2/PE2.5φ9.3		
	3.2mm O.D. rigid tube	UNF	FJ-XJ-U2/PE3.2φ9.3		
		M6	FJ-XJ-M2/PE3.2φ9.3		
 <p>Flangeless fittings</p>	3.2mm O.D. rigid tube	UNF	FJ-XJ-U2/PE3.2φ9.3		
		M6	FJ-XJ-M2/PE3.2φ9.3		Nut: PP Ferrule: PVDF (compact)
		UNF	FJ-XJ-U2/PE3.2φ7		
		M6	FJ-XJ-M2/PE3.2φ7		
 <p>PEEK fittings</p>	1.6mm O.D. rigid tube	FJ-XJ-M2/PE1.6	Nut/Ferrule: PEEK Lock ring: 316 stainless steel		

Fittings & Consumables

Picture	Type	Model	Material	Dimensions
 <p>Bulkhead unions</p>	Bulkhead unions 1/4-28 UNF female*2	FJ-TS-11/UM	POM	
 <p>Tee fittings</p>	(UNF Female fitting) 1/4-28 UNF female*3	FJ-TS-31/UM	POM	
		FJ-TS-31/UH	PVDF	
	(UNF male fitting) female*3, male*1	FJ-TS-32/UM	POM	
		FJ-TS-32/UH	PVDF (customized)	
 <p>Ferrule</p>	1/4-28 UNF male*1	FJ-XJ-U3	PVDF	
M6 male*1	FJ-XJ-M3			

Pipette Tips



50µL sterile Tip & with filter



200µL sterile Tip & with filter



1000µL sterile Tip & with filter

Warm tips:

Keyto has been developing for over 12 years, and throughout this period, we have relied on the trust and support of both our longstanding and new customers. We invite you to share your valuable suggestions with us. Every December, kindly return this old catalog to our headquarters, and in return, we will provide you with a complimentary new year catalog along with some small gifts as a token of our appreciation. Once again, we express our gratitude for your thoughtful suggestions and extend our best wishes for a prosperous business and a joyful, prosperous life!

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