

# PROTEIN PURIFICATION SYSTEM



EPC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

**Analytical Technologies Limited**

An ISO 9001 Certified Company

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## AutomaticColumn

AutomaticColumn automatic chromatography column represents a new way for mechanical modular design. The structure of the distributor, the tube rotating structure, and pneumatic nozzle all have patented designs. The diameters of AutomaticColumn range from 450 to 1000mm.

### ►► Column and Packing Station Feature

- AutomaticColumn control the motor rotating forward or reverse by position feedback, in order to lift column head automatically.
- Using vales and pneumatic pumps to packing and unpacking column.
- Column can connect with any chromatography system to purify products.
- Users can combine packing workstation with column to be an automatic System, which can be used for not only packing and recovering of media automatically, but also cleaning and rotating column tube.

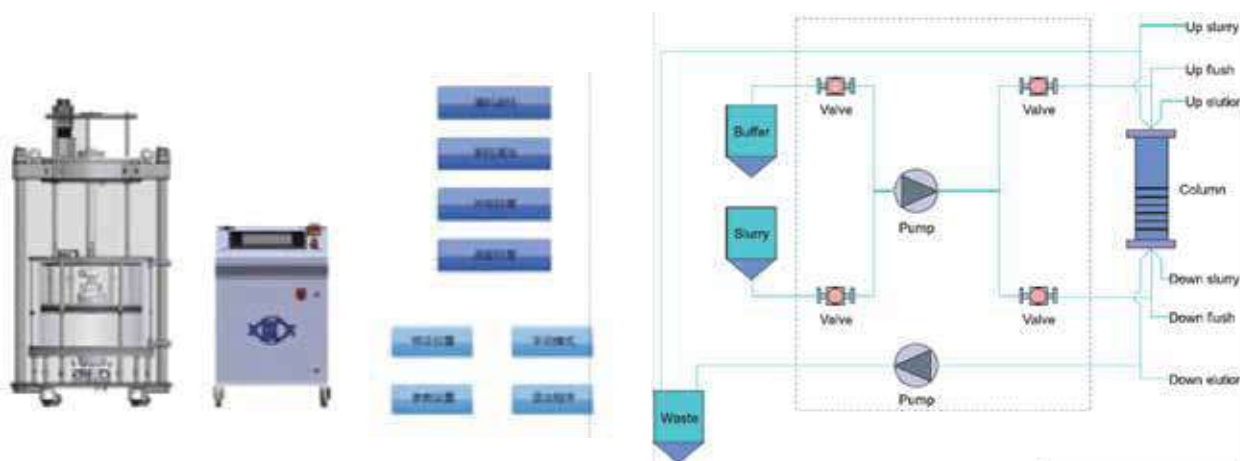
### ►► Characteristic of Product

#### 1) Intelligent Packing process

- Packing station has Pump, Valves, Touch Screen and Framework.
- All the operation could be done on the Touch Screen.
- Using wizard to maintain, pack and unpack the column, avoiding mistake.
- End point of packing is determined by sensors, and repeatability is excellent.

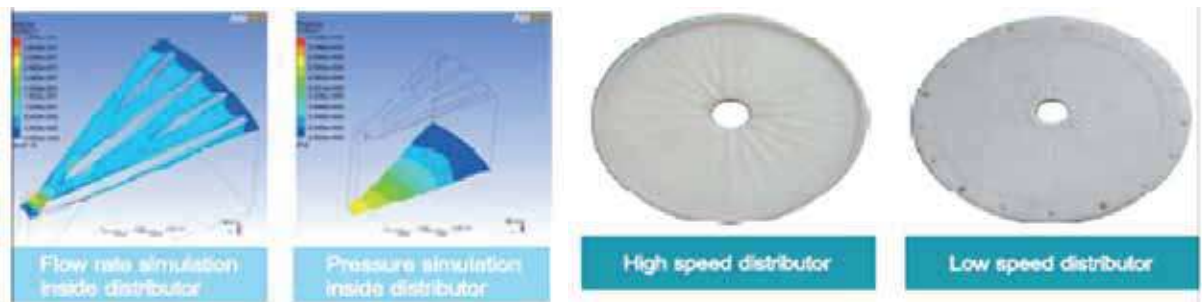
#### 2) Simple

- Packing Station use pneumatic diaphragm valves to control every flow path independently, and easy to clean



#### 3) Patented Distributor

- Using fluid dynamics simulation to predict distributor performance.
- Many experiences on large diameter columns designing, maximal column is 1200mm.
- Customer design distributor for better performance.



#### 4) Patented tube rotation structure

- Special structure, easy operation and reliable.
- Loosen screws on the bottom of the column, then the tube can be lift up and rotated, avoiding damage from misoperation

#### 5) Patented Nozzle

- Pneumatic control, easy to operation.
- Special seal, improving reliability.
- Easy to clean



#### ►► Size and Weight

Length mm	840	1050	1300	1530	1030
Width mm	620	785	1060	1530	700
Height mmt	1830	1950	2000	2250	1130
Mcc<Operation Height mm	2300	2500	2650	2950	1130
Weight kg	650	950	1600	2300	185



#### ►► Main Parameter

	AutomaticColumn450	AutomaticColumn630	AutomaticColumn800	AutomaticColumn1000
Tube Material	Acrylic, Gloss or 3161			

<b>Tubing Size</b>	10mm	10mm	15mm	15mm
<b>Max Pressure</b>	5bar			
<b>Ingress Protection</b>	IP65			
<b>Surrounding Temperature</b>	5 -30°C			
<b>Wet Part Material</b>	316L, PP, PEEK, EPDM			

## EasiestColumn

Patented sealing method and rotating structure of column head are used. It has features of easy manual packing and less matched tools, and provides rapid manual packing method for kinds of chromatography media. It can save time and reduce the labor intensity of operators. Meanwhile it can obtain precise and highly repetitive packing effect. It can achieve the conversion among different product lines much faster.

### ►► Product Feature

#### 1) Cover all diameter

The diameters of EasiestColumn have five standard specifications, including 100mm, 140mm, 200mm, 300mm, 450mm; the heights of the column tube have two standard specifications: 500mm, 1000mm. Extender is optional in the packing process to comply with special requirements of column packing.



#### 2) Patent column head sealing technology

- Lever -pressing sealing structure was used with high reliability, which prevents the problem that the pneumatic mechanism is easy to leak and invalid.
- The expansion structure of pressurizing -down style gasket ring prevents column head departing from bed caused by the pull-up structure.
- Minimized Hold-up Volumes, Easy to clean and change the seal.

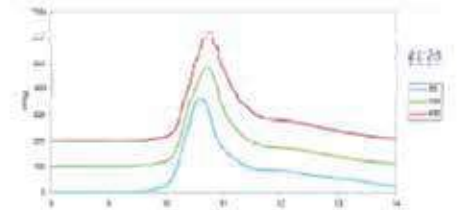
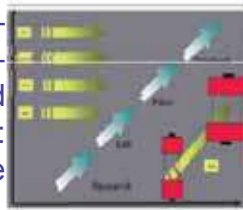
#### 3) Patent column head rotating structure

Column head rotates by the rotating screw of the column pipe, which is in the upper surface of the flange plate. After rotating in place, the second screw needs to be inserted. Media packing can be done after rotating the column head. It is easy to operate, without carrying out the column head.



## 1) Predictable linear scale up

Fix condition: Linear flow rate, buffer, packing material, bed height, sample concentration and pH, sample volume and bed volume ratio, etc. Scale up condition: Column ID., volume flow rate, sample volume



### ►► Size and Weight

<b>Length mm</b>	570	570	650	600	620
<b>Width mm</b>	570	570	650	600	700
<b>Height mm</b>	1930	1930	1930	1930	2030
<b>Net Weight kg</b>	40	55	65	85	215
<b>Gross Weight kg</b>	85	100	110	140	300

### ►► Main Parameter

	EasiestColumn100	EasiestColumn140	EasiestColumn200	EasiestColumn300	EasiestColumn450
Tube Material	Acrylic, Glass or 316L				
Tube Size	4mm	4mm	6mm	6mm	10mm
Max pressure Glass	5 bar	5 bar	5 bar	3 bar	---
Max pressure Acrylic	5 bar	5 bar	5 bar	5 bar	5 bar
Max pressure 316L	7 bar	7 bar	7 bar	5 bar	5 bar
Ingress Protection	IP65				
Surrounding Temperature	5-30°C				
Wet Part Material	316L, PP, PEEK, EPDM				





# AutomaticPrep

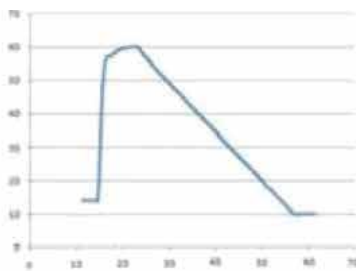
AutomaticPrep is a smart chromatography system for production, which is flexible and intuitive. It can provide multiple flexible configurations corresponding to requests of mass production. With compact design, built-in computer and neat appearance, its volume is much smaller than the similar products. AutomaticPrep uses automatic valve and device, and the production process can be automatically programmed.



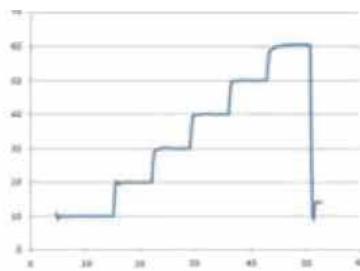
## ►► Multiple Gradient

Colour Mode	Gradient Range	Accuracy	Stable Time
Single Pump Gradient	5 ~ 95%	2%	90s
Twin Pump Gradient	10 ~ 90%	1%	60s

## ►► Online dispensing



Conductivity Linear Gradient



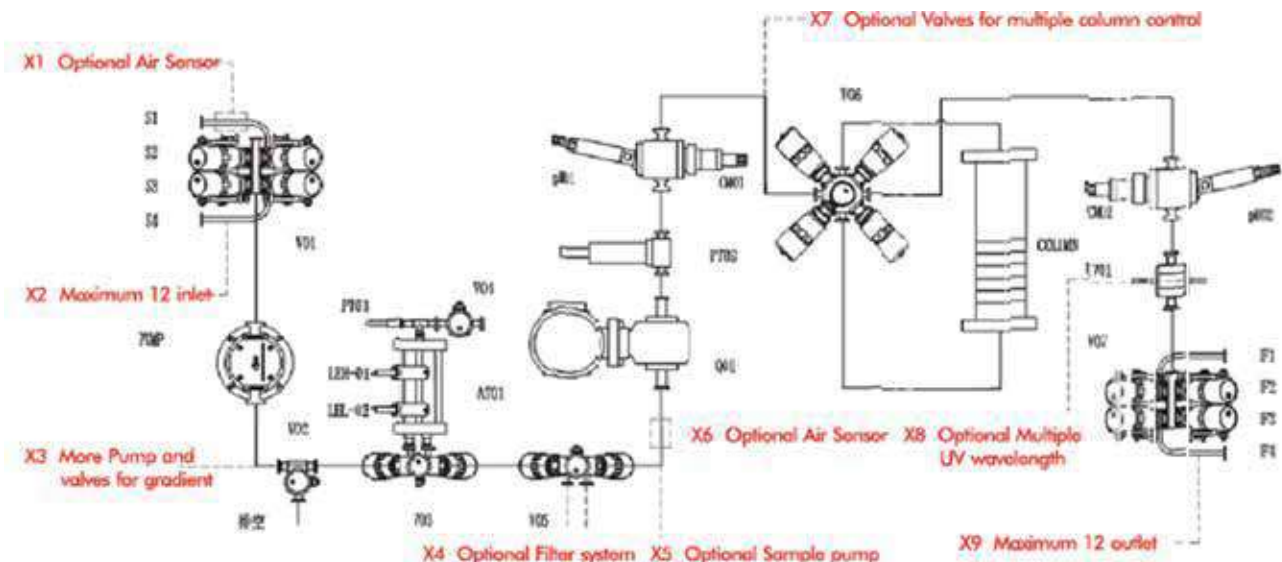
Conductivity Step Gradient



Volume Gradient

## ►► Compact Structure and Minimized Hold-up Volume

	Automaticprep 10	Automaticprep 30	Automaticprep 100	Automaticprep 200
Tubing Size	4mm	6mm	10mm	15mm
Single Pump Hold-up Volume	40mL	80mL	180mL	450mL
Twin Pump Hold - up Volume	50mL	100mL	200mL	490mL



## ►► Powerfull Software

- Real time data acquisition, System Log;UPS optional to protect data from unexpected power failure; Compare different batch curves.
- Customer naming in \out let.
- Complete user permission management, FDA 21 CFR part 11 compliant.
- Powerful Method Editor, Scouting best method.
- Software upgrade to meet customer's feedback.
- Gradient Editor makes it easy to set volume and conductivity gradient, linear or step.
- Result report can be made by using Wizard
- Powerful chromatography process function make it easy to get analysis of the product.



	Automaticprep 10	Automaticprep 30	Automaticprep 100	Automaticprep 200
Flow Rate	20 -1000mL/min	0. 10 -31/min	0.26 - 101/min	1 -201/min
Tubing Size	4mm	6mm	10m m	15mm
Dimension	LengthWide*Height 1200'700'1120mm			
Net Weight kg	230	235	240	250
Gross Weight kg	280	285	290	300
UV wavelength	Single Wavelength(280nm) or Twin Wavelength			
pH Range	0-14 (2- 10)			
Conductivity	0-200mS/cm (no- 1000ms/cm			
Max Pressure	6bar			
Ingress Protection	1P65			
Surrounding Temperature	5-30°C			
Wet Part Materia	3161, PP, PEEK, EPDM			

# AutomaticPilot

AutomaticPilot system is designed for lab or pilot scale purification. With powerful automatic control software AutomaticPilot support many kinds of chromatography column, solvent and sample. designed with modular, functional and intelligent components which make it easy to build their own most compatible systems for our customers

## ►► Characteristic of Product

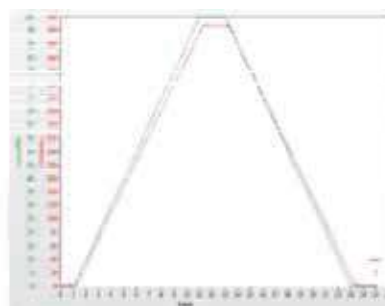
### 1) Apply for pilot process development and sample preparation

Max flow rate is 1L/min with single pump, and co-ordinate with lab column or EasyColumn 100 or 140.



### 2) Customer design for multiple configuration

- USP Class VI compatible material, SS shell and IP 65 protection level.
- FAT,DQ/10/0Q validation file system.



### 2) Main Parts of the system

Electronic diaphragm valve: Minimum hold-up volume and modular design.

Pressure sensor: High accuracy for protecting column and system.

pH/Conductivity: temperature compensation and online calibration

Piston pump	PEEK/316L pump head, good chemical resistance and high accuracy.
Electronic diaphragm valve	Minimum hold-up volume and modular design.
Pressure sensor	High accuracy for protecting column and system.
pH/Conductivity	temperature compensation and online calibration



Piston pump



Electronic diaphragm valve



Pressure sensor



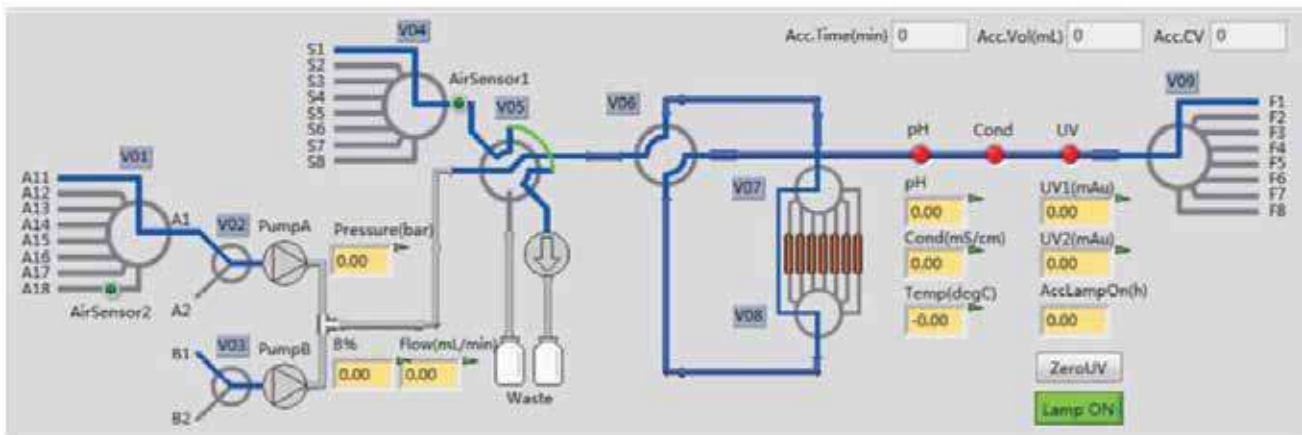
pH/Conductivity





# Auto Flash

AutoFlash automatic chromatography system is specially designed for biological product development and preparation of purification process in lab and pilot. AutoFlash with high degree of automation can explore intensive procedure methods. It's Software owns strong functions, and hardware supports variety specifications of columns, multiple solvents and samples. The system is modular, functional, intelligent design, and easy for customers to choose suitable configurations according to their actual needs.



## ►► Product Feature

- Customizable, flexible configuration and easy to upgrade.
- All valves, piston pumps and detectors utilize modular approach.
- Control software is autonomous development, complied with GMP specification. The long-distance control can be achieved
- The materials comply with USP Class VI. Protection grade is IP65; Complete FAT, DO/10/00 verifications



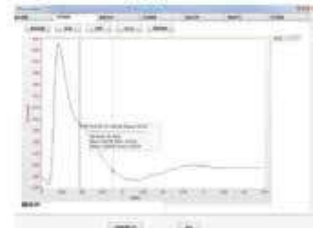
Powerful Scouting Process



Method Editor Interface



Powerful Chromatography Process



# Easy Pump

EasyPump is using QuattroFlow Pump which made in German. The control interface is full color touch screen which display some information such as pump speed and pressure etc. EasyPump can be customer designed with variable configurations, collecting 8 channel of analog signal and processing with professional software.



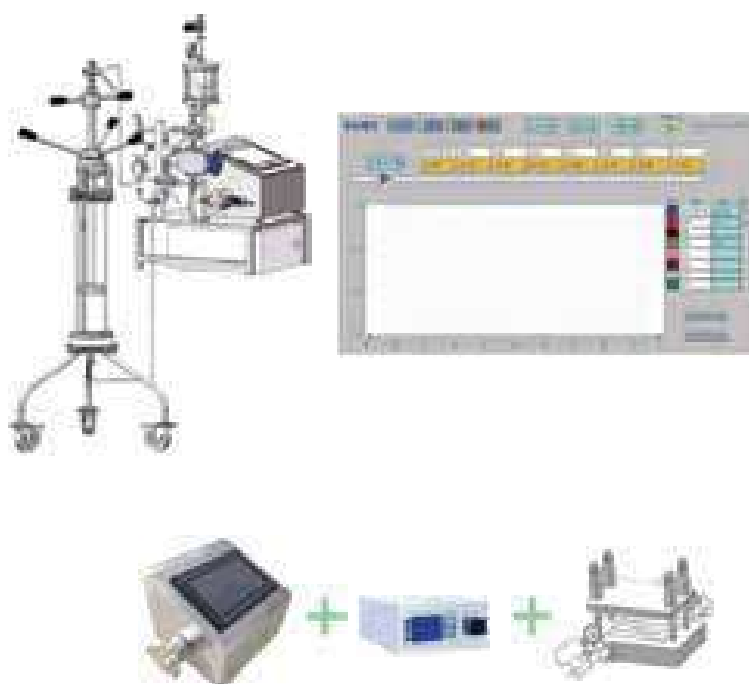
## ►► Product Feature

### Simple Chromatography System

- Easy hardware upgrading, and variable configuration.
- Small footprint, production cost and performance optimization.
- All the process data real time acquisition, and conform to GMP

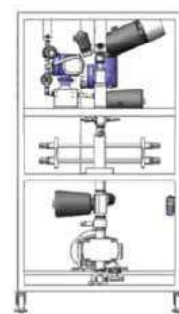
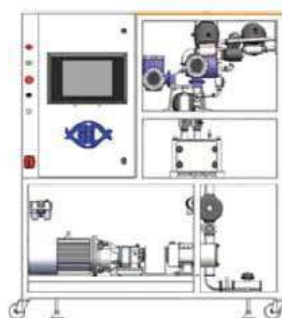
### ►► Simple TFF System

- Running with constant IMP or Pressure.
- Real-time monitor pressure and UV.
- Data acquisition and Log store into a USB key, and Easy to analysis.



## Automatic TFF System

- Standard fixture for ultrafiltration membrane can match ultrafiltration membrane of Merck, Sartorius and other well-known brands.
- Flow rate and temperature sensors are used, flux and concentration factor can be calculated online.
- Pressure sensors are used, then it can detect the pressure of every ports, and calculate the trans-membrane pressure TMP and pressure difference  $\Delta P$  automatically.
- Precision proportional valve is used to control the reflux end opening precisely, to achieve the precise control of TMP.
- The system can set the flow rate by adjusting the speed of rotor pump in real-time, thus control the tangential flow rate automatically.
- The system can configure online detectors flexibly according to process requirements, such as flow rate, temperature, conductivity, pH and UV, recording operation curves in real-time.
- Control software is autonomous development, complied with GMP specification. Data and log can be recorded in real-time and traced back, but cannot be modified.



	ATFF050	ATFF100	ATFF150	ATFF200
Flow rate	50L/min	100L/min	150L/min	200L/min
Membrane area	5m'	10m'	15m'	20m'
Size(mm)	1400x600x1600	1600x800x1750	1600x800x1750	1600x800x1750
Hold-up Volume	2L	31	4L	4.51
Power consumer	1.5kw	3kw	4kw	5.5kw
Power supply	3 phase 380V 50Hz			
Operation Temperature	1-70°C			
Pressure detection range	-1-9bar			
UV wavelength	Single wavelength(280) or twin wavelength, 0 -Mu			
pH Range	0-14			
Conductivity	0-300mS/cm (or 0-500mS/cm)			
Control Mode	TM R Constant Pressure, Constant Flow rate, Constant speed, Automatic water flux test			
Max Pressure	5bar			
Ingress Protection	1P65			
Surrounding Temperature	5-30°C			
Wet Port Material	316L, PEEK, EPDM			

**Our Customer**



**ATFF050**



**ATFF100**



**ATFF150**









