

## ChiralTek MFA Short Product Manual

Please visit English website <http://chiraltek-column.com> or  
Chinese website <http://cbook.antpedia.com/6755> for  
downloading the latest product manual.

All ChiralTek MFA instruments have been passed the quality control tests before delivery. Please kindly refer to the "Certificate of Quality Control Analysis" for information about the testing results. Before powering up the device, make sure the casing & components have no obvious damage from the shipping and also make sure the 110 or 240V power socket has a ground connection. Please carefully read this manual before using the MFA system.

### 1. Novel compact and versatile MFA multiple functional analyzer

The MFA is manufactured by ChiralTek using a specially-designed flow-path-integration technique. It is a novel compact, versatile, and practical multiple functional analyzer. It can be easily configured and used as automated solvent distributor, feeder or sampler for chemical & biological reactors, natural product purifier, or automated SPE.

When used as solvent distributor, the MFA can accurately and automatically deliver liquids from one location to another. With the user-friendly built-in program, MFA can automatically prepare a set of standard solutions in a wide range of volumes.

When used as feeder or sampler for chemical & biological reactors, the MFA can automatically and accurately deliver reagents to a chemical or biological reactor or automatically perform sampling of reaction mixture from the reactor, according to pre-set time points.

When used as natural product purifier, the MFA can rapidly isolate and purify the bioactive fractions of the Traditional Chinese Medicinal (TCM) herbs or other natural products. The MFA can automatically perform natural product sample loading, extraction, step-gradient elution, automatic fraction collection, and re-generation of the purifying column when working with ChiralTek HLE universal SPE cartridges. The MFA can process much bigger volume of natural product samples than preparative HPLC. MFA uses much cheaper purifying column than preparative HPLC.

When used as automated SPE, the MFA can carry out full-automatic SPE extraction for one sample per batch for normal-level analysis. It also can perform semi-automatic SPE extraction for three samples per batch for trace-level analysis. The MFA can also be used as portable equipment in fields when driven by a 24-voltages storage battery.



### 2. ChiralTek MFA specifications

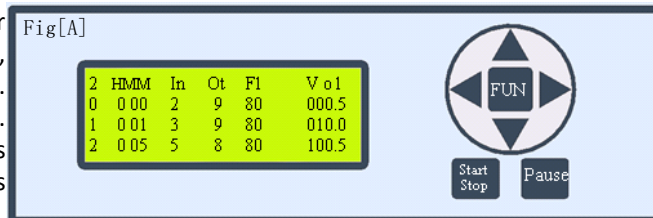
To meet kinds of users' different types of needs and requirements, the MFA system is designed to have many different configurations. The specifications for two typical configurations are listed below. Please directly contact ChiralTek (Tel: 65-93656129 or 86-95040358310, Email: [info@chiraltek-column.com](mailto:info@chiraltek-column.com)) for enquiry of other configurations.

	Part No. 981-MFA-01	Part No. 981-MFA-02
Number of valve ports:	10	18
Volume of sample:	0.1 to 6000 mL	0.1 to 6000 mL
Material of wetted parts:	Teflon, 316 stainless steel, Pyrex glass	Teflon, 316 stainless steel, Pyrex glass
System control:	Microcontroller with data entry panel	Microcontroller with data entry panel
Pump flow rate:	0.1 to 90 mL/min	0.1 to 90 mL/min
Pressure limit of pump:	6 bar	6 bar
Pump reproducibility (C.V.%):	<0.5	<0.5
Liquid delivery accuracy (%):	<1	<1
Number of standard solution for use as solvent distributor:	6 / batch	10 / batch
Sample capacity for use as feeder or sampler of reactor:	6	14
Sample capacity for use as automated SPE instrument:	3/ batch	3/ batch
Solvent choices for use as natural product purifier:	4 / batch	8 / batch
Power consumption:	< 1.0 A at 24 VDC	< 1.0 A at 24 VDC
Weight (Kg):	3	3
Dimension (cm):	17 x 22x 26 (width x depth x height)	17 x 22x 26 (width x depth x height)

### 3. ChiralTek MFA Product Features

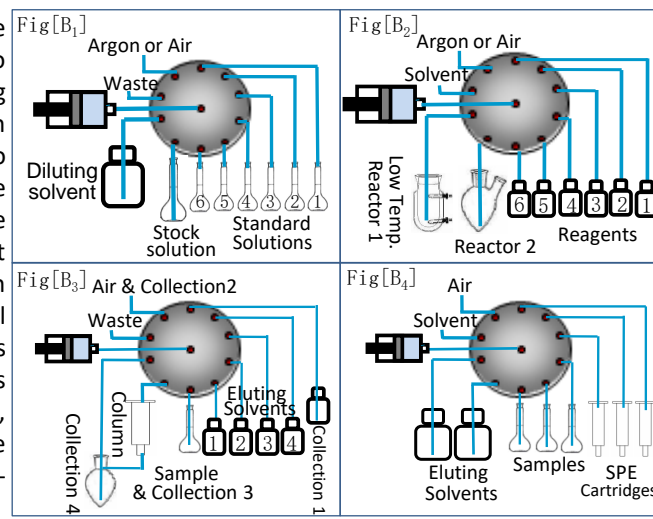
#### [A] Automation with easy operation

MFA uses built-in methods to automatically deliver liquids. Each step setting in the method controls time, input port, output port, flow rate, and solvent volume. Methods can be easily edited and permanently saved. The operation of MFA instrument involves only 7 buttons as shown in Fig [A]. The MFA will automatically process according to the settings in the selected method.



#### [B] Multiple functions with versatile applications

ChiralTek MFA can easily work under both stepwise mode and timer mode. Stepwise mode is designed to automatically prepare solutions and clean tubing according to the step setting. The other timer mode can be used to deliver liquid or gas from one location to another according to the pre-set time points. When the two working modes are properly arranged in the methods, the MFA can be easily configured as solvent distributor shown in Fig [B1], feeder or sampler shown in Fig [B2] for chemical & biological reactors, natural product purifier shown in Fig [B3], or automatic SPE as shown in Fig [B4]. Since it is equipped with a continuous pump with wide range of flow rate (0.1 to 90mL/min), the MFA exhibits great advantages with extra versatile applications such as, infusion analysis for LC-MS, step-gradient elution, and re-generation of SPE columns, etc.



#### [C] Compact design with great flexibility

Due to the flow-path-integration design, the dimension of MFA is very small (17 x 22 x 26 cm, width x depth x height). The weight of the MFA is only 3 kg. The MFA can be conveniently placed in any fume hood for connection with chemical or biological reactors which are already inside the fume hood. This is also helpful for MFA to automatically handle kinds of volatile, toxic, or irritant solvents and solutions inside the fume hood. The MFA also can directly be used as automatic SPE and natural product purifier in the fume hood to process kinds of samples.

By using ChiralTek HLE universal SPE cartridge as purifying column, the step-gradient elution function allows MFA to easily fractionate the complicated TCM herbal sample or other natural product sample into different groups of compounds according to the polarity, hydrophilic, and lipophilic abilities since the single HLE cartridge contains Doil, C18 (ODS), vinylpyrrolidone and divinylbenzene (HLB) multiple functional groups. The MFA adopts an innovative general purpose adapter to deal with variations in diameter of SPE columns. The MFA can also be used as portable equipment in fields when driven by an external uninterrupted power supply or 24-voltages storage battery.

### 4. Other information

ChiralTek MFA system is designed to have many different configurations to meet users' different requirements for multiple tasks. The order information for two typical basic configurations is listed below.

#### ChiralTek MFA order information

Part No.	Description	Remarks
981-MFA-01	Include a MFA-01 mainframe with 10-port valve, sample collection rack, a pack of column adapters, a pack of SPE cartridges, 24 volt power supply, and user manual.	110-240V
981-MFA-02	Include a MFA-02 mainframe with 18-port valve, sample collection rack, a pack of column adapters, a pack of SPE cartridges, 24 volt power supply, and user manual.	110-240V

Please directly contact ChiralTek team in Singapore (Tel: 65-93656129 or 86-95040358310, Email: [info@chiraltek-column.com](mailto:info@chiraltek-column.com); [support@chiraltek-column.com](mailto:support@chiraltek-column.com)) for enquiry of other configurations and technical supports. Please visit English website <http://chiraltek-column.com> or Chinese website <http://cbook.antpedia.com/6755> for downloading the updated product manual.