

# Introduction

Jointly established by W. L. Gore & Associates, Inc. and Shanghai Carbon Works with a total investment of US\$ 5.4 million in September 1997, Shanghai Bag Filtration Equipment Co., Ltd. is a famous company with a tradition of more than 30 years in developing, manufacturing and selling bag filtration component, automatic dust-clean system and accessories under the brand name of HuanJing.

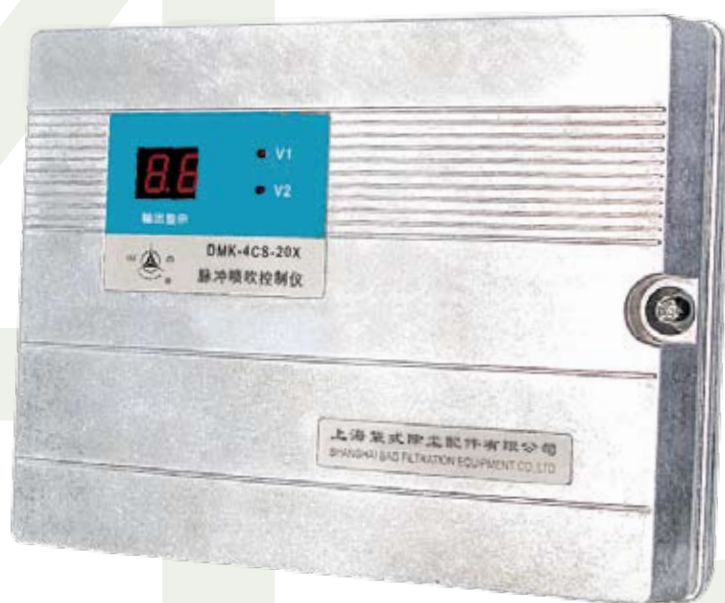
With a product line covers pulse jet valve, dust control device, filter bag, filter bag cage, special parts, electric control cabinet and filter cartridge, the company enjoys the most complete options and highest quality of its bag filtration components in China. The company's production facility covers an area of 10000 m<sup>2</sup> and owns production lines with annual capacity of 400,000 pulse jet valves and 300,000 filter bags, and a production line with an annual capacity of 20000 dust control devices. With full range of testing equipments and advanced production techniques, the performance and quality of the company's automated and semi-automated production lines in mold design and processing, die casting, plastic injecting, press molding, plastic encapsulation, mechanical processing, welding and assembling have met the international standards for relevant categories. The company's products are widely used in dust treatment and smoke purification in ferrous metallurgy, non-ferrous metal metallurgy, construction cement, chemical, industrial power station boiler, urban trash burning and other applications. Its products are exported

in large quantities to US, Europe, Japan and Southeast Asia and enjoy great reputation and awareness both at home and abroad markets.

Being awarded the titles of the "Foreign Invested Hi-tech Company in Shanghai" and "Hi-tech Company in Shanghai", the company has been qualified by the ISO9001 quality system certification and review of the TUV America Inc. The company has also been awarded the titles of "The Key Company in Environmental Protection in China", "A-class Company Creditable in Taxpaying in Shanghai", "A-class Company Creditable in Accounting in Shanghai" and was named "the AAA-class Company Adhering to Contract and Credit in Shanghai". The company's 6 categories of products have all been qualified by the State Administration of Environment Protection's product certification and review.

Backed by leading technology, the company's products sell well in the market. The total sale and the number of users have kept increasing for years. Adhering to the principle of "people-oriented", the company will focus on introducing in and cultivating human resources, stably improving product quality, developing new product, enlarging the sales scale, and providing a sound foundation for the sustainable development of Shanghai Bag Filtration Equipment Co., Ltd.

产品概述 Product Description	>	3
工作原理 Working Principle	>	5
型号含义 Type Definition	>	6
技术指标 Technical Index	>	6
规格尺寸 Specification Size	>	7
安装方法 Installation	>	8
使用说明 Manual	>	11
维护保养 Maintenance	>	12



## 产品概述 Product Description

脉冲喷吹控制仪是脉冲袋式除尘器喷吹清灰系统的主要控制装置。它的输出信号控制电磁脉冲阀，喷吹压缩空气对滤袋循序清灰，使除尘器的阻力保持在设定的范围内，以保持除尘器的处理能力和收尘器率。

Pulse jet control device is the main control equipment in the injection spray dust cleaning system of the pulse bag-house. Its output signals control the electro-magnetic pulse valve, which spray and inject compressed air to clear dust from the filter-bag in sequence to keep the resistance of the bag-house within the set range and thus guarantee the processing ability and the dust-collecting efficiency.

控制仪输出一个电信号持续时间，称为脉冲宽度。控制仪输出二个电信号之间的间隔时间，称为脉冲间隔。控制仪输出电信号完成一个循环所需要的时间，称为脉冲周期。

The duration of an electrical signal output sent by the controller is called pulse width. The time interval between two signals sent by the controller is called pulse interval. The time needed for the electrical signal output sent by the controller to complete a cycle is called pulse cycle.

根据除尘器的清灰要求设定控制仪输出脉冲间隔和脉冲宽度，保证除尘器阻力在设定范围内。

The controller output pulse interval and pulse width are set according to the dust cleaning requirement of the duster to ensure that the duster resistance remains within the set range.

DMK-4CS型脉冲喷吹控制仪具备如下功能：  
DMK-4CS Pulse jet control device possesses the following functions:

1

可根据清灰要求，调整脉冲间隔和脉冲宽度，控制电磁脉冲阀的开启和关闭，对除尘器实行定时清灰。同时设有压差控制仪输入接点，接上压差控制仪后可以定压差清灰。

Pulse interval and pulse width can be adjusted according to the dust cleaning requirement to control the opening and closing of the electro-magnetic pulse valve and to clear dust from the bag-house periodically. Input connection point of the pressure differential control device is available, and by connection to the pressure differential control device, the fixed pressure differential dust cleaning can be carried out.





2

面板上设有数字显示,能依次显示电磁脉冲阀工作顺序。印刷电路板上设有“手进”按钮,能依次检查电磁脉冲阀工作情况。如按住“手进”按钮不放便能锁定自动进位。

On the dial is the digital display that indicates the working sequence of the electromagnetic pulse valves in order. The printed circuits boards have 'manual' buttons by which operating situation of the electro-magnetic pulse valves can be checked in sequence. By keeping the 'manual' buttons pressed, one can lock the automatic number-carrying function.

3

采用专用集成电路简化了线路,节省了器件,提高了控制仪的稳定性和可靠性。

Special integrated circuits are adopted to simplify the circuits and components, thus enhancing the stability and reliability of the control device.

4

采用全密封铝合金压铸外壳,外形美观,防尘性能好,下部有供布线用的敲落孔,安装方便。

Sealed aluminum alloy die cast housing with attractive appearance and good dust resistance is adopted. Knock-off holes for wires distribution are available in the lower part to make installation easy and convenient.

5

配套型控制仪的输出位数是固定的,它适用于相对应规格的脉冲袋式除尘器。通用型控制仪的输出位数可在额定范围内选择,它适用于具有各种不同规格的脉冲袋式除尘器的企业选配统一的控制仪。无论是配套型或通用型控制仪,可在输出位数100位之内向客户提供任何位数的控制仪。

The auxiliary type control devices in fixed output digits are applicable to pulse bag-houses with corresponding specification. And general type with optional output digits can be used unitive for pulse bag-houses of any different specification. These two type control devices can be met the any requirements of different specification within 100 output digits.

# DMK-4CS

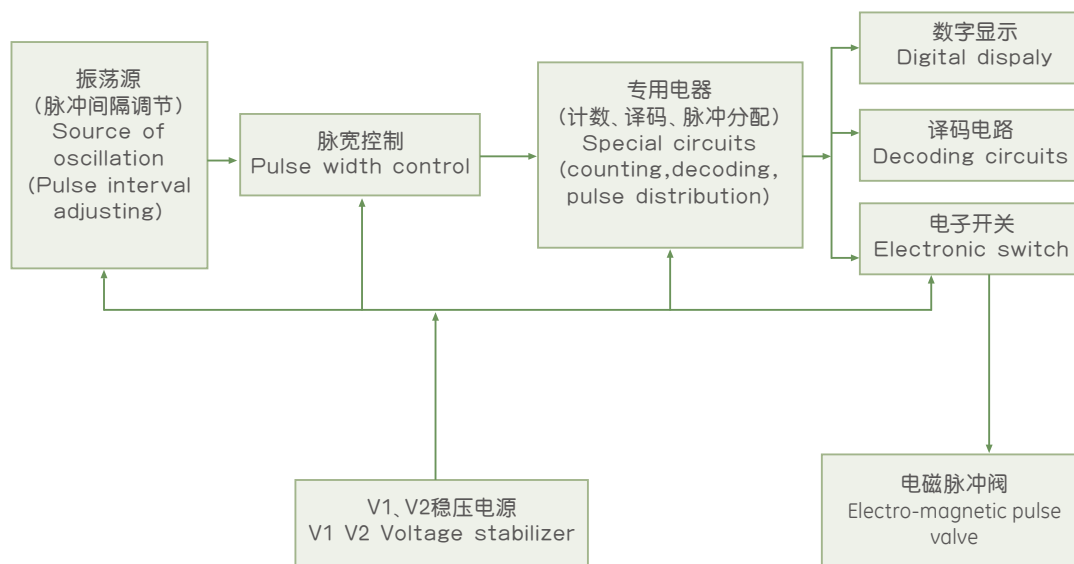
## 工作原理 Working Principle

本控制仪由双时基电路CH7556的1/2作为无稳态多谐振荡器产生周期为1~30秒的可调脉冲信号；另1/2作为单稳态电路产生0.03~0.2秒的可调脉冲宽度信号，并将脉冲宽度信号送至专用电路完成计数、译码、脉冲分配等一系列逻辑功能，再由专用电路的各输出端输出所设定的脉冲宽度信号至电子开关（VMOS电路），控制电磁脉冲阀的开启，喷吹压缩空气，同时由数码管显示喷吹顺序。

The adjustable pulse signals with duration of 1~30 seconds are generated by 1/2 of the double time base circuit CH7556 as a non-stable multi-vibrator. The adjustable pulse width signals with duration of 0.03~0.2 seconds are generated by the other 1/2 as a mono-stable circuit. The mono-stable circuit sends pulse width signals to special circuitry for a series of logical functions, such as counting, decoding and pulse distributing before the output terminals of the special circuitry send the specified pulse width signals to electronic switch (VMOS circuit) to control opening/closing of the electromagnetic pulse valves and to blow compressed air with the blowing sequence being displayed by the digital tubes.

图1 DMK-3CS脉冲吹喷控制仪工作原理方框图

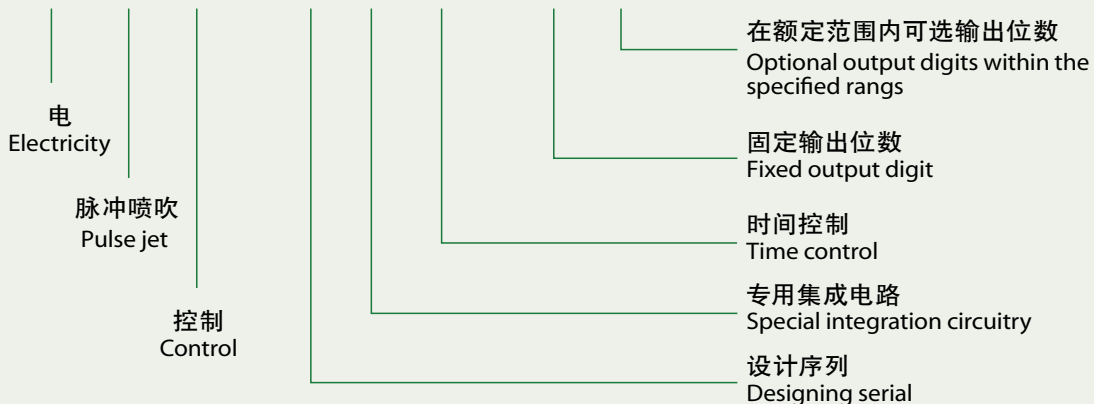
Fig.1.Flow diagram of DMK-3CS operation





## 型号含义 Type Definition

# DMK-4CS-AX



## 技术指标 Technical Index

额定输入电压 Rated Input Voltage	AC220V (-10%~+10%) 50HZ-60HZ
额定输出电压 Rated Output Voltage	DC24V (或其他规格)
额定输出电流 Rated Output Current	1A
耗电 Power Consumption	8W (脉宽及间隔在额定范围内) (Pulse width and interval are within the specified range)
输出脉冲间隔调节范围 Adjusting Range of Output Pulse Interval	1~30 Sec
输出脉冲宽度调节范围 Adjusting Range of Output Pulse Width	0.03~0.2 Sec
压差控制输入信号 Nput Signal of Pressure Differential	开头触点 Switch contact
使用环境 Working Environment	-25°C~+55°C 空气的相对湿度不超过85% 无严重的腐蚀气体和导电尘埃 无剧烈震动或冲击 The relative humidity should be no more than 85% No serious corrosive gas or conducting dust No violent shock or impact

## 规格尺寸 Specification Size

控制仪有配套型和通用型二种, 具体规格见下表:

Control devices are divided into auxiliary type and general type with their specifications listed in the following table:

型号规格 Specification	额定输出位数 Rated output digits(A)	控制电磁脉冲阀数 Number of controlling electro-magnetic pulse valves	外型尺寸 Size(L×W×H) A=254×184×80mm B=354×240×90mm	重量 Weight (kg)
DMK-4CS-4	4	4	A	2.40
DMK-4CS-6	6	6	A	2.40
DMK-4CS-8	8	8	A	2.40
DMK-4CS-10	10	10	A	2.40
DMK-4CS-12	12	12	A	2.40
DMK-4CS-14	14	14	A	2.40
DMK-4CS-16	16	16	A	2.40
DMK-4CS-18	18	18	A	2.40
DMK-4CS-20	20	20	A	2.40
DMK-4CS-25	25	25	B	4.20
DMK-4CS-30	30	30	B	4.20
DMK-4CS-35	35	35	B	4.20
DMK-4CS-40	40	40	B	4.20
DMK-4CS-60	60	60	B	4.20
DMK-4CS-80	80	80	B	4.20
DMK-4CS-100	100	100	B	4.20

配套型  
Auxiliary type

型号规格 Specification	额定输出位数 Rated output digits(A)	控制电磁脉冲阀数 Number of controlling electro-magnetic pulse valves	外型尺寸 Size(L×W×H) A=254×184×80mm B=354×240×90mm	重量 Weight (kg)
DMK-4CS-5X	5	1-5任选 1-5optional	A	2.40
DMK-4CS-10X	10	1-10任选 1-10optional	A	2.40
DMK-4CS-15X	15	1-15任选 1-15optional	A	2.40
DMK-4CS-20X	20	1-20任选 1-20optional	A	2.40
DMK-4CS-25X	25	21-25任选 21-25optional	B	4.20
DMK-4CS-30X	30	21-30任选 21-30optional	B	4.20
DMK-4CS-35X	35	30-35任选 30-35optional	B	4.20
DMK-4CS-40X	40	31-40任选 31-40optional	B	4.20
DMK-4CS-48X	48	41-48任选 41-48optional	B	4.20
DMK-4CS-60X	60	41-60任选 41-60optional	B	4.20
DMK-4CS-80X	80	61-80任选 61-80optional	B	4.20
DMK-4CS-100X	100	81-100任选 81-100optional	B	4.20

通用型  
general type

# 安装方式 Installation



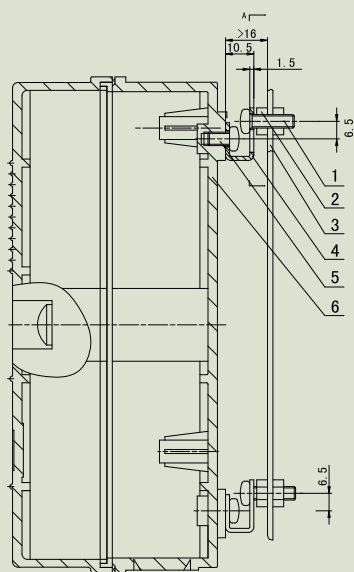
1

在控制仪外壳的背面有三只供安装的固定板，可插入并挂在相对应的螺钉上。也可将安装固定板去除，利用外壳固定座上的内螺纹直接固定，见图2。

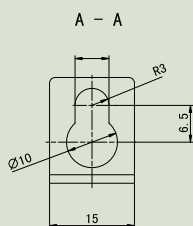
At the back of the housing of the control device, there are three fixing fasteners for installation of the inserts. Put the inserts into the slots of fixing fasteners and fix them with screws. It also could fastened using the inner screws at the fixing base of the housing directly. (Fig. 2 Installation sketch for the housing of the control device)

图2 控制仪外壳安装示意图

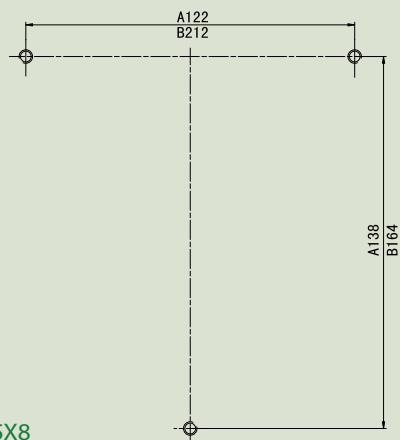
Fig.2. Installation sketch of the housing of the control device



安装结构  
Structure



- 1、螺钉  
Screw
- 2、螺母  
Nut
- 3、安装板  
Fixing board
- 4、挂件  
Hook
- 5、十字槽盘头螺钉M5X8  
Screw with cross slot
- 6、控制仪  
Control device



螺钉安装位置尺寸  
Screw Installation sketch

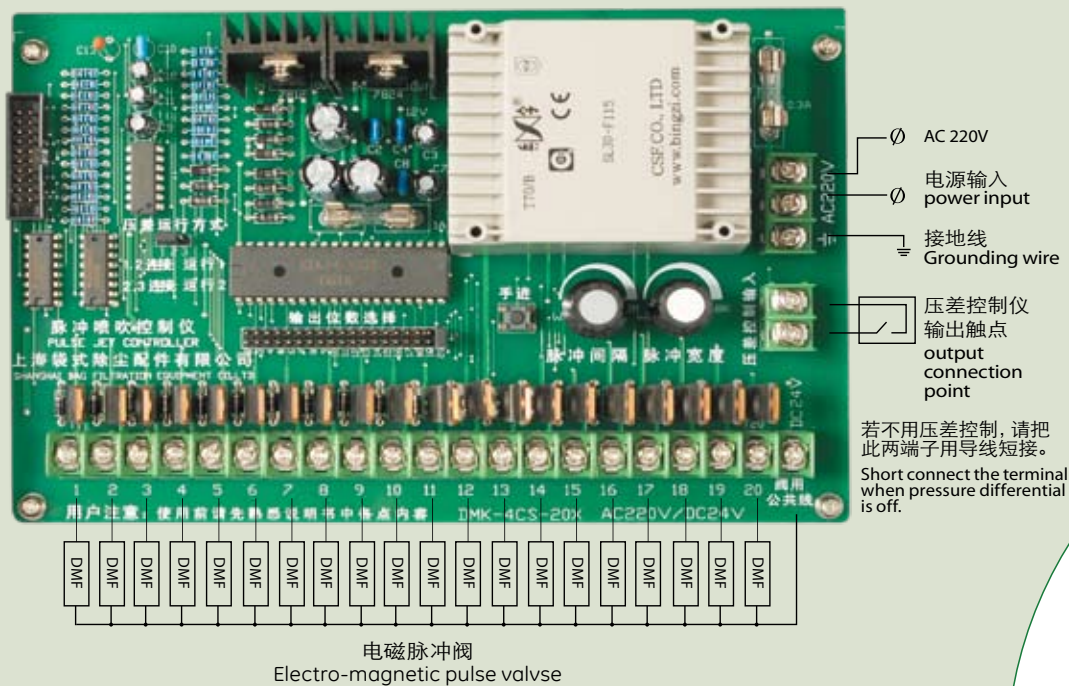
# 2

注意印刷板上的接线符号，AC220V端子应接交流220V电源，“ $\perp$ ”为接地线，1至终位（如10位控制仪应为1~10，以此类推）及DC24V端子（共用线）接至电磁脉冲阀，接线方法见图3。

The connection symbols on the printed circuit boards should be noticed to avoid wrong connection. AC 220V terminal is for power supply and " $\perp$ " is for ground. 1-final digit (10-digit control device should be 1-10,etc.) and DC 24V terminals are to be connected to electro-magnetic pulse valves. For the connection row, refer to Fig. 3.

图3 印刷线路板及接线方法

Fig. 3. Print circuit board and its practical connection





# 3

控制仪印刷板上的压差控制输入端子与压差控制仪的输出触点相连接即可进行定压差清灰。

The differential pressure dust cleaning can be carried through two input terminals for differential pressure control on this control instrument being connected with the output contact of the differential pressure controller.

**注意:**

若不用压差控制, 请用导线把本控制仪上的压差控制输入两端子短接。

压差控制仪的输出控制线与本控制仪的连线, 要用屏蔽导线, 屏蔽层要可靠接地。

**Note:**

If the differential pressure control is not used, please short circuit tow input terminals of differential pressure control on this control instrument.

For the connection lines between the output wires of the differential pressure controller and this control instrument, the shielded cable must be used and its shielding layer must be earthed reliably.

# 4CS

# 使用说明 Manul

1	<p>脉冲宽度调节旋钮按顺时针方向旋转，脉冲宽度从小逐渐增大。</p> <p>The pulse width increases gradually when the pulse width adjustment knob turns in clockwise direction.</p>
2	<p>脉冲间隔调节旋钮按顺时针方向旋转，脉冲间隔从小逐渐增大。</p> <p>The pulse interval increases gradually when the pulse interval adjustment knob turns in clockwise direction.</p>
3	<p>通用型控制仪设有输出位数选择：将选择插头移动至需要的输出位数插座上，即可实现需要的输出位数。</p> <p>Output digit selection of general control device: move the selection plug to the required output digit socket and the required output digits are available.</p>
4	<p>V1为机内控制电源 (DC12V)，V2为输出电源 (DC24V)，V1、V2分别设有指示灯。0.3A (延时型) 熔丝为AC220V电源过流保护，1A熔丝为DC24V输出电源过流保护。</p> <p>V1 is the internal control power (DC12V) and V2 output power (DC24V), V1 and V2 have their indicating lamps respectively. The 0.3A (time-delay type) fuses provide current foldback for AC220V and the 1A fuses for DC24V output power.</p>
5	<p>控制仪接上电源后，若其处于定时控制状态，数码管显示从“1”开始循序进行，24V输出与此同步，至终位后返回，再进行新的循环。若其处于定压差控制状态，当压差控制仪的输出触点断开时，数码管显示为“0”，24V亦无输出。压差控制仪的输出触点闭合时，数码管显示从“1”开始，24V输出与些同步，并按所选择的运行方式工作。(详见第6点压差运行方式选择)</p> <p>When the control device is connected to power source and under control of time, the digital tube displays from digital “1” to final position with 24V output carries in phase, then return to digital “1” for new circle. In case the control device is under control of pressure differentials and the output contact of the differential pressure controller is “open”, the digital tube displays digital “0” and 24V output does not carry. When the output contact of the differential pressure controller is “close”, the control device begins to operate according to the optional mode. The digital tube displays from digital “1” once again with 24V output carries in phase. (Refer to 6 for selection of pressure differential operation mode)</p>
6	<p>压差运行方式选择：将控制仪处于压差控制时，应外接压差控制开关或压差控制仪。压差控制有二种运行方式：“运行1”（1、2端子短接）是压差信号到来时（输出触点闭合）即开始按序输出。压差信号消失时（输出触点断开）控制仪即停止输出，当压差信号再次出现时，控制仪即从原停止那位继续循序输出。“运行2”（2、3端子短接）是压差信号到来时即开始按序输出，当压差信号消失时，控制仪不立即停止输出，要工作到控制仪输出的终位，当压差信号再次出现时，控制仪即从第一位开始输出。</p> <p>Selection of pressure differential operation mode: when the device is under control of pressure differentials, an external pressure differential control switch or pressure differential control device should be connected. There are two operation modes of pressure differential control: In “Operation 1” (Terminals 1 and 2 are short-connected) output starts in sequence as soon as the pressure differential signal appears (i.e. output contact is “close”), and stops when pressure differential signals disappear (i.e. output is contact is “open”). When pressure differential signal re-appears, the control device continues to output in sequence from the digit where it stopped. “Operation 2” (Terminals 2 and 3 are short-connected) starts to give sequential output when pressure differential signal appears, and when the pressure differential signal disappears, it does not stop until the final position of the output of the control device is reached. The control device starts to output from the first digit when the pressure differential signal re-appears.</p>

## 维护保养 Maintenance



## 4CS

1

控制仪接上电源，V1、V2指示灯不亮，应检查电源线与接线端子是否松动，电源熔丝（0.315A）是否熔断，电源变压器是否正常、电源部分有无断线、脱焊等现象。印刷线路板中有AC220V高压电，请注意安全。

If the indicators V1 and V2 are not on when the control device is connected to power source, check and see whether power leads and connection terminals are loose, fuse(0.315A) is broken, the power transformer works normally, any portion of the power supply is disconnected or off at the welding point. Please pay attention to the safety in the 220V high voltage in printed circuits boards.

2

控制仪接上电源，V1电压指示灯不亮或偏暗（V1为DC12V由三端稳压器7812输出），若断开负载后V1迅速恢复正常，说明V1负载发生短路，很可能是个别元件损坏，应逐一检查，如断开负载后，V1仍不正常应检查三端式稳压电路是否正常，如已损坏应及时更换。

If V1 indicator is not on or dim when the control device is connected to power source.(V1 with DC12V comes from the three-terminal voltage stabilizer 7812 output), then there are two possibilities. If normal operation quickly resumes after the loads are disconnected, then V1 loads are short circuited resulting in probable damage of individual elements. Check should be done on each component. If V1 still fails to operate normally after disconnection of the loads, the three-terminal voltage-stabilizing circuit should be checked to see if it is normal, and replacements should be made promptly if any damage is detected.

3

控制仪接上电源，V2指示灯不亮或偏暗（V2为DC24V，由三端稳压器7824输出），若断开负载后V2即恢复正常，说明外负载有短路或碰线，偶尔也有开关管击穿的可能。如断开负载后V2仍不正常，应检查三端式稳压电路是否正常，如已损坏应及时更换。

V2 indicator is not on or dim, when the control device is connected to power source.(V2 with DC24V comes from the three-terminal voltage stabilizer 7824 output). If V2 resumes normal operation immediately after loads are disconnected, then there is short-circuit or wire contact in external loads, or occasional breakthrough in the switch tube was the cause. If V2 still fail to operate normally after load disconnection, the three-terminal voltage-stabilizing circuits should be checked to see if they are normal. Replacements should be made promptly if damage is found.

4

控制仪通电后数字显示停留在某一位不跳动，应检查信号源是否振荡，译码电路是否完好，“手进”按钮是否复位，计数电路能否正常进位。

If the display digit stays on a certain position and does not jump after the control device is switched on, check if signal source oscillates, the decoding circuits are in good conditions, the "manual" button is reset and the counting circuits operate normally.

5

控制仪数码显示正常, 但对应电磁脉冲阀不动作, 应检查对应的电子开关是否损坏, 控制门输出高电平是否正常。

If the nixie tube of the control device gives normal indication but the corresponding electro-magnetic pulse valve does not operate, check to see if the corresponding electronic switch tube is damaged and if the high output voltage level of the control gate is normal.

6

控制仪数码管显示正常, 某一电磁脉冲阀常吸, 应检查对应的电子开关管是否漏电、被击穿, 控制门输出为“0”时是否低于0.5V。

If the operation of the nixie tube of the control device is normal but one of the electro-magnetic pulse valves always sucks, check to see if the corresponding electronic switch tube has power leakage or breakthrough and if the voltage is lower than 0.5V when the output of the control gate is “0”.

7

控制仪数码管显示正常, 电磁脉冲阀全部不吸, 应检查V2稳压电源及脉宽控制是否正常, 阀用公共线接线端子与输出导线接触是否可靠。

If the operation of the nixie tube of the control device is normal but no electro-magnetic pulse valve can suck, check to see if V2 voltage stabilizer and pulse-width control are normal and if the terminals to valve and output leads have reliable contact.

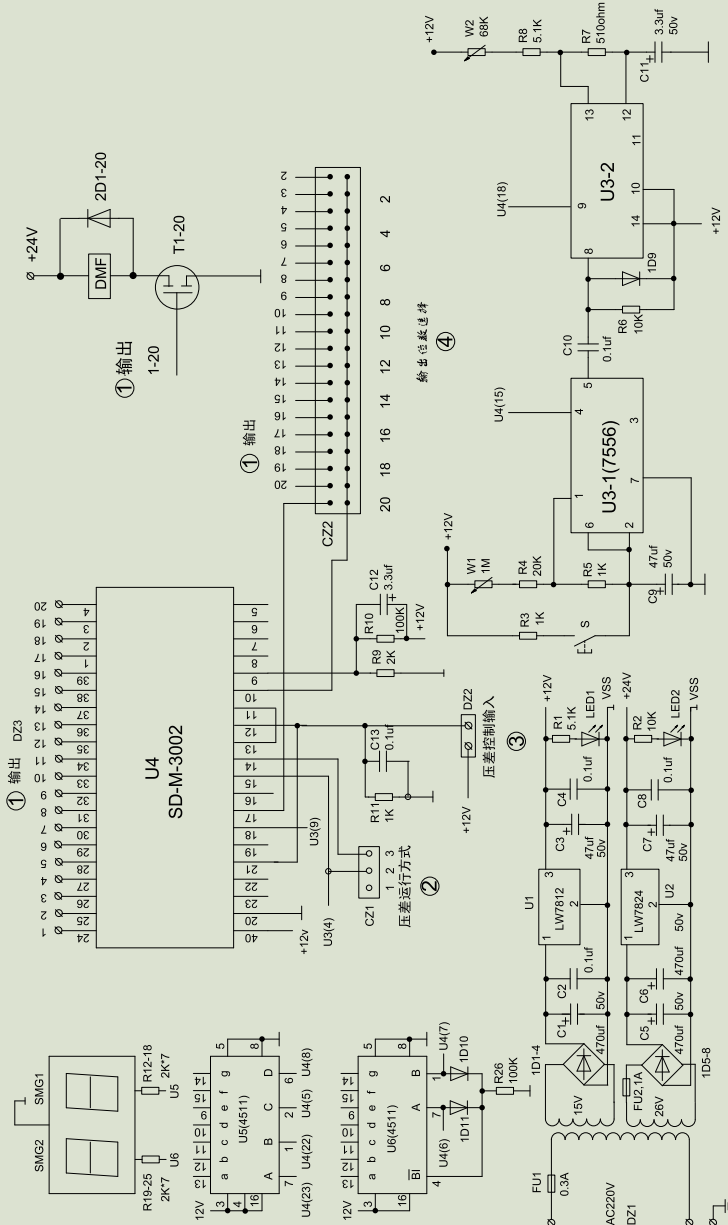
8

控制仪数码管显示正常, 二个电磁脉冲阀同时吸合, 应检查电子开关有否漏电、被击穿, 控制门输出为“0”时是否低于0.5V, 有无碰线等现象

If the operation of the nixie tube of the control device is normal and two electro-magnetic pulse valves suck at the same time, check to see if the electronic switch tube has power leakage or breakthrough, if the voltage is lower than 0.5V when the output of control gate is “0”, and if there are wire contact.

图4 DMK-4CS原理图

Fig.4 DMK-4CS Principle diagram



- ① 输出 Output
- ② 压差运行方式 Pressure differential operation mode
- ③ 压差控制输入 Input of pressure differential control
- ④ 输出位数选择 Option of output position number

随着技术的发展, 本控制仪可能会有所改进, 恕不另行通知, 用户可向本公司查询。  
 For any information about the improvement of pulse jet control device, please feel free to contact our company.