



营造健康工业环境
BUILDING GREEN INDUSTRY

脉冲喷吹控制仪 第四代新

PULSE JET CONTROL DEVICE DMK-4CSA



美国TUV质量管理体系认证



Leading Technology

中美合作

上海袋式除尘配件有限公司
SHANGHAI BAG FILTRATION EQUIPMENT CO., LTD.



专业铸就品质 创新引领市场



上海袋式除尘配件有限公司由美国戈尔公司 (W.L.Gore & Associates, Inc.) 与上海碳素厂于1997年9月合作组建, 投资总额540万美元, 是一家拥有30多年研制、生产和销售环晶牌袋式除尘器过滤单元、自动清灰系统及配件经验的著名企业。

公司产品包括电磁脉冲阀、清灰控制仪、滤袋、滤袋框架、专用配件、电气控制柜及过滤筒等, 是国内生产袋式除尘器配件品种最为齐全、质量最为优异的企业。公司厂房使用面积达1万平方米, 拥有年产40万只电磁脉冲阀生产线、30万只滤袋缝纫专用设备和年产2万台清灰控制仪生产线。公司测试设备齐全, 生产工艺先进, 所具有的模具设计加工、压铸、注塑、冲压、塑封、机械加工、焊接、装配等自动化及半自动化产品全套生产线使产品性能和质量均与国际同类产品接轨, 并广泛应用于钢铁冶金、有色冶炼、建筑水泥、化工、

工业电站锅炉以及城市垃圾焚烧等行业中的粉尘治理和烟气净化, 产品批量出口美国、欧洲、日本及东南亚等地区, 在国内外市场享有很高的声誉和知名度。

公司连年先后被确认为上海市外商投资先进技术和上海市高新技术企业, 通过美国TUV ISO 9001质量管理体系认证, 先后被评为中国环境保护产业骨干企业, 上海市A类纳税信用单位和上海市A类财务会计信用单位, 以及上海市AAA级守合同重信用企业。公司六大类产品全部通过国家环保总局产品认证及复审。

在技术领先产品适销对路的情况下, 公司销售额及用户数量保持连年增长。公司将秉承和发展“以人为本”的原则, 注重专业人才的引进、培养, 以稳定提升产品质量及新品开发, 扩大销售规模, 为上海袋式除尘配件有限公司的可持续性发展提供坚实的基础。

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 m² 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.

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产品概述 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。它的输出驱动电磁脉冲阀，进而控制压缩空气对滤袋循序喷吹清灰，使除尘器的运行阻力保持在设定的范围内，以保证除尘器的处理能力和收尘效率。

Pulse jet control device is a main control device in a jet dust-cleaning system of a pulse bag-house. It outputs driving electromagnetic pulse valve, to control compressed air, to jet dust on the filtration bag in a proper sequence, and to keep the operation resistance to clear dust within the set range, so as to guarantee the processing capability and dust-collection efficiency of the bag house.

控制仪每次输出一位的驱动电压，一个驱动电压持续时间，称为脉冲宽度。相邻二个输出驱动电压之间的间隔时间，称为脉冲间隔。控制仪完成对所有位的电磁阀驱动输出所需要的时间，称为脉冲周期。两个脉冲周期之间的停顿时间，称为循环间隔。

The control device creates driving voltage output every time. One driving voltage has duration, called a pulse width. The interval time between the two interfacing output-driving voltages is called as pulse interval. The time necessary for the control device to complete electromagnetic valve outputs of all bits is called as pulse cycle. Pause time between the two pulse cycles is called as cycle interval.

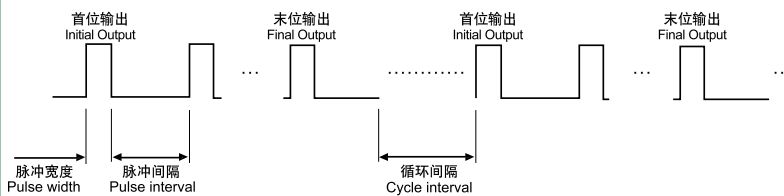
根据除尘器的清灰要求设定控制仪的循环间隔、脉冲间隔和脉冲宽度参数，保证除尘器运行阻力在设定的范围内。

According to the dust-cleaning requirement of bag house, control device parameters, such as cycle interval, pulse interval and pulse width, are set, to guarantee that the operation resistance of the bag house is within the set range.



图1 DMK-4CSA输出波形图

Fig.1.DMK-4CSA Wave shapt of output



DMK-4CSA型脉冲喷吹控制仪具备如下功能：
The following are the functions of DMK-4CSA Pulse Jet Control Device:

1

可根据清灰要求，调整循环间隔、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。

According to dust-cleaning requirement, cycle interval, pulse interval and pulse width can be adjusted, to control turning on or off the electromagnetic pulse valve, and to clean dust in the bag house at a fixed time. Meanwhile, there is differential pressure to control the input connection point of the control device. When differential pressure of control device is connected, differential pressure can be set to clean dust at a fixed pressure.

2

印刷线路板上的“手进”按钮，能依次检查电磁脉冲阀工作情况。

"Manual Advance" key on the PCB can test the working status of the electromagnetic pulse valve in sequence.

3

面板上的数码管能显示运行时的计时时间和参数设定时的参数值。

Nixie light on the Panel can display timekeeping time during operation and parameter value set during setting parameter.

4

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-purpose IC is adopted to simplify the circuit, so as to save components, and improve stability and reliability of the control device.

5

采用全密封铝合金外壳，外形美观，防尘性能好。

Fully sealed alnico case is used so that its appearance is attractive and dustproof performance is good.

CSA

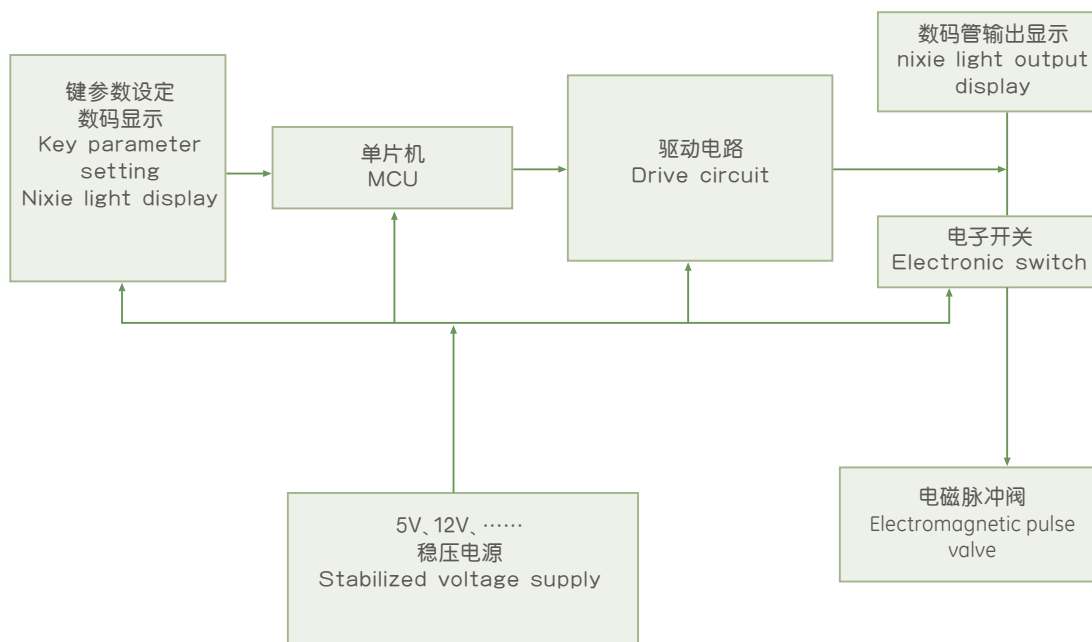
工作原理 Working Principle

本控制仪核心控制由单片机实行, 实现按键参数设定、数码显示及循环间隔、脉冲间隔和脉冲宽度控制, 根据“停止/运行”信号, 来控制清灰运行。各输出端输出控制电磁脉冲阀的开启, 喷吹压缩空气清灰, 同时有数码管显示喷吹顺序。本控制功能齐全, 操作简单明了。

The core control of the control device is performed by a MCU, to realize key-press parameter setting, number display, and control cycle interval, pulse interval and pulse width, so as to control dust-clearing operation according to the "Stop/Run" input signal. Every output terminal control turning on of electromagnetic pulse valve and dust clearing with jet compressed air meanwhile nixie light displays jet sequence. The control device is full of functions and is easy to operate.

图2 DMK-4CSA脉冲吹喷控制仪工作原理方框图

Fig.2.Flow diagram of DMK-4CSA operation





型号含义 Type Definition

DMK - 4 C S A - N R C

喷吹控制仪
Pulse jet control device

输入电压/输出电压
Input Voltage / Output Voltage

固定输出位数
Fixed output digit

升级型
Grade type

时间控制
Time control

专用集成电路
Special integration circuitry

设计序列
Designing serial

RC	输入电压 Input Voltage	输出电压 Output Voltage
	220VAC	24VDC
HH	220VAC	220VAC
MM	110VAC	110VAC
ML	110VAC	24VDC
LL	24VDC	24VDC

技术指标 Technical Index

额定输入电压 Rated Input Voltage	220VAC (1 ± 10%) 50-60Hz, (或其他规格) (or other specifications)
额定输出电压 Rated Output Voltage	24VDC (或其他规格) (or other specifications)
额定输出电流 Rated Output Current	1A
耗电 Power Consumption	≤8W
输出脉冲宽度调节范围 Adjustable Range of Output Pulse Width	10~990 Millisecond
输出脉冲间隔调节范围 Adjustable Range of Output Pulse Interval	1~99 Second
循环间隔调节范围 Adjustable Range of Cycle Interval	1~99Minute
控制输入信号 Control Input Signal	开关触点 Switch Contact
使用环境 Use Environment	-25℃~+55℃ 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 Relative humidity of air does not exceed 85% No serious corrosion gas and conducting dust No acute vibration or shock



规格尺寸 Specification Size

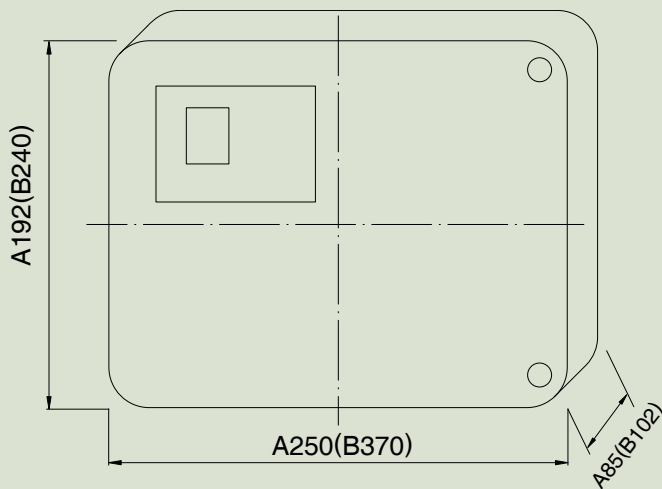
型号规格 Model and Specifications	输出位数 Output Digit	控制电磁脉冲阀数 Number to Control Electromagnetic Pulse Valve	外型尺寸 Size(L×W×H) A=230×185×90mm B=370×240×102mm
DMK-4CSA-4	4	1-4任选 1-4 optional	A
DMK-4CSA-5	5	1-5任选 1-5 optional	A
DMK-4CSA-6	6	1-6任选 1-6 optional	A
DMK-4CSA-8	8	1-8任选 1-8 optional	A
DMK-4CSA-10	10	1-10任选 1-10 optional	A
DMK-4CSA-12	12	9-12任选 9-12 optional	A
DMK-4CSA-14	14	9-14任选 9-14 optional	A
DMK-4CSA-15	15	9-15任选 9-15 optional	A
DMK-4CSA-16	16	9-16任选 9-16 optional	A
DMK-4CSA-18	18	9-18任选 9-18 optional	A
DMK-4CSA-20	20	9-20任选 9-20 optional	A
DMK-4CSA-25	25	9-25任选 9-25 optional	A
DMK-4CSA-28	28	9-28任选 9-28 optional	A
DMK-4CSA-35	35	25-35任选 25-35 optional	B
DMK-4CSA-40	40	25-40任选 25-40 optional	B
DMK-4CSA-50	50	30-50任选 30-50 optional	B
DMK-4CSA-60	60	40-60任选 40-60 optional	B
DMK-4CSA-72	72	50-72任选 50-72 optional	B

安装方式 Installation

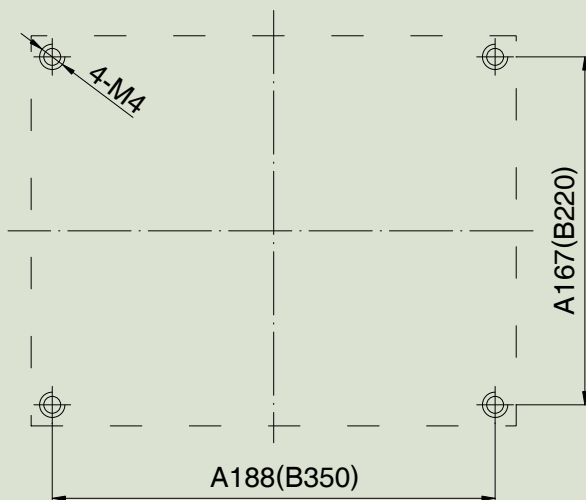


图3 控制仪外形及安装孔尺寸图

Fig.3. Installation sketch of the housing of the control device



外形图
Configuration sketch



安装孔尺寸图
Size of mounion hole

1

推荐使用不低于 0.75mm^2 的铜电缆线，装上密封接头，从控制仪外壳的敲落孔中穿进，注意穿过密封接头的导线粗细要合适，不要过紧和过松，以免损坏或影响密封性能。接线方法见图5。

It is recommended to use a copper cable not less than 0.75 mm^2 , with seal joint. It goes through the knockdown hole on the control device case, which should be not too tight and not too loose, to avoid damage and affect seal performance. See Fig. 5 for wiring method.

图4 印刷电路板

Fig.4. Print circuit board



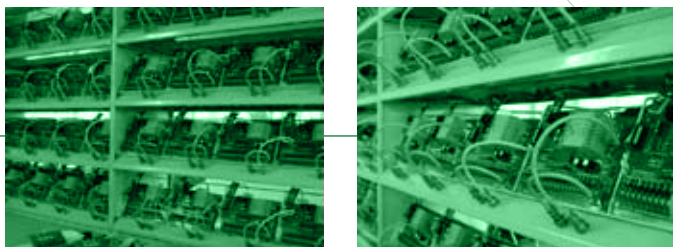
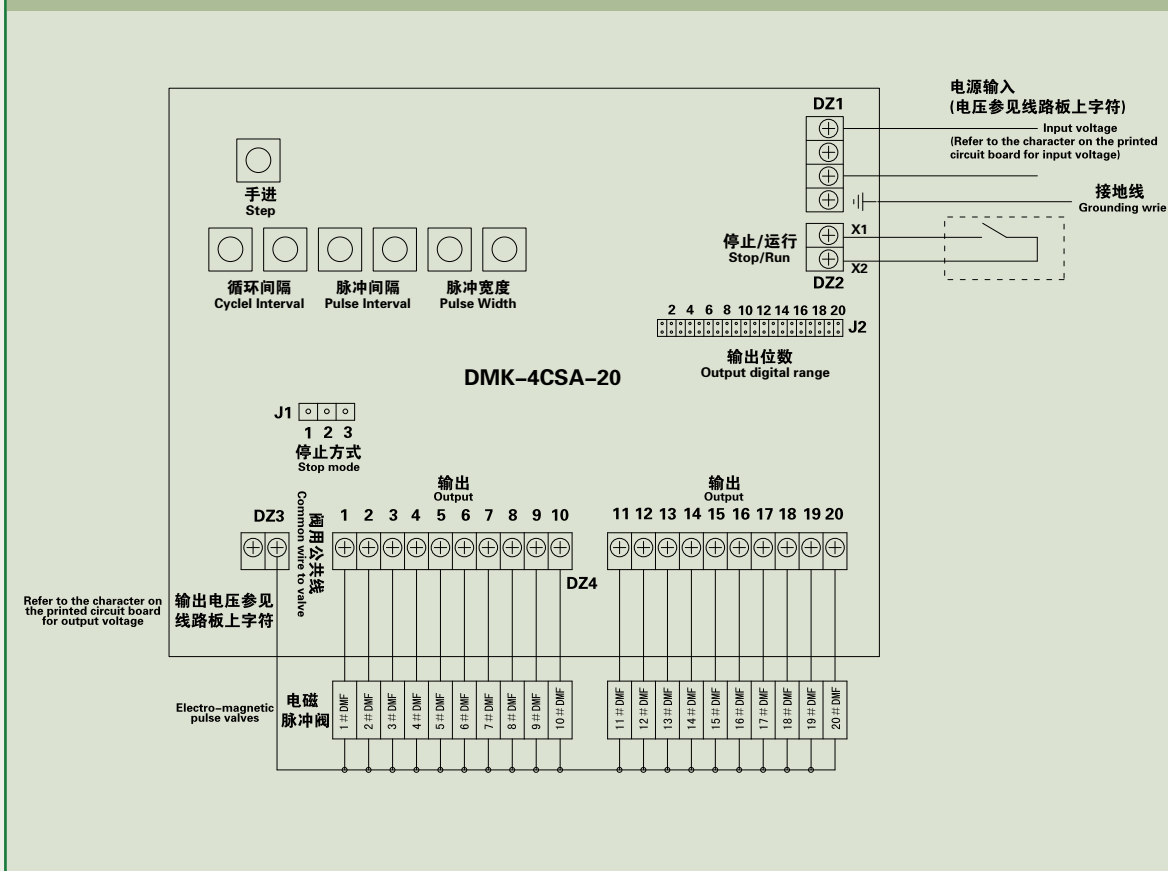


图5 接线方法图

Fig.5. Connection method



2

本控制仪选用的是插拔式的接线端子，在更换线路板时，不用卸下所有的连接导线，只要拔出插头即可，节省维修时间。

The control device adopts a connection terminal of inset and pull type. When circuit board is replaced, it is not necessary to remove all connection leads, but only to pull out the plug so as to save maintenance time.



使用说明 Manul

1

运行控制: 接上电源后。线路板“停止/运行”输入端子上若,

(1) 外接的触点没有闭合, 则控制仪停止运行, 等待外接的触点闭合;

(2) 外接的触点闭合, 则控制仪开始运行, 从第一位开始输出驱动脉冲阀, 经脉冲宽度延时, 停止输出。再经脉冲间隔计时后移至下一位进行输出, 至终位后停止脉冲输出, 再经循环间隔计时后重新从第一位输出, 进行新的循环。

Run Control:

After power on, the input terminal of "Stop/Run" on the circuit board has the following:

(1)The contact of external connection is not closed, and the control device stops operation, to wait for the contact to close;

(2)The contact of external connection is closed, and the control device starts operation. starts to output driving pulse valve from the 1st digit. After the pulse is delayed by a pulse width, it stops output. Then after pulse interval is time-kept, it shifts to the next digit to output and then to the last digit and pulse output stops. After cycle interval is time-kept, the 1st digit starts to output again, and a new cycle starts.

2

停止方式: 控制仪运行时, 当线路板“停止/运行”输入端子上外接的触点断开, 有二种停止运行的方式:

(1) 线路板上J1的插块使1、2针脚相连时, 控制仪马上停止运行。当线路板“停止/运行”输入端子上外接的触点再闭合后, 从停止运行时的下一位继续开始输出运行。

(2) 线路板上J1的插块使2、3针脚相连时, 控制仪不马上停止运行, 要工作到控制仪最后一位输出后才停止运行。当线路板“停止/运行”输入端子上外接的触点再闭合后, 从第一位开始继续输出运行。

Stop Mode:

When control device is operating, and if the contact of external connection on input terminal of "Stop/Run" on the circuit board is disconnected, there are 2 stop operation modes:

(1)J1 insert block on the circuit board makes pin 1 and pin 2 joined, and the control device stops operation at once. If external contact of input terminal of "Stop/Run" on the circuit board is closed again, the next digit, from the last time when operation stops, continues output operation.

(2)J1 insert block on the circuit board makes pin 2 and pin 3 joined, and the control device does not stop operation at once, and stops operation until the last digit output of the control device. If external contact of input terminal of "Stop/Run" on the circuit board is closed again, it starts to continue output operation from the 1st digit.

3

计时数码显示: 控制运行时, 显示的是脉冲间隔或循环间隔计时的剩余时间; 数码管闪烁显示时, 显示的是循环间隔剩余时间; 不闪烁显示时, 显示的是脉冲间隔剩余时间; 停止运行时, 显示“0”; 参数设定时, 显示的是所设定的参数值。

Time nixie light display:

Under control operation, display is the remaining timekeeping of pulse interval or cycle interval; if nixie light display is blinking, the display is the remaining time of cycle interval; if nixie light display is not blinking, the display is the remaining time of pulse interval; if operation stops, the display is "0" when a parameter is set up, the display is the set parameter value.



4

手进输出: 按动线路板上的“手进”键能停止当前的脉冲间隔计时, 马上进行下一位的脉冲阀驱动输出, 这样可快速依次检查电磁脉冲阀的工作情况。

Step output:
Pressing “Step” key on the circuit board can stop the current pulse interval timekeeping, to go to the next pulse valve driving output at once. In this way, the working status of the electromagnetic pulse valve can be checked in sequence quickly.

5

最大输出位数: 控制仪有最大输出位数选择短接块, 将J2选择插块移至需要的输出位数插座上, 使该位置上下两针脚相连, 即可实现选择需要的最大输出位数。

Maximum output digit:
There is a selection short connection block of maximum output digit for control device, to move J2selection insert block to the required socket of the output digit and make the upper and down pins on the location jointed, so as to realize the required selection of maximum output digit.

6

脉冲宽度参数: 按动线路板上“脉冲宽度”处“V”和“^”键, 可使脉冲宽度参数在1~99数字之间调节, 该参数单位为10毫秒, 相对应的脉冲宽度可调范围为10~990毫秒。

Pulse width parameter:
“V”and “^”key is pressed at “pulse width” on the circuit board, pulse width parameter can be adjusted between digits 1~99. The parameter unit is 10 millisecond, and the adjustable range of the corresponding pulse width is 10~990 millisecond.

7

脉冲间隔参数: 按动线路板上“脉冲间隔”处“V”和“^”键,可使脉冲间隔参数在1~99数字之间调节,该参数的单位为1秒,相对应的脉冲宽度可调范围为1~99秒。

Pulse interval parameter:
“V”and “^”key is pressed at “pulse interval” on the circuit board, pulse interval parameter can be adjusted between digits 1~99. The parameter unit is 1 second, and the adjustable range of the corresponding pulse interval is 1~99 second.

8

循环间隔参数: 按动线路板上“循环间隔”处“V”和“^”键,可使循环间隔参数在1~99数字之间调节,该参数的单位为“分”,对应的循环间隔可调范围为1~99分。

Cycle interval parameter:
“V”and “^”key is pressed at “cycle interval” on the circuit board, cycle interval parameter can be adjusted between digits 1~99. The parameter unit is “minute”. Adjustable range of the corresponding cycle interval is 1~99 minutes.

9

参数保存: 当控制仪处于参数修改状态,停止计时及脉冲输出。以上三个参数,在第一次按动“V”或“^”键时,数码管显示的是原来的参数值。以后按动后显示的是改动后的参数值,3秒内没有按动任何的“V”或“^”键,则当前改动后的参数值将被保存。控制和显示返回到参数修改前的状态,并以修改后的参数来控制运行。在修改某个参数时,可随时修改另一个参数,保存时所有修改过的参数都被保存。

Parameter saving:
Under parameter modification status of control device, timekeeping and pulse output stops. For the above 3 parameters, when “V”or “^”key is pressed for the 1st time, the display on the nixie light is the original parameter value. After afterwards pressing, the display is the modified parameter value; if there is not any pressing “V”or“^” key in 3 seconds, the parameter value of the current modified value is saved, and the control and display return to the status before the parameter is modified, and the modified parameter controls operation. When any parameter is under modification, another parameter can be modified at any time and the modified parameter is all saved during saving period.

维护保养 Maintenance



1

控制仪接上电源后，线路板上5V、24V的数码管指示灯都不亮，应检查电源线与接线端子是否松动，电源0.315A熔丝是否熔断，电源变压器是否正常、电源部分有无断线、脱焊等现象。

After the control device is powered on, 5V, 24V nixie light indicator on the circuit board is not lit. It is necessary to check if power line is loose with connection terminal, if 0.315A fuse of power supply is broken, if power transformer is normal and if there is any phenomena like a broken line, loose soldering, etc. in the power supply part.

2

若5V的LED指示灯不亮，说明负载发生短路，很可能是个别元件损坏，应逐一检查，如断开负载后5V仍不正常，应检查三端式稳压电路是否正常。

If 5V LED indicator is not lit, it shows that there is a short circuit in the load, and some component is damaged. It is necessary to check one by one. If load is disconnected, 5V is still abnormal, and 3-terminal stabilized circuit must be checked to see if it is normal.

3

若24V的数码管指示灯不亮，一般是负载端电磁脉冲阀及导线引起过载或短路造成的。

If 24V nixie light indicator is not lit, the general status is that there is overload or short circuit of electromagnetic pulse valve and lead at the load side.

4

控制仪通电后数码管显示和按键输入正常：
输出数码管指示灯亮，而电磁脉冲阀不动作，则有可能相应的电子开关管损坏。

After the control device is powered on, nixie light display and key input is normal: Output nixie light indicator is lit and electromagnetic pulse valve does not work. And it is possible that the corresponding electronic switch tube is damaged.

5

若某一电磁脉冲阀常吸，应检查对应的电子开关管是否漏电、击穿。

If a electromagnetic pulse valve is always magnetized, it must be checked if the corresponding electronic switch tube is in electric leakage or broken-down.

6

若电磁脉冲阀全部不吸，应检查阀用公共线端子外的接线是否正确可靠。

If electromagnetic pulse valve is not always magnetized, it must be checked if the connection outside of the terminal of common lead of the valve is correct and reliable.

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。

With the development of technolohg, the control device may be improved quickly. The user may contact our company.

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