SPARKULAR
USER MANUAL

V1.1

Showven Technologies Co.,Ltd.

SPARKULAR
USER MANUAL

Safety

Warnings and Cautions

These are designed to alert your attention to hazards and important information that assists you in carrying out your activities on this machine safely and efficiently. Examples and descriptions of safety statements have been provided as follows:

WARNING:

A WARNING ALERTS YOU TO HARMFUL OR POTENTIALLY LETHAL ACTIVITIES.

A DESCRIPTION OF THE HAZARD IS GIVEN AND THE CONSEQUENCES OF IGNORING THEM.

Eye Protection

THE EYE PROTECTION WARNING ICON IS SHOWN TO INDICATE THAT YOU MUST BE PROTECT YOUR EYES WHEN CLOSE TO THE MACHINE DURING MACHINE OPERATION.

Injury Voltages

WARNING:

DANGEROUS VOLTAGES ARE PRESENT IN THIS MACHINE AND CONTROLLER WHEN ELECTRICAL POWER IS APPLIED. THERE IS A DANGER OF INJURY FROM ELECTRIC SHOCK.

UNDER NO CIRCUMSTANCES ARE YOU TO ATTEMPT TO OPEN THE MACHINE AND CONTROLLER OR ATTMPT TO REMOVE OR ADJUST ANY COMPONENTS FITTED WITHIN THE MACHINE AND CONTROLLER. ONLY FULL TRAINED SERVICE ENGINEERS ARE QUALIFIED TO OPEN THE MACHINE AND CONTROLLER.

Caution Against Liquids

WARNING:

USE CAUTION SO THAT ANY LIQUIDS DO NOT WET THE MACHINE. KEEP THE MACHINE AND CONTROLLER DRYAND NOT USE ON RAINY OR SNOWY DAYS UNLESS COVERED.

Warning

PLEASE PREVENT ANYTHING FROM ENTERING THE FOUNTAIN NOZZLE. IF THIS HAPPENS PLEASE CLEAR OBSTRUCTIONS BEFORE CONTINUING OPERATION.

PLEASE PREVENT MACHINE FROM DROPING WHEN INSTALLING "DAMAGE CAN OCCUR".

NEVER TOUCH THE NOZZLE OF SPARKULAR, DANGER OF GETTING BURNT.

NEVER TOUCH THE SPARKS WHICH SHOOTING OUT FROM THE NOZZLE.

COVER THE NOZZLE OF SPARKULAR IS PROHIBITED.

MAKE SURE LID OF FEEDBING HOPPER IS CLOSED WHEN USE SPARKULAR

FOR BETTER HEAT DISSIPATION, BLOCK THE AIR INTAKE AND OUTLET IS PROHIBITED.

Safe Distance

KEEP AUDIENCE AND FLAMMABLE MATERIALS AT A MINIMUM SAFETY DISTANCE OF 10 FEETS.

ENSURE THAT CHILDREN, ANIMALS AND UNAUTHORIZED PERSONS CAN'T ACCESS TO SPARKULAR.

MAKE SURE SPARKS SHOOT OUT FROM SPARKULAR CAN NOT TOUCH ANY OBJECTS IN THE AIR.

In Case of Emergency

IF THE MACHINE NEEDS TO BE STOPPED QUICKLY DUE TO AN EMERGENCY, PRESS THE "PAUSE" / "STOP" KEY ON THE CONTROLLER TO STOP THE MACHINE AND SWITCH THE

MACHINE POWER SWITCH ON THE PANEL OF THE MACHINE TO THE "OFF" POSITION.

IF NECESSARY CALL FOR MEDICAL ASSISTANCE AS REQUIRED.

Clear Material

PLEASE INSPECT FOUNTAIN NOZZEL OF SPARKULAR MACHINE BEFORE USE AND CONFIRM WHETHER THERE ARE ACCUMULATED GRANULES. PLEASE CLEAN OUT EXCESS BY INVERTING THE UNIT TO CLEAN OUT PORT. EACH TIME BEFORE AND AFTER THE SHOW PLEASE RUNNING CLEAR MATERIAL ON HOST CONTROLLER OR DMX CONSOLE.

BEFORE DELIVERY THE MACHINE OR NOT USE THE MACHINE IN A LONG TIME, PLEASE POURING THE HC8200 OUT FROM HOPPER, AND STORE THE REMAINING HC8200 IN A DRY SEALED BOTTLE FOR NEXT TIME USE.

Power Supply Requirement

PLEASE SELECT QUALIFIED POWER CONNECTOR ACCORDING TO THE REQUIRMENT OF SPARKULAR. IF NECESSARY PLEASE CONTACT SHOWVEN DIRECTLY FOR SUGGESTION.

PLEASE NOTE: ONE POWER SUPPLY CABLE CAN SUPPORT A MAXIMUM OF 6 SPARKULAR (BT01) / 3 SPARKULAR (BT02). EACH MACHINE CAN BE CONNECTED INDIVIDUALLY OR WITH THE POWER-CON SERIES CABLES SUPPLIED.

Difference

PLEASE NOTE: THE VOTAGE OF MODEL BT01 AND BT02 IS DIFFERENT.

BT01: AC 200V~240V

BT02: AC 100V~120V

1. Production Overview

1) Description

BT01 is a revolutionary special effect system. It uses a newly designed delivery control system for a fountain style sparks special effect, it can be controlled easily with DMX communication and compatible with other stage effects equipment.

Model	BT01/BT02
Dimension	200×218×305mm
Weight	8.5kg
Input	AC 220V 50/60Hz (BT01)
	AC 110V 50/60Hz (BT02)
Work Power	500W
Work Temp.	-10℃ ~ 50℃
Casing	Anti-flaming ABS
Fountain Height	1.5m ~ 5m adjustable
Lifetime	>3 years
Interface type	DMX in/out, AC power in/out

2) Instructions

The Sparkular system has two main components: Sparkular BT01/BT02 and Host Controller ZK6200/ZK6300. BT01/BT02 with series built-in safety features that is readable on the Sparkular and host controller. Please note the read out function is not applicable for other DMX console.

Below descriptions will help to learn the operation and function of SPARKULAR systems.

3) Characteristics

A)   Safe, no gunpowder, no smoke and pyro smell

B)   Up to 10-20min effects time after fill up

C)   Standard DMX 512 control

D)   Adjustable height from 1.5-5m.

E)   Easy set up and tear down

F)   Indoor / outdoor usage

G)   Flexible for rehearsal

H)   Environmental friendly

I)   Patented and Originality technology

4) Operation Panel:

a) LCD display:

Shows operation menu and status of the machine.

b) LED Displaying Area:

READY: Flash means machine is preparing, LED keeps on means ready to operate

DMX: Flash means DMX signal is connected, light OFF means there is no DMX signal

FAULT: Light ON when error occurs

HEAT: Light ON when system is heating up

c) Control Button Area：

MENU: switch through setup menu

DOWN: parameter down

UP: parameter up

ENTER: confirm and save parameters

d) Interface and Plugging Area：

POWER IN: power in

POWER OUT: power out

DMX IN: DMX Communication Signal Input

DMX OUT: DMX Communication Signal Output

e) Radio Frequency Identification Area：

RFID card comes together with HC8200, it is a safety design, allow machines to identify the parameter and types of consumable it adding to the hopper of machine. It is obligatory to swiping the card before adding the consumable HC8200 to the hopper of machine.

Note:

Please note that the card enables the unit for 10-20 minutes of operation (which is the amount of time each bag of HC8200 last). The RFID card is disposable and it is disabled after it has been swiped.

5) Interface

a)   Main Interface

i)   Displays DMX Address

ii)   Display inner core temperature of machine

iii)   Display error information when error occurs

Error Information

Error Information	Explanation
E0 System IC	Systematic error
E1 Motor Protect	Over current protection of the motor
E2 Temp. Sensor	Temperature sensor is not connected or damaged
E3 P Temp. Over	The equipment stops due to the over-temperature of the chassis
E4 Time Remain	Activated time for the machine is not enough, please swip RFID card
E5 K Temp. Over	The equipment stops due to over-temperature of the inner core
E6 Heating Failure	Heating fail, problem on heating PCB of mainboard
E7 Tip Over	Tilt sensor activated when machine slant more than 45 degree.

b) Setting Menu

Press "MENU" switch through setup menu.

Option	Range	Explanation
Set DMX Address	1-512	Set DMX Address.
Fountain Height	1-10	10 gears of fountain height, manually adjust the height of sparks.
Manual Heat	On/Off	Auto preheat function switch after turn on machine. If it is ON, machine will heating up automatically after turn on. If it is OFF, operator need to start heating up on HOST CONTROLLER or DMX console.
Manual Fountain	On/Off	Start firing manually, only for test.

DMX address setup for SPARKULAR:

Sparkular No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
DMX Address	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35

Note:

DMX address must set according to above rules.

If use together with HOST CONTROLLER ZK6200/6300, each unit of SPARKULAR must use different DMX address, otherwise it may leads to signal interference.

c) Advanced Interface :

Press "MENU" for 3 seconds, operator can enter the Advanced Interface. Press "MENU" switch to different options, and press "MENU" for 3 seconds, return to the main interface.

Option	Range	Explanation
Set Temperature	Range	Setup SPARKULAR inner core temperature
Wireless Control	On/Off	Wireless On/Off, for wireless version only
LCD Backlight	On/Off	LCD Backlight On/Off
Density@ Height 1	30-50	Adjusts the sparks density of Height gear 1*
Density@ Height 2	30-50	Adjusts the sparks density of Height gear 2*
Density@ Height 3	30-50	Adjusts the sparks density of Height gear 3*
Density@ Height 4	30-60	Adjusts the sparks density of Height gear 4*
Density@ Height 5	30-70	Adjusts the sparks density of Height gear 5*
Density@ Height 6	40-100	Adjusts the sparks density of Height gear 6*
Density@ Height 7	40-100	Adjusts the sparks density of Height gear 7*
Density@ Height 8	40-100	Adjusts the sparks density of Height gear 8*
Density@ Height 9	40-100	Adjusts the sparks density of Height gear 9*
Density@ Height 9	40-100	Adjusts the sparks density of Height gear 10*
Mode Selection	Factory Mode User Mode	Factory mode is for engineer only. When in Factory mode machine can't controlled by DMX console/host controller
Default Parameter		Press ENTER in this interface, all parameter of machine restore to default value.
Motor Protect	On/Off	Motor protect function, default setting is Off
Power Selection	220/110Vac	Select input power supply voltage. Default setting for BT01 is 220VAC. BT02 is 110VAC.

*For better performance of SPARKULAR, please don't change the default value of density without permission from SHOWVEN.

6) DMX Channel Mode: The system occupies two channels.

First Channel	Function
0-15	Fountain Off
16-39	Fountain Height 1
40-63	Fountain Height 2
64-87	Fountain Height 3
88-111	Fountain Height 4
112-135	Fountain Height 5
136-159	Fountain Height 6
160-183	Fountain Height 7
184-207	Fountain Height 8
208-231	Fountain Height 9
232-255	Fountain Height 10
Second Channel	**Function**
60-80	Clear Material
20-40	EMERGENCY STOP
0-10	Pre-heat Off
240-255	Pre-heat On

2.Host Controller

1) Description

1. ZK6200/ZK6300 Host Controller is an intelligent system specially designed for the multi-effects and remote control of Sparkular series machine, so as to create the simulation and demonstration of sparks effects. The audio trigger and timing code trigger can be used to control the synchronous with music. LAN ports can be used to extend the communication among multi host controllers.

Model	ZK6200
Dimension	390 x 300 x 110mm
Weight	3.5kg
Input	AC 110V-240V, 50/60Hz
Work Power	15W
Work Temp.	-10℃~50℃
Ports	2 CAN communication ports,
	1 USB port,
	2 media ports(trigger by music),
	2 MIDI ports(trigger by music),
	2 DMX512 output ports, Ethernet.
Support max.	200m communication cable
Battery	3350mAH
Lifetime	>3 years

2) Host Controller Introduction – Standard or Pro Version

a) Standard DMX512 signal output

b) Support 18 units Sparkular at the same time (ZK6300 54 units).

c) Five standard dynamic effect modes: Synchronization, Center to Ends, Ends to Center, Left to right, Right To Left, Special Effects and one user-definable special effect mode (together with SPARKULAREdit 200 software from SHOWVEN), supports 8 files and each file supports 36000 lines at maximum (special effects last for 30 minutes)

d) There are multiple optional trigger sources. Hand, Music or Midi Inputs.

e) Support simulation function and LED display.

f) Monitoring function: Host controller with RDMX function, can feedback status information such as Temp., error message etc. of each machine.

g) Emergency stop function: Pause or Stop Button.

3) Controller Operation Panel

a) Cable Connection Area:

AC Input: AC Power Input.

CAN: CAN Communication Input/Output Ports.

Tape In: Audio Signal Input Port of Main Channel

Aux: Audio Signal Socket of Side Channel.

Music: Displaying the Electrical Level of Audio Signal.

MIDI In: Time Synchronous Signal Input of MIDI thru output.

DMX 512: DMX Signal port

LAN: Network's Cascade Socket among Multi-Chassis, so as to link the remote control feature.

Download: SparkularEdit200 software Port
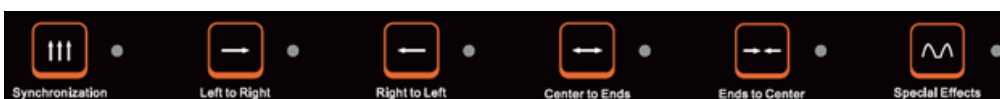
b) Manual Operation Area

No.1 to No.18 is Sparkular number.

Firing / Stop of each unit of Sparkular by press related key of 1 to18.

The Sparkular can be operated after the Pre-Heat warm up for 5 minutes. The indicator light will switch from flash green to always-on when heating up was ready. When firing is activated the indicator light will change to Red. Press "FIRING" to shoot/stop the SPARKULAR machine.

c) Mode Selection Area

There are five standard dynamic modes and one special effects mode which can be initiated by pressing the keys. These activate a pre-programmed page of functions that are displayed on each selection.

d) LCD Area

F1: Main Menu

F2: File Selection Menu

F3: Configuration Menu

F4: About Menu

e) Edit/Control Area

Parameters can be programmed through number keys or up/down keys.

Test: For test/demonstration of edit effects. When press the Test, Sparkular file will be operated and LED will display the effect, but communication won't be output. This is also for factory testing.

Pause: Device can be forced to stop once any abnormality happens. Pre-heat also shuts off.

Forward: Under the special effect mode, the operating time can be put forward.

Rewind: Under the special effect mode, the operating time can be put backward.

Clear Material: Clear material of SPARKULAR before and after each show, to clean the remaining consumable in the heating chamber, avoid blocking of the SPARKULAR.

Pre-heat: Press "Pre-heat" to heating up the SPARKULAR. It takes around 5min. For long time not use the machine, suggest to turn off the "Pre-heat" function and allow SPARKULAR to return to normal temperature.

Firing: Activate/stop SPARKULAR programming.

Left and right keys can make the cursor move on the different parameters.

Parameters can be edited through up/down keys and number keys and it will be saved automatically. The confirm key can also be initiated to save.
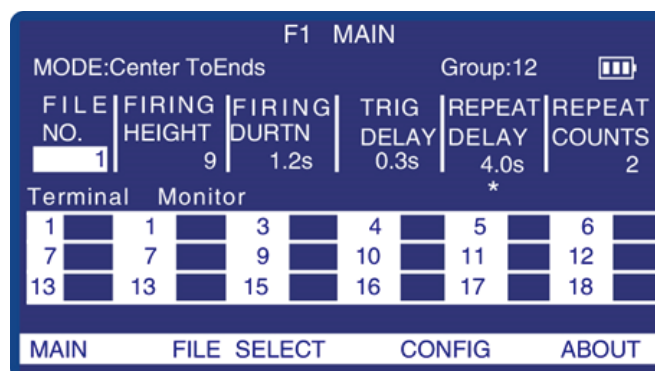
4) Interface

a)Main Menu

MODE: Effect Mode

GROUP: Total Quantity of Devices.

Battery logo shows battery capacity and when it decrease to one grid, please charge it.

Option	Scope	Illustration
FILE NO.	1-8	File number
FIRING HEIGHT	1-10	Fountain Height gear. "." button can change height10 directly.
FIRING DURATION	0.1-30.0s	Duration of the Fountain
TRIGER DELAY	0.1-30.0s	Trigger delay between two machines
REPEAT PERIOD	0.1-50.0s	Time to start of next sequence/period
REPEAT COUNTS	1-5	Repeated times

Note: Only "Pause or Stop, Forward", "Rewind" button are available when "Firing" button lighting. Please note the setting for "repeat counts"to avoid mutli repeat of effects.

Monitor: The working status of SPARKULAR will show on the LCD screen of host controller. Normally it shows the core temperature of SPARKULAR, when there are error information it will also show in this area.

b) Error Information

Please refer to the error information of the machine.

c) File Select: F2

F2 displays the parameters list of 8 preset files.

```
              F2 FILE SELECT
MODE: Synchronization
FILE  |FURING |FIRING | TRIG  |REPEAT|REPEAT
No.   |NEIGHT |DURTN  |DELAY  |DELAY |COUNTS
  1   |     3 | 5.0s  | 0.0s  | 5.0s |      1
  2   |     9 | 0.8s  | 0.0s  | 1.0s |      1
  3   |     3 | 5.0s  | 0.0s  | 7.0s |      2
  4   |     9 | 0.4s  | 0.0s  | 1.0s |      1
  5   |     9 | 0.5s  | 0.0s  | 5.0s |      2
  6   |     9 | 1.0s  | 0.0s  | 3.0s |      3
  7   |     9 | 1.0s  | 0.0s  | 2.0s |      2
  8   |     9 | 1.0s  | 0.0s  | 1.0s |      1
```

d) Configuration Menu： F3

```
              F3 CONFIG
SPARKULAR Start No.    :      1
SPARKULAR End No.      :      6
Trigger Source         : HAND
Audio Level            :  2
Audio Filter Delay     :   20ms
Audio Stop             : Firing Stop
Mode Selection         : Factory Mode
LAN                    : OFF
Language               : EngLish
Repeat Time Mode       : Repeat Delay Mode
```

Option	Range	Description
SPARKULAR Start No.	1-18	Select range
SPARKULAR End No.	1-18	Select range
Trigger Source	HAND,AUDIO,MIDI	Trigger Sources options under special effect mode
Audio Level	1,2,3,4	Voltage classes1-4 after choosing Audio Trigger Mode
Audio Filter Delay	10-100ms	Time toThe filtering time of trigger signals after choosing Audio Trigger Mode start of next sequence/period
Mode Selection	User Mode Factory Mode	Factory Mode only used for the factory test
LANGUAGE	ENGLISH/CHINESE	Language switch
REPEAT TIME MODE	Repeat period Repeat Delay	Repeat period: Cycle timing start when first machines start to work. (chasing effects can realize with this mode) Repeat delay: Cycle timing start when the first firing cycle terminate
DMX IN	On/Off	On: DMX in activated, when there is DMX in signal, host controller will be locked, and DMX signal will transfer to SPARKULAR. OFF: DMX in disabled.
DMX Address	1-512	When use DMX IN function of Host controller, the DMX address of host controller.
LAN		Reserve for future use. Default value is OFF.

5) The Use of the Special Effect Mode:

Special effects are edit on SparkularEdit200 software with computer, effects file can download to host controller with USB cable. For more information please refer to SparkularEdit200 manual.

Trigger Source

HAND: When Trigger Source select HAND, press Firing to activate programming.

AUDIO: Audio Trigger interfered easily, and it can be triggered only one time, it activated when audio signal appears. There are audio signal light on the Music window, and Audio Level 1-4 corresponding to bottom to top.

When Audio Level is 1 and Audio Filter Delay is 50ms, when audio signal appear, first light of Music is on and lasts for 50ms, and the file was activated.
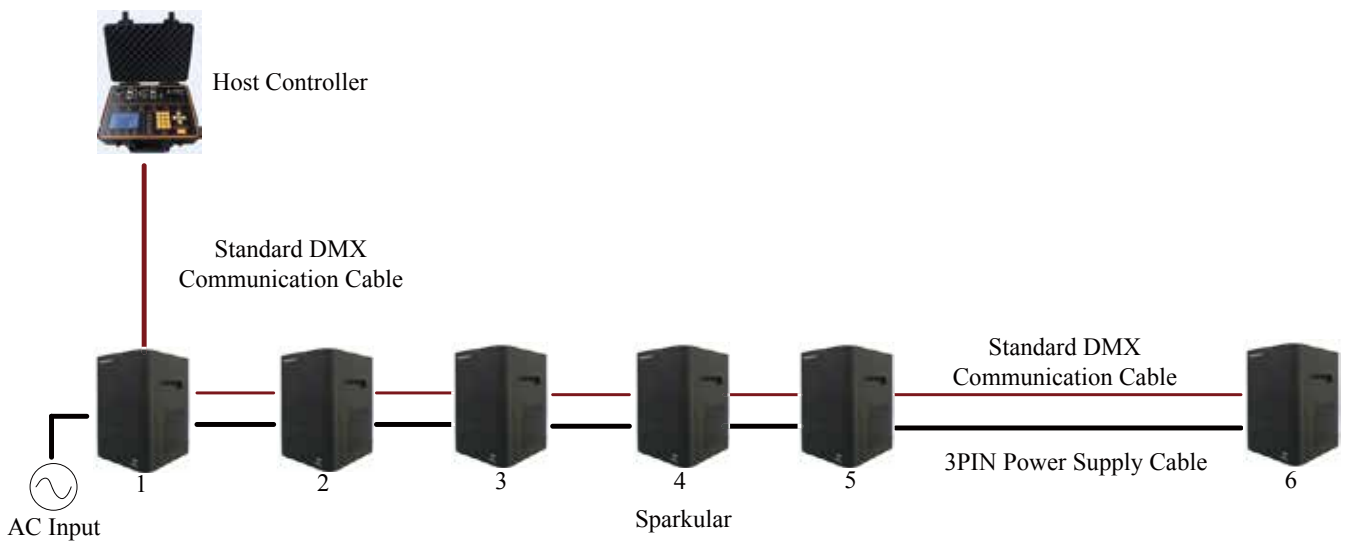
In order to prevent the mistake trigger, before use AUDIO trigger function, please set Trigger Source at HAND, connect audio signal to normal audio signal source, and select AUDIO. According to the level of audio signal select proper Audio Level, Audio Filter Delay.

MIDI: When Trigger Source is set as MIDI, the operation of the device can be started and stopped synchronously by MIDI Time Code (MTC).

No matter which mode the Trigger Source selected, the operation of the device can be started and stopped synchronously by SparkularEdit200 connected computer.
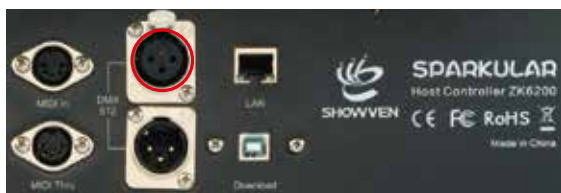
3. System Configuration and Connection

1) System Configuration

Host Controller

Standard DMX
Communication Cable

Standard DMX
Communication Cable

3PIN Power Supply Cable

AC Input

1   2   3   4   5   6

Sparkular

2) System Connection

a) Controller and Sparkular

Host Controller (ZK6200)   **DMX Communication Cable**   **Sparkular**

b) Sparkular Power Supply Cable

Maximum of 6 units (BT01) / 3 units (BT02) Sparkular in series with one main power supply cable.

Sparkular   **Power Supply Cable**

c) Power Link Cable Connection between Sparkular

Sparkular   **Power Link Cable**   **Sparkular**

d) Communication Cable Connection between Sparkular

Sparkular   **DMX Communication Cable**   **Sparkular**

4. System Prepare and Start

1) Fill the Sparkular consumable HC8200 to Sparkular

Please fill in Sparkular Granules HC8200 into the hopper. Maximum volume for the hopper is 200g. There are three types of HC8200 for SPARKULAR.

Model	HC8200 SMALL	HC8200 MEDIUM	HC8200 LARGE
Effect height	1.5-3m	1.5-3.5m	2-5m

a) Open HC8200 pouch

SMALL   **MEDIUM**   **LARGE**

b) Fill SPARKULAR hopper

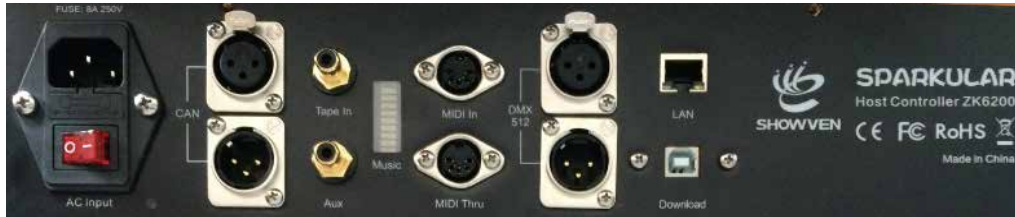Open the hopper lid   Funnel and Nozzel plug (not standard configuration, can order from SHOWVEN)   Filling the hopper   Close the lid of hopper

Warning: Please fill SPARKULAR by following above process. After adding the consumable, please do remember to close the lid.

2) Turn On Host Controller

Switch on host controller as below.

3) Turn On Sparkular

Switch on Sparkular,

4) Parameters setup

Programming SPARKULAR effects according to this manual.

5) Activate Sparkular machine

Swip an RFID card after filling each bag of HC8200. Read the card as show below. SPARKULAR shows time remain if read successfully. SPARKULAR report E4 when remaining time is less than 10 minutes.

6) Firing

Activate programming effects by press "FIRING" on the host controller.

7) Turn Off

After show, please power off Sparkular and host controller. Allow SPARKULAR to cool down before packing. Never touch the nozzle of SPARKULAR. DANGER OF BURN!

8) Clear Material

Please running Clear Material both before and after each show. Before delivery or not use machine in a long time, please pouring the HC8200 out of hopper, and store the remaining HC8200 in a dry sealed bottle for next time use.

Tools   To empty Granular material

⚠ **Warning: Please follow this process to clear material when necessary.**

Warranty Instructions

▲Sincere thanks for your choosing SPARKULAR, you will receive quality service from us.

▲The product warranty period is one year. If there are any quality problems within 7 days after shipping out from our factory, we can exchange a brand new same model machine for you.

▲We will offer free of charge maintenance service for machines which with hardware malfunction (except for the instrument damage caused by human factors)in warranty period. Please don't repair machine without factory permission.

★Below situations NOT included in warranty service:

1. Damage caused by improper transportation, usage, management, and maintenance, or damage caused by human factors;

2. Disassemble, modify or repair products without Showven's permission;

3. Damage caused by external reasons (lightning strike, power supply etc);

4. Damage caused by improper installation or use;

For product damage not included in warranty range, we can provide paid service.

★Invoice and warranty card are necessary when applying for maintenance service from SHOWVEN.

Warranty Card

Product Name:		Serial No.	
Purchase Date:			
Tel:			
Address:			
Problem Feedback			
Actual Problem:			
Maintenance Detail:			
Service Engineer:		Service Date:	

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