



USER MANUAL Circle Flamer X-F1800

V1.1

WARNING

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Manufacturer: Showven Technologies Co.,Ltd.

USER MANUAL Circle Flamer X-F1800

★Please read this manual carefully before operating this product.
★ Warranty card attached in the manual, please keep it well.

It is the responsibility of the user to be fully aware of all potential consequences and actions when using this machine.

- The manufacturer is not responsible for accident occurring due to use of this machine by unqualified or untrained personnel.
- ▲ Unauthorized repair are prohibited, it may cause serious incident
- A Make sure power supply in consistent with the rated voltage of the equipment, and the socket must well grounded. Unplug the machine when not use.
- Before connect the power cable, communication DMX cable should well connected and ensure the command keep at firing OFF status.
- A Keep the machine dry, not use in rain or snow.
- ▲ The device can only be placed horizontally. Safety distances are marked on the device (at least 15m in all projection directions, at least 5m to the other sides of the device).
- After turning on the device, no person allows to stay in the danger area. Ensure all persons that are part of the show be informed about the safety distance, risks and functions of the device.
- Always have a CO2 fire extinguisher and an extinguishing blanket in case of needed.
- ▲ If there be any doubt as to the safety operation of the device in any circumstances, the device should be taken out of service immediately.
- ▲ Be sure the device is in good operating condition before use. If fail to fire correctly, immediately shut down and check it accordingly.
- Be sure to use high quality flame fluid, otherwise, it is easily lead to failure or danger. Be careful when refill the flame fluid tank. Please keep flame fluid away from heat source, sparks, fire or other possibility of ignition. Do not smoke!
- ▲ The operator responsible for the control of Circle Flamer must always have a clear view of the device, so that he/she can stop the show immediately when there is danger.
- The main AC power switch should near operator. So that operator can turn off the power of all devices in case of abnormal.
- A The device shall not be altered and applied to other use purpose.

▲ Foreword

Thanks for choosing CIRCLE FLAMER X-F1800. We hope it will bring you more wonderful shows. Please read following manual carefully and completely before operating this product. Operate according to instructions is very important for safety, and can elongate the service life of the machine.

Strictly follow the instruction in the manual when operate Circle flamer X-F1800. If you have any doubts, please contact SHOWVEN technologies Co., Ltd by info@showven.com.

We assume the person who use or come in contact with the device are familiar with how the device should be handled. This includes proper use, maintenance and repair of the machine as defined in this user manual.

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Disclaimers:

SHOWVEN technologies Co., Ltd excludes liability for unsafe situations, accidents and damages resulting from:

Ignoring warnings or regulations as shown one circle flamer or this manual.

Use for other applications or circumstances other than those indicated herein.

Changes to the circle flamer, including use of non-original spare parts.

Improper use of machine.

Use this machine by unqualified or untrained personnel.

▲ Functional Characteristics

» Compact pumping system

» Double electromagnetic valves design for additional safety

» Tilt protection, the tilt sensor will be activated when machine slant 40° at any angle

» Unique safety lock design, device can not firing when locked, avoid spurious triggering.

» Intelligent control system: pressure monitor, safety warning, no consumable alarm, failure warning.

» High performance nozzle, reliable and durable

» High-accuracy swiveling head driving and controlling system, allows for fast and precise flame bursts.

» Neutrik PowerCON and DMX socket

 $^{\scriptscriptstyle >}$ Wireless DMX function, compatible with almost all DMX console on the market, both 3 and 5-pin socket available

» Standard battery connector configuration, support 12V battery power supply

» Fitted with fireworks igniter signal port, can be triggered by fireworks igniter

» Flame effects up to 10m, with 210° swiveling angles. 70 preset flame sequences available.

 $^{\scriptscriptstyle >}$ It is easier and stable to running the CIRCLE FLAMER when controlled by SHOWVEN original host controller ZK6200/6300.

▲ Technical Specifications

MODEL	Circle Flamer X-F1800		
Dimension	590 x 360 x 370mm		
Input	AC100-240V, 50-60Hz		
Work power	380W		
DMX interface	3-pin and 5-pin double DMX socket		
Control	Standard DMX 512, compatible with wireless DMX		
Effect height	Up to 10m (no wind)		
Effect angles	±105°		
Fuel	ISOPROPANOL, ISOPAR G,H,L,M, BIOETHANOL		
Fuel bottle capacity	10L		

▲ Overview of Control Panel



1. LCD area 2. Safety Lock 3. Indicator Light 4. DC 5V output 5. 3-pin DMX socket 6. 5-pin DMX socket 7. Power socket 8. Fuse 9. ON/OFF switch 10. Battery socket 11. Input DC 12V-24V(fireworks igniter signal port)

Note: When safety lock is locked. There will alarm message on LCD screen, the device enter testing status, engineer can test nozzle rotate, ignition etc. but it won't eject flame fluid.

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•Operation Panel:



a) LED display area: RX: radio receiving (reserved) DMX: flash means DMX signal available, otherwise no DMX signal ERR: turn on when there is an error PUMP: turn on when pump is working

b) Button function:"MENU" : switch interface to setup parameter

"+": parameter up

"-": parameter down

"ENTER": Confirm and save parameters (screen will flash when parameters saved) Note: screen display will switch to main interface if don't press button for a long time.

a) Main Interface:



First Line: DMX address Second Line: Pressure, P: 100 means pressure is 100%; V: 13.6 means internal DC voltage is 13.6V

Alarm prompts on screen when error occur, error info:

Error Explanation		
E0 system lock	Safety lock is locked, system enter testing mode	
E1 Pressure	No fuel, or pump error	
E2 Evacuate	Evacuate pipeline error	
E3 Motor Protect	Motor error, please check whether the nozzle was get stuck	
E5 Battery. Over	Battery voltage > 15V or <10V for continuous 5s.	
E7 Factory Mode	DMX signal blocked in factory mode	

b) Interface Setup:

Press "MENU" to enter setup interface, press "MENU" to switch parameters until back to main interface.

ltems	Scope	Explanation
Set DMX address	1~512	DMX address setup
Restrict nozzle angles	OFF/ON	Restrict nozzle angles manually

c) Advanced Interface:

Press "MENU" 3s enter advanced interface, press "MENU" to switch interface, press "MENU" 3s can back to main interface.

ltems	Scope	Explanation
Driven test	OFF/ON	Regular test after error
Firing triggered by ignitor signal	ON/OFF	Trigger through fireworks ignitor signal
Setup trigger sequence	1~70	Sequence triggered by fireworks ignitor
Language switch	Chinese/English	Language switch



•Drive time for Effects

Angle	Drive time needed	
-105°	170ms	
-90°	150ms	
-75°	130ms	
-60°	110ms	
-45°	90ms	
-30°	70ms	
-15°	50ms	
0°	Oms	
15°	50ms	
30°	70ms	
45°	90ms	
60°	110ms	
75°	130ms	
90°	150ms	
105°	170ms	

Time for the motor drive to related angles.

For example for the motor drive from 0°to 45°, it need 90ms, when operator design a show to synchronize to music, this drive time must be calculated.

•Control of Circle Flamer

Sequence list

Circle Flamer X-F1800 has 70 default sequences, you can use related channel and box number to access certain sequence. Below, you can find sequence list and single ignitions.

Important Notice: The time period are guaranteed only when the device supplied with AC power. The values may change when use battery.

Sequence No.	Ignition angle	Ignition Time	Description	Nozzle Movement	Firing Time (For reference)	DMX VALUE
1	-105°	110ms (40)	Single Ignition SHORT flame		0.11s	4
2	-90°	110ms (40)	Single Ignition SHORT flame		0.11s	7
3	-75°	110ms (40)	Single Ignition SHORT flame		0.11s	9
4	-60°	110ms (40)	Single Ignition SHORT flame		0.11s	12
5	-45°	110ms (40)	Single Ignition SHORT flame		0.11s	14
6	-30°	110ms (40)	Single Ignition SHORT flame		0.11s	16
7	-15°	110ms (40)	Single Ignition SHORT flame		0.11s	18
8	0°	110ms (40)	Single Ignition SHORT flame		0.11s	21
9	15°	110ms (40)	Single Ignition SHORT flame		0.11s	24
10	30°	110ms (40)	Single Ignition SHORT flame		0.11s	26
11	45°	110ms (40)	Single Ignition SHORT flame		0.11s	29
12	60°	110ms (40)	Single Ignition SHORT flame		0.11s	31
13	75°	110ms (40)	Single Ignition SHORT flame		0.11s	34
14	90°	110ms (40)	Single Ignition SHORT flame		0.11s	37
15	105°	110ms (40)	Single Ignition SHORT flame		0.11s	39
16	-105°	410ms (340)	Single Ignition LONG flame		0.41s	42
17	-90°	410ms (340)	Single Ignition LONG flame		0.41s	44
18	-75°	410ms (340)	Single Ignition LONG flame		0.41s	46
19	-60°	410ms (340)	Single Ignition LONG flame		0.41s	49
20	-45°	410ms (340)	Single Ignition LONG flame		0.41s	51
21	-30°	410ms (340)	Single Ignition LONG flame		0.41s	54
22	-15°	410ms (340)	Single Ignition LONG flame		0.41s	57
23	0°	410ms (340)	Single Ignition LONG flame		0.41s	59
24	15°	410ms (340)	Single Ignition LONG flame		0.41s	62
25	30°	410ms (340)	Single Ignition LONG flame		0.41s	64
26	45°	410ms (340)	Single Ignition LONG flame		0.41s	67
27	60°	410ms (340)	Single Ignition LONG flame		0.41s	69
28	75°	410ms (340)	Single Ignition LONG flame		0.41s	72
29	90°	410ms (340)	Single Ignition LONG flame		0.41s	74
30	105°	410ms (340)	Single Ignition LONG flame		0.41s	77

Single Ignitions List

Step Sequences:

Sequence No.	Ignition sequence	Description	Nozzle Movement	Firing Time (For reference)	DMX VALUE
31	Step from 1-15	Single Ignition SHORT flame	L->R	2.4s	80
32	Step from 15-1	Single Ignition SHORT flame	R->L	2.4s	83
33	Step 5>8>11	Single Ignition SHORT flame	L->R	0.58s	86
34	Step 11>8>5	Single Ignition SHORT flame	R->L	0.58s	89
35	Step 6>10	Single Ignition SHORT flame	L->R	0.39s	91
36	Step 10>6	Single Ignition SHORT flame	R->L	0.39s	94
37	Step 4>6>8>10>12	Single Ignition SHORT flame	L->R	0.9s	96
38	Step 12>10>8>6>4	Single Ignition SHORT flame	R ->L	0.9s	98
39	Step 8>6>10>4>12	Single Ignition SHORT flame	M>L>R>L>R	1s	100
40	Step 8>10>6>12>4	Single Ignition SHORT flame	M>R>L>R>L	1s	102
41	Step from 1-15	Single Ignition LONG flame	L->R	6.89s	105
42	Step from 15-1	Single Ignition LONG flame	R->L	6.89s	108
43	Step 5>8>11	Single Ignition LONG flame	L->R	1.48s	110
44	Step 11>8>5	Single Ignition LONG flame	R->L	1.48s	113
45	Step 6>10	Single Ignition LONG flame	L->R	0.99s	115
46	Step 10>6	Single Ignition LONG flame	R->L	0.99s	118
47	Step 12>10>8>6>4	Single Ignition LONG flame	L->R	2.4s	120
48	Step 8>6>10>4>12	Single Ignition LONG flame	R->L	2.4s	123
49	Step 8>6>10>4>12	Single Ignition LONG flame	M>L>R>L>R	2.4s	125
50	Step 8>10>6>12>4	Single Ignition LONG flame	M>R>L>R>L	2.4s	128

WAVE Sequences:

Sequence No.	Ignition sequence	Description	Nozzle Movement	Firing Time (For reference)	DMX VALUE
51	Wave 5>11	Middle wave sequence	L->R	1.79s	131
52	Wave 11>5	Middle wave sequence	R->L	1.79s	133
53	Big wave 115	LONG wave sequence	L->R	3.93s	136
54	Big wave 151	LONG wave sequence	R->L	3.93s	138
55	Wave 8>1	Middle wave sequence	M->L	2.26s	142
56	Wave 8>15	Middle wave sequence	M->R	2.26s	144
57	Wave 1>8	Middle wave sequence	L->M	2.26s	147
58	Wave 15>8	SHORT wave sequence	R->M	2.26s	149
59	Wave 8>11	SHORT wave sequence	M->R	1.19s	152
60	Wave 8>5	SHORT wave sequence	M->L	1.19s	154
61	Wave 5>8	SHORT wave sequence	M->L	1.19s	156
62	Wave 11>8	SHORT wave sequence	R->M	1.19s	159

Additional Sequences:

Sequence No.	Ignition sequence	Description	Nozzle Movement	Firing Time (For reference)	DMX VALUE
63	Step 2>14	Step Sequence SHORT flame	L->R	0.48s	161
64	Step 14>2	Step Sequence SHORT flame	R->L	0.48s	165
65	Step 2>14	Step sequence LONG flame	L->R	1.23s	167
66	Step 14>2	Step sequence LONG flame	R->L	1.23s	170
67	Step 8>1	Step Sequence SHORT flame	M->L	1.2s	173
68	Step 8>15	Step Sequence SHORT flame	M->R	1.2s	175
69	Step 8>1	Step sequence LONG flame	M->L	1.9s	177
70	Step 8>15	Step sequence LONG flame	M->R	1.9s	179

▲DMX Channels

Channel	Function		
Channel 1	Angle: (0~255) from -105°to 105°		
Channel 2	(1~254) speed increase, (0 and 255) Maxi. speed		
Channel 3	Firing: (0~253) Firing OFF, (254~255) Firing ON		
Channel 4	Firing Time (0~255), Firing time = DMX value * 10ms (0-2550ms) (0~2.55s)		
Channel 5	Firing Sequence Mode (3~181), related sequence=DMX value/2.55 (round off)		
Channel 6	Mode Setup (0~49) Evacuate mode (Emergency Stop) , (50~200) Firing mode, (201~255) Evacuate mode (Emergency Stop)		

•Channel Explanation

1. **The First Channel** controls the firing angle. It defines to which angle the nozzle of circle flamer move to. The angle can be chosen anywhere between -105°to +105°(DMX value 0 to 255). 2. Since DMX value itself can only be a integral number, some angles can only be rounded up. 3. The DMX value for angle of 0°is 127.5 (round up 128) . Use this value, following formula can be used to calculate all other angles \angle in degree. Please always note the prefix of the angle.

DMX value=127.5+ (∠*1.2145)

To calculate a DMX value in percentage, please use following formula:

%value=DMX value* (100/255)

Channel	Angle	DMX value	DMX (%)
1	-105°	0	0%
2	-90°	18	7%
3	-75°	36	14%
4	-60°	54	65%
5	-45°	73	21%
6	-30°	91	28%
7	-15°	109	35%
8	0°	128	42%
9	15°	146	50%
10	30°	165	64%
11	45°	183	71%
12	60°	201	78%
13	75°	219	85%
14	90°	237	92%
14	105°	255	100%

Channel 1: angle set up

The Second Channel defines the rotate speed. It can be set anywhere from DMX value 0 to 255. (from static to Maxi. speed)

Speed is related to time, not to power. Leads to better synchronization of flamers. This setting not affected by "fading", since a synchronization can only be measured from a distance of about 8-9 DMX values (Channel 1).

Example of Manual Firing

1. Drive firing nozzle to start point (CH1 Angle = 0°, CH2 Speed = 255°, CH3 Firing = 0°)

2. Once nozzle reached start point, set CH2, speed (CH1 Angle = 0° , CH2 Speed = 50° , CH3 Firing = 0°)

3. Set end point and Firing (CH1 Angle = 255°, CH2 Speed = 50°, CH3 Firing =255°)

4. The device will make a constant move to the end point and firing.

If the flamer fade, must set DMX value of 255 again.

Channel 2: Speed set

Explanation				
DMX value 0 1-254 255				
Speed Stop Incremental of Speed Maxi.Speed				

The Third Channel control firing. If DMX value reached 253, the flamer will firing. The DMX value of this channel must fall below 254, before an ignition can be made again with the value of 254 and 255.

Channel 3: Firing setup

		Channel 3: Firing setup	
DMX value	0-253		254-255
Speed	Firing OFF		Firing ON

The Fourth Channel is Firing time setup. The firing time can be selected in steps of 10ms to 2540ms (2.54s) using the DMX values from 0 to 254.

DMX value of 255 allows a permanent firing. Firing OFF when DMX value drops below 254 at latest after 2.5s.

Below formula can be used to calculate the firing time (ms).

DMX value = t/10

Channel 4: Firing time setup

Channel 4: Firing time setup						
DMX value	1	2	3	4	 254	255
Firing time	0ms	10ms	20ms	30ms	2540ms	Permanent

The Fifth Channel allows to firing at a preset sequence. Three DMX values can be used for one of the firing channels from above sequence list. DMX value 0 to 2 are unused. The first sequence (Firing channel 1) starts with DMX values 3 to 5.

Below formula can be used to calculate firing channels

DMX value=2+channel number*(255/100)

Following formula can be used for % value:

% value = Channel Number

Firing sequence mode/related firing channel						
DMX value	0~2	3~5	6~7	8~10	11~12	 11~12
% value	0ms	0	2	3	4	70
Firing Channel	0ms	N/A	2	3	4	70

The DMX value of each preset sequence No. are listed on above sequence list table.

The Sixth Channel is handling mode. It allows operator to set the device into firing mode (DMX value between 50 to 200), other DMX value are the test mode. Important notice: The device can only firing at firing mode.

Channel 6: Mode Setup

Channel 6: Mode Setup				
DMX value	0-49	50-200	201-255	
Mode	Evacuate Mode	Firing Mode	Evacuate Mode	

Firing through Manual Setting

1. Set all channel's DMX value to 0. Turn Channel 6 to DMX value 50 to 200.

2. Set DMX value of Channel 1 to adjust the firing angle.

3. Set Channel 5 DMX value to 0.

4. Set DMX value of Channel 4 to adjust the firing time. (For constant firing, set DMX value of Channel 4 at 0).

5. Firing Time = DMX value * 10ms (0-2550ms)

After finish setting of above step 1-4, push channel 3 to the top (DMX value at 254-255) to firing. NOTE: After firing, The DMX value of this channel must fall below 254, before an ignition can be made again.

Firing with Preset Sequence

1. Set all channel's DMX value to 0. Turn Channel 6 to DMX value 50 to 200.

2. Set Channel 1 to DMX value 128.

3. Set DMX value of Channel 5 to related firing channel value, Channel 4 setup invalid.

4. After finish setting of above step 1-3, push channel 3 to the top (DMX value at 254-255) to firing.

NOTE: After firing, The DMX value of this channel must fall below 254, before an ignition can be made again.

Firing with Preset Sequence

Set DMX address of CIRCLE FLAMER as below:

CIRCLE FLAMER No.	DMX Address
1	1
2	7
3	13
4	19
5	25
6	31
7	37
8	43
9	49
10	55
11	61
12	67
13	73
14	79
15	85
16	91
17	97
18	103
n	X=6n-5

NOTE: Each unit of CIRCLE FLAMER occupy 6 channels. Error DMX address may leads to uncontrolled firing of CIRCLE FLAMER. Please be sure to set DMX address according to above rules.

Setup of Host controller:

1. Press F3, enter host controller configuration menu, switch device to CIRCLE FLAMER. 2. Set up the Start No. and End No. of CIRCLE FLAMER.

Start No	· 1
End No.	. 10
Device Made Calestian	
Node Selection	: User Mode
Repeat Time Mode	: Repeat Period Mode
DMX IN	: ON
DMX Address	: 1
CAN	: OFF
Trigger Source	: HAND
Audio Level	: 2
Audio Filter Delay	: 100ms

Press F1 return to Host controller main interface.



Press "PRE-HEAT" button on host controller panel to compress the circle flamer. When the compression is ready, the LED light of related circle flamer will turn green.

1. Press 1-18 can firing the circle flamer at 0 degree.

2. Firing according to preset sequence. Choose the sequence No. eg: 31. Set the firing duration (normally the firing duration set 0.5s, even the firing duration of choose sequence are longer than 0.5s, it will still executed). Set the repeat counts. Press "FIRING" button start firing.

NOTE: Testing the machine by lock the system with safety lock before use.

For emergency situation need emergency stop, Press "PRE-HEAT" button on host controller panel to evacuate the system.

▲ Structure of Circle Flamer

- 1. Handle
- 2. Firing Nozzle
- 3. Top Panel
- 4. Fuel Bottle Area
- 5. Control Panel
- 6. Safety loop



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Adjustable power input design, just switch below red button to change between 110V and 220V power input.



▲ Maintenance

1. To maintain the system in good running status, it is recommended to running the device at least once per month.

2. To protect the fuel pipeline and pump, it is highly recommended to add 10-20ml castor oil per 10L canister.

3. Dust, liquids residue etc. on the device will affect the performance of device and leads to poor heat dissipation. Air compressor, cleaner or banister brush are suggested to clean the dust. Out side panel can be wiped with a wet cloth.

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