USER MANUAL
uFlamer X20

V1.0

2023/05/18

SHOWVEN®

SHOWVEN Technologies Co., Ltd

Thanks for choosing SHOWVEN Flame system, we wish it will bring you lots of exciting moments. Please read the following user's manual and related product installation guide carefully before operating this system.

△ Safety Instructions

1. Safety icons explanation

Safety instructions warn of hazards when handling equipment and provide information on how to avoid those hazards. They are classified according to the severity of the hazard and are divided into the following groups. Please do follow all safety instructions in this document!

DANGER: Indicates a hazardous situation that, if not avoided, will result in death or serious injury. (This signal word is limited to the most extreme situations)

WARNING: Indicates a hazardous situation that, if not avoided, could result in serious injury

CAUTION: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE: Provide additional or supplementary information.

2. General Safety Instructions

\ Unauthorized repair are prohibited, it may cause serious incident.

\ Make sure power supply in consistent with the rated voltage of the equipment, and the socket must well grounded. Unplug and turn off the machine when not use.

\ Please connect DMX cable before power on uFlamer X20, and ensure that the communication command is disarmed, and the safety switch of device is under test mode.

\ 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 CO_2 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. Any questions please always contact SHOWVEN (info@showven.cn) for help.

\ Be sure to use high quality flame fluid ISOPAR L/M, otherwise, it is easily leads 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 flame system 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.

\ The device shall not be altered and applied to other use purpose.

3. Disclaimers:

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

1. Ignoring warnings or regulations as shown on product manual or this manual.

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

3. Changes to the device, including use of non-original spare parts, lack of maintenance etc.

4. Dismantling device without authorization from SHOWVEN.

5. Use this machine by unqualified or untrained personnel.

6. Improper use of machine。

A dry powder fire extinguisher, a carbon dioxide fire extinguisher and a fire blanket must be equipped next to the equipment (uPumper P20 pump station, uFlamer X1800). Someone must be on duty during operation. In case of fire accident, dry powder fire extinguisher can be used when the fire is large, and a carbon dioxide fire extinguisher can be used when the fire is small.
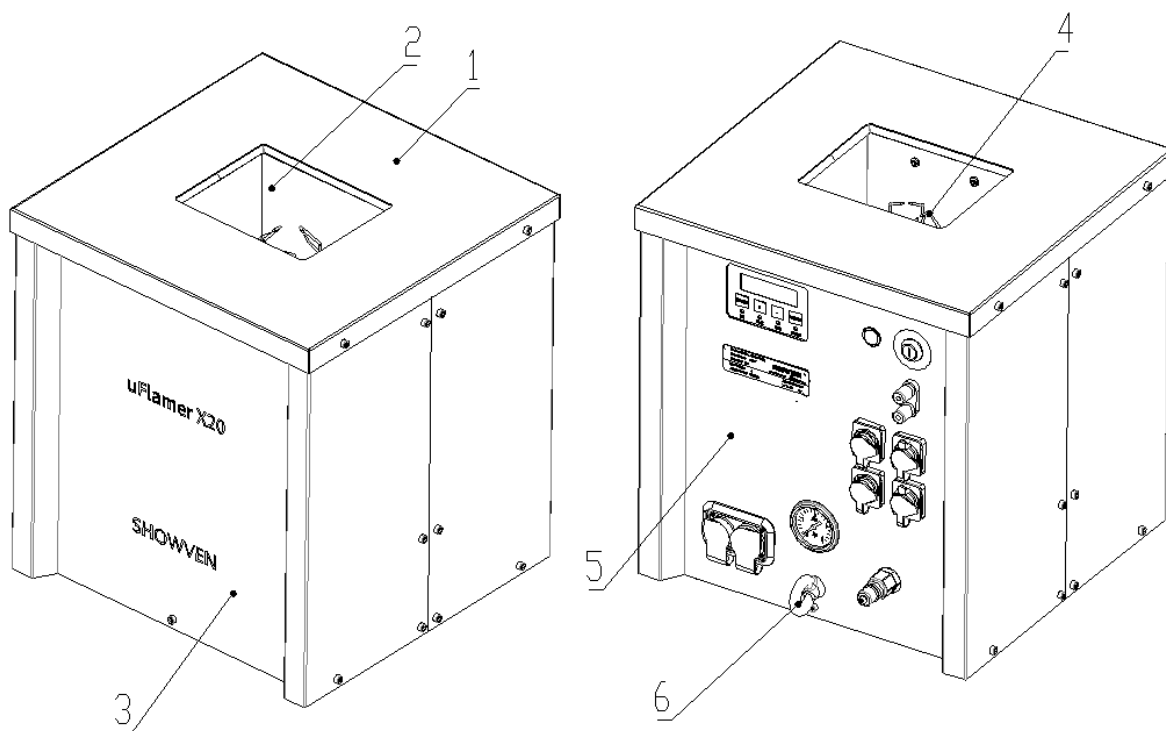
Fuel requirements for SHOWVEN flame system, for safety and long service life of flame system, please strictly follow below requirements. SHOWVEN technologies Co., Ltd excludes liability for unsafe situations, accidents and damages if not following below requirements.

1. Water content in fuel should less than 0.5%.
2. For safety, please use fuel with flash point between 60-80℃, ISOPAR L or M are recommended.
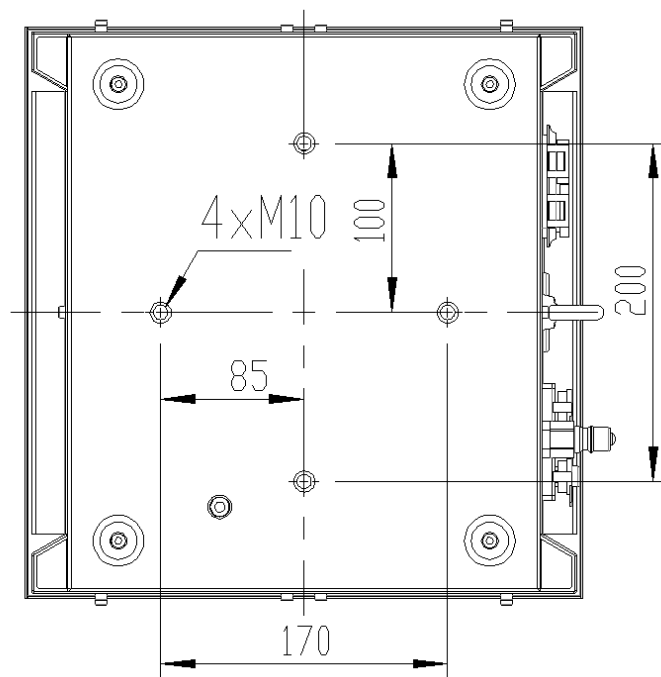
◬ Technical Specifications

╲ **Model:** uFlamer X20

╲ **Housing Material:** 304 stainless steel

╲ **Dimension:** 330×330×320mm

╲ **Weight:** 18kg

╲ **Input:** AC100-240V, 50/60Hz

╲ **Work Power:** 100W

╲ **Usage in Rain:** Yes

╲ **Quick Coupler:** ISO7241B G1/4 male

╲ **Work Pressure Range:** 40-60Bar

╲ **Firing Angle:** Vertical Up

╲ **Installation Direction:** Vertical Up

╲ **Fuel:** ISOPAR L

╲ **Flame Height:** 16-18m(no wind)

╲ **Ignition:** Triple, high voltage electron ignition

╲ **Fuel Consumption:** 1000ml/s

╲ **Control:** DMX, 9-60V pyro signal

╲ **Pressure Gauge:** Yes, mechanical

╲ **Min. Firing Duration:** 0.2s

╲ **Max. Firing Duration:** 1s
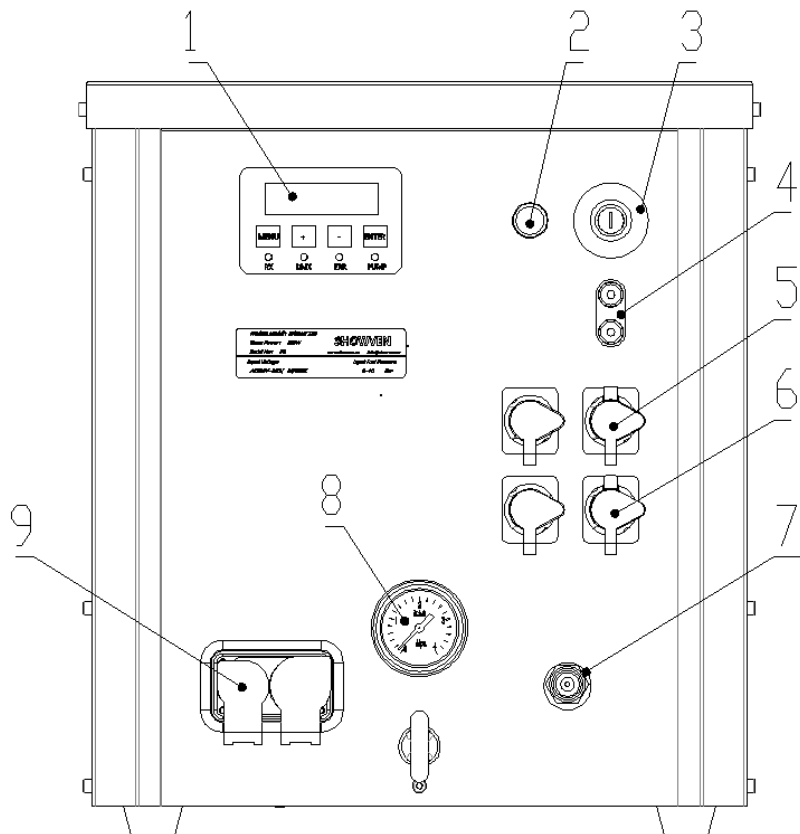
△ Structure

1. Top panel
2. Nozzle box
3. Front panel
4. Igniter (triple)
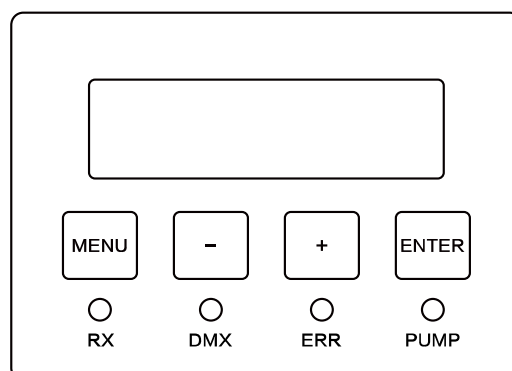5. Rear panel
6. Safety loop

Diagram of bottom panel

◬ Rear Panel

1. LCD Screen
2. Indicator light
3. Safety switch
4. 9-60V pyro signal port
5. 3-pin XLR IN/OUT
6. 5-pin XLR IN/OUT
7. Power IN
8. Pressure gauge
9. Safety loop M8
10. FUEL IN quick coupler (ISO 7241B G1/4 male)
11. Label

◬ Display and setting

1. Display area

Indicator light	Explanation	ON	OFF	BLINK
RX	Reserved	N/A	N/A	N/A
DMX	DMX signal	N/A	No DMX signal	DMX connected
ERR	Alert or Error message	Alert or Error	No	N/A
PUMP	Reserved	N/A	N/A	N/A

2. Button functions

MENU: Switch interface to setup parameter;

+: Parameter Up

-: Parameter Down

ENTER: Confirm and save parameters (screen will flash once when parameters saved)

Note: screen display will switch to main interface if there is no operation in 15s.

3. Indicator light status explanations

Indicator light ON: safety switch point to USER MODE

Indicator light OFF: safety switch point to TEST MODE, jet valve CLOSE, no fuel spray out even firing.

4. Welcome interface

```
X20-230105
XXXXXXXXXXX
```

First Line: Product model and software version

Second Line: Equipment series number

5. Main interface

```
DMX Address: 1
M: 2CH-N
```

First Line:

For 2CH-N: display DMX Address: XXX

For 2CH-P: display Fire: XXX Safe: XXX;

Second Line:

Mode selection

2CH-N: 2CH normal mode

2CH-P: 2CH professional mode

6. Alert message

Alert Message	Why it appears	How to remove
E0 Test Mode	Safety Switch at TEST MODE	Switch to USER MODE
E0 Factory Mode	Factory mode	Switch to Normal mode
E0 FireForbidden	Fire Forbidden ON	Set Fire Forbidden OFF
E4 ExtIgnite ON	Ext Ignite ON	Set Ext Ignite OFF

7. Error message

Error Message	Why it appears	Reason / How to remove
E6 Tip Err	Machine slant over 45°	Tip setting set to OFF, or horizontal install machine.

8. Menu setup

Press "MENU" to switch through setup menu.

DMX Channel Mode	Menu	Range	Default	Explanation
2CH-N	Set DMX Address	1~511	1	DMX address setup
2CH-P	Fire Address	1~512	1	Fire address setup
	Safety Address	1~512	2	Safety address setup

9. Advanced menu setup

Press "MENU" 3s enter advanced interface, press "MENU" to switch interface, press "MENU" 3s can back to main interface. The value in bold character is default value.

Items	Contents	Description
Drive Test	OFF / Igniter / Jet Valve	
	Igniter	Ignite 1s
	Jet Valve	Jet valve will be on and off for 3 times. ON 0.5s, OFF 0.5s.
Ext Ignite	**OFF** / ON	Use 9-60V pyro signal to trigger the firing
Ext Ignite Time	0.2-1s	Firing duration through Ext Ignite
Language	**English** / Chinese	Language switch
Mode Select	**Normal Mode** / Factory Mode	Factory mode is for test in factory only
Tip setting	**ON** / OFF	Turn ON/OFF tip over function
DMX Channel Mode	**2CH-Pro Mode** / 2CH-Normal Mode	Change the DMX Channel Mode.
Default Parameter	**OFF** / ON	Reset default parameter settings

10. Factory menu

Press and hold ENTER for 3s entering factory menu, press menu to switch to different items. Press and hold ENTER for 3s to exit factory menu.

Menu	Range	Default	Explanation
Max Jet Dura	0.6-1.0s	0.8s	Max. firing duration
Min Jet Dura	0.2-0.5s	0.2s	Min. firing duration
Safety Level	50-255 / 50-200	50-200	The effective range of safety valve
Fire LCD State	ON/OFF	OFF	ON: LCD screen ON when firing OFF: LCD screen OFF when firing
Fire Forbidden	ON/OFF	OFF	ON: NO ignition OFF: igniter work normally

11. DMX control

uFlamer X20 with 2 different channel mode: 2CH-N and 2CH-P.

2CH-N:

In this channel mode uFlamer X20 occupies 2 functional channel.

Channel	Function	Value
CH-1	Igniter and Jet valve ON/OFF	0~99: OFF 100~255: ON
CH-2	Armed / Disarm	0~239: disarm 240~255: armed

2CH-P:

In this channel mode uFlamer X20 occupies 1 functional channel and 1 separate safety channel (this channel is independent from operational channel, can be shared with other machine).

Channel	Function	Value
Functional Channel	Igniter and Jet valve ON/OFF	0~99: OFF 100~255: ON
Safety Channel	Armed / Disarm	Safety level 50-255 0~49: Disarm 50~255: Armed Safety level 50-200 0~49 and 201~255: Disarm 50~200: Armed

⚠ Operation

1. Safety Distance
Definition and Instructions

Safety distance for uFlamer X20 divided into two parts safety radius around machine (a) and safety distance at firing direction (b). No person and flammable materials are allowed to stay inside the safety isolation zone when flamer was armed.

uFlamer X20 with default nozzle can generate a flame effect up to 18m, for safety we suggest a 5m safety radius around the machine.

For safety distance at firing direction equals to maximum firing height * 1.5.

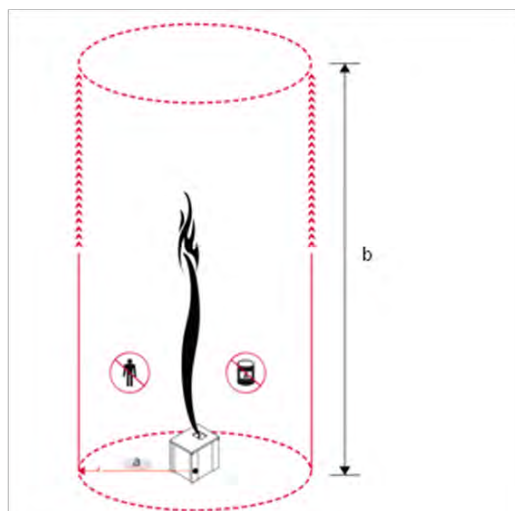| Max. Flame Height	Safety Radius around uFlamer (a)	Safety Distance at Firing Direction (b)
18m	5m	27m

The uFlamer X20 safety isolation zone (show as below) is a cylindrical three-dimensional space with Safety radius around machine (a) and Height of b. Unauthorized persons and objects are strictly prohibited from entering.

For angled installation, the safety distance both around machine and firing direction should shift accordingly.

Safety distance in windy environment

The safety isolation zone radius (a) increase with wind direction and wind speed (v, m/s). The safety distance in windy conditions can be calculated as a = 5 + v.

For example when the wind speed is 3m/s, then the safety isolation zone radius should be 8m. When the wind speed ≥ 8m/s (wind force ≥ 5), please use it with caution. When wind speed ≥ 17.2m/s （wind force ≥ 8）, please stop use uFlamer X20.
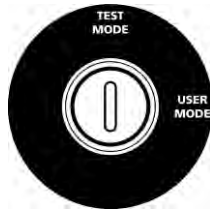

2. Install uFlamer X20
    a) Horizontal installation is preferred for uFlamer X20. And be very careful about the safety distance around machine and in the firing direction.
    b) For truss installations always connect with safety rope to ensure extra safety. If there is any other national or regional guidelines please follow it accordingly.
    c) Double confirm the machine was firmly installed.

3. Connect uFlamer X20 to flame system through fuel input quick coupler
Before connect to the flame system, make sure safety lock of uFlamer X20 stay at TEST MODE as below picture.

4. Connect Power and DMX cable to uFlamer X20, and assign DMX address for each unit of machine.

a) Connect a power cable to the POWER IN socket of uFlamer X20. Connect the other end of power cable to the power source. Make sure power supply in consistent with the rated voltage of the equipment, and the socket must well grounded.

b) Each unit of uFlamer X20 can be connected to power supply directly. If connect machine in sequence, please connect a power link cable to the POWER OUT of previous machine, connect the other end of the power link cable to POWER IN of the next machine. Do not connect exceed units to a single electrical circuit.

c) Connect a DMX cable to the DMX IN socket of first unit of uFlamer X20, another head of this DMX cable connect to DMX console (such as FXcommander). Make sure the DMX console is powered off.

d) Connect a DMX cable to the DMX OUT socket of previous uFlamer X20, and the other end to the DMX IN of next machine. Connect all devices in series in this way.

e) Plug in a DMX terminator into the DMX OUT in last unit of machine to improve signal reliability. For long distance (>200m) please connect SHOWVEN DMX splitter 8 to amplify the signal.

f) Power ON uFlamer X20

g) Assign a unique DMX address for each unit of machine.

5. Power ON the DMX console

6. Test the ignition function of uFlamer X20

Test the ignition function of uFlamer X20, we can check whether the igniters of each unit of uFlamer X20 is working fine. Due to the safety switch is stay at TEST MODE the pump won't work, there will be only ignition while no fuel spray out, so no flames generated.
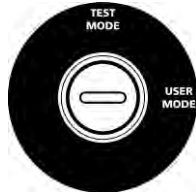
7. Filling and Power ON the pump station uPumper P20H

a) Due to the volatilization of fuel, please do to install uPumper P20H in a well-ventilated place and open the cover of uPumper P20H after power on.

b) Please fill uPumper P20H with qualified fuel. Water content in fuel should less than 0.5%.For safety, please use fuel with flash point between 60-80℃, ISOPAR L or M are recommended.

c) Power ON pump station, and check the pressure through pressure gauge on device.
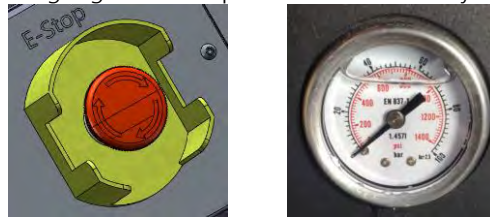

8.   Firing

a) Double confirm the prescribed safety isolation zone is clear, no person, animal or other property within this region.

b) Switch the safety switch of uFlamer X20 to USER MODE.

c) Firing, the operator should always have a clear view of the device, so that he/she can stop the show immediately when there is danger.

9.   Depressurize and Power OFF uPumper P20H

Depressurize uPumper P20H by press the "E-Stop" button, and Power OFF uPumper P20H after use or if not use for a long time during the show we also suggest to depressurize to ensure the safety. The pressure shows on pressure gauge is 0 if depressurize successfully.

10. Disconnect hose connection, stop fuel supply.
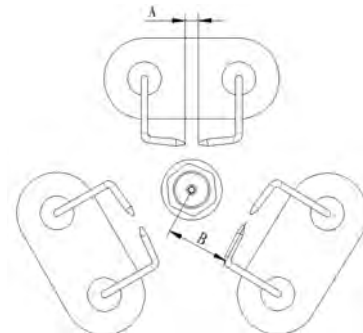Disconnect the hose connection on uPumper P20H.

11. Power OFF
a) Power OFF DMX console
b) Switch safety switch of uFlamer X20 to TEST MODE
c) Unplug power cable, DMX cable.

⚠ Nozzle Replacement

Use 14mm outer hexagon socket wrench to disassemble the nozzle, clean the nozzle and nozzle socket with air gun (air compressor), change a new nozzle and install it.

⚠ Igniter Position Adjustment

Whenever changed the nozzle or ignition is not good, please check igniter pole position according to below parameters. The right position for each pair of pole should have a gap from tip to tip of 4±0.5mm (A) and a gap between igniter and fuel stream of 15±1mm (B). (As show in above picture). Check the ignition success rate after adjustment by firing.

<mark>WARNING:</mark>
Do unplug the power cable when service flamer.

△ Maintenance

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

2. Check the ignition probes both before and after each show, if there is any foreign objects on it please clean it up.

3. Maintenance of the nozzle: Nozzle needs to be cleaned from time to time, and it is recommended that once every six months (depending on the environment and frequency of use). In the process of using the equipment, if the flame shape is seriously deformed or the fuel injection line is significantly deformed or coarsened, the nozzle should be removed immediately for cleaning. If after clean, there are still problems please replace new nozzle.

△ Optional Parts for uFlamer X20

Part. No.	Description	pcs / unit
SFSMA507	Nozzle XH	1
RMBOT036	Safety ring	1
RMMET045	Safety rope	1
SFMET944	Nozzle disassemble tool	1
SFCAB065	Waterproof DMX cable, 6m	1
SFCAB204	Waterproof DMX cable, 10m	1

⚠ Warranty Instructions

❭ Sincere thanks for your choosing our products, 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:

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

❭ Disassemble, modify or repair products without permission;

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

❭ Damage caused by improper installation or use;

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

Invoice is necessary when applying for maintenance service from SHOWVEN

SHOWVEN®