



**CITY OF YPSILANTI
CITY COUNCIL MEETING
January 11, 2022 @ 7:00 pm
Council Chambers
[Virtual Access](#)
One South Huron, Ypsilanti, MI 48197
Revised 1-10-22**

Page

I. CALL TO ORDER

II. ROLL CALL

III. AGENDA APPROVAL

IV. RESOLUTIONS/MOTIONS/DISCUSSIONS

- 4 - 5** A. Resolution No. 2022-001A, approving Council Policy on the wearing of masks during public meetings.
[2022-001A - Pdf](#)

V. PUBLIC COMMENT (3 MINUTES)

VI. PUBLIC HEARINGS

- 6 - 13** A. Approval of the 2020 City of Ypsilanti Redistricting Plan.
1. Resolution No. 2021-001 Determination
2. Public Hearing
3. Resolution No. 2021-002
[Supporting Documents - Pdf](#)

VII. ORDINANCES FIRST READING

- 14 - 20** A. Ordinance No. 1384, An ordinance to amend Section 14-5 of the Ypsilanti City Code be amended to allow the keeping of ducks and drakes in the City of Ypsilanti
1. Resolution No. 2021-003 Determination
2. Public Hearing
3. Resolution No. 2021-004
[Supporting Documents - Pdf](#)

VIII. CONSENT AGENDA

- 21** A. Resolution No. 2022-005, approving the Consent Agenda.
[2022-005 - Pdf](#)

- 22 - 29** B. Resolution No. 2022-006, approving the minutes of December 21, 2021.
[2022-006 - Pdf](#)

- 30** C. Resolution No. 2022-007, approving appointments to boards and commissions.
[2022-007 - Pdf](#)

IX. RESOLUTIONS/MOTIONS/DISCUSSIONS

- 31 - 48** A. Resolution No. 2022-008, approving the amended Articles of Incorporation for the Ypsilanti Community Utilities Authority.
[2022-008 - Pdf](#)
- 49 - 202** B. Resolution No. 2022-009, approving the use of indoor pyrotechnics at the EMU Convocation Center.
[2022-009 - Pdf](#)
- 203 - 214** C. Resolution No. 2022-010, approving a Memorandum of Understanding with Ann Arbor SPARK for the installation of fiber optic cable.
[2022-010 - Pdf](#)
- 215** D. Resolution No. 2022-011, acknowledging the Martin Luther King Jr. Holiday.
(added)
[2022-011 - Pdf](#)
- E. Discussion regarding holding a Martin Luther King Jr. Celebration. (15 minute)

X. BOARD AND COMMISSION - NOMINATIONS

- 216 - 217** A. **Tax Board of Review - Reappointment**
Roberta Wojcik-Andrews
7 N. Normal St.
Ypsilanti, MI 48197
[Application](#)

XI. BOARD AND COMMISSION - LIAISON REPORTS

1. Police Advisory Commission.
2. Human Relations Commission.
3. Arts Commission.
4. Parks and Recreation Commission.
5. Sustainability Commission.
6. Historic District Commission.
7. Planning Commission.
8. Zoning Board of Appeals

XII. LIAISON REPORTS

1. SEMCOG Update
2. Washtenaw Area Transportation Study
3. Urban County
4. Ypsilanti Downtown Development Authority

5. Friends of Rutherford Pool

XIII. COUNCIL PROPOSED BUSINESS

XIV. COMMUNICATIONS FROM THE MAYOR

XV. COMMUNICATIONS FROM THE CITY MANAGER

XVI. COMMUNICATIONS

- A. Rescheduling second Goal Setting Date

XVII. ADJOURNMENT

218

- A. Resolution No. 2022-012, adjourning the City Council Meeting.
[2022-012 - Pdf](#)
- B. Please click [here](#) to access the City Council Contact Form. This form can be used to submit any comments/concerns you might have about this agenda.



Resolution No. 2022-001A
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

Whereas, Amendments to the Michigan Open Meetings Act require City Council to return to in-person meetings starting January 1, 2022;

Whereas, Community transmission of COVID-19 remains high in Washtenaw County; and especially the 48197 and 48198 zip code areas;

Whereas, Recommendations from the Centers for Disease Control and Prevention (CDC) state that even fully vaccinated people can further reduce their risk of becoming infected with COVID-19 and transmitting it to others by wearing a mask indoors in public in areas of substantial or high community transmission;

RESOLVED, That, in order to prevent the transmission of COVID-19, protect the health of meeting attendees, minimize the possibility of disrupting the meeting, and thereby promote public participation by creating a safer meeting environment, City Council hereby establishes the regulation that all in-person attendees at City Council meetings are required to wear a mask;

RESOLVED, That the type of mask required and how it must be worn shall be consistent with the order by the CDC titled Requirement for Persons To Wear Masks While on Conveyances and at Transportation Hubs, with an effective date of February 1, 2021, as from time to time amended, along with all supplemental guidance issued by the CDC;

RESOLVED, That, to ensure full participation of the public in City Council meetings, the City Clerk is directed to provide free masks for attendees at City Council meetings, to establish a mechanism for the public to comment remotely without entering City Hall, and to establish an area within City Hall where unmasked persons can watch City Council meetings live and provide comment; and

RESOLVED, that this regulation shall be adopted and published as a temporary Council Rule until rescinded or modified by City Council.

OFFERED BY: _____

#Resolution No. 2022-001A

SECONDED BY: _____

YES:

NO:

ABSENT:

VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this
11 day of January 2022

#Resolution No. 2022-001A



Resolution No. 2022-001
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

WHEREAS, the Ypsilanti City Council has the authority to determine Ward boundaries following each decennial U.S. Census; and

WHEREAS, the Ypsilanti City Council has reviewed 2020 U.S. Census data describing the current population of the City of Ypsilanti and its Wards as last established by Ypsilanti City Council in 2011; and

WHEREAS, the Census 2020 data shows that the populations of Wards 1, 2, and 3 are no longer within the standard of 95% to 105% of the optimal ward population in accordance MCL 4.261 (1) (d) and populations will need to be shifted from Ward 2 to Ward 3, in accordance with Section 117.27a of the Michigan Home Rule City Act; and

WHEREAS, the proposed plan for Ward boundaries would alleviate, as much as possible, any disruption to voters; and

WHEREAS, City Council has received and considered the recommendation of the City of Ypsilanti Election Commission.

NOW THEREFORE BE IT RESOLVED that the proposed plan for redistricting be approved and the City Clerk's office be directed to provide a copy of this resolution to the Washtenaw County and State of Michigan Bureau of Elections.

OFFERED BY: _____

SECONDED BY: _____

YES:

NO:

ABSENT:

VOTE:

#Resolution No. 2022-001

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this
11 day of January 2022

#Resolution No. 2022-001

MEMORANDUM

TO: Mayor and City Council

FROM: Andrew Hellenga, City Clerk

SUBJECT: Proposed 2021 Redistricting Plan

Summary

The population following the 2020 Federal Census of the City of Ypsilanti is 20,648. While there is no state statute governing how cities and counties must balance populations of voting districts, they are required to balance. Historically, the City of Ypsilanti has applied MCL 4.261(1)(D), which governs how the state legislature must balance.

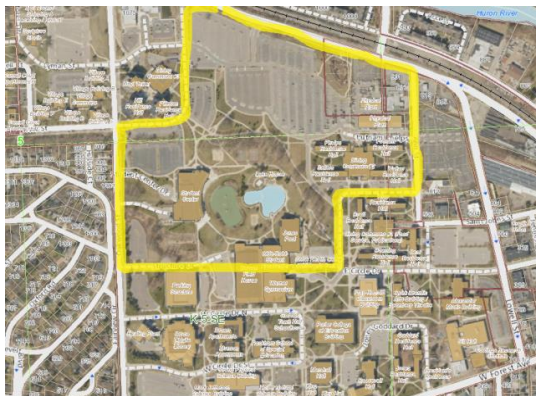
MCL 4.261(a)(d) requires that districts be balanced within a 5% deviation between voting districts. The population following the 2020 per Ward was as follows:

- Ward 1 – 7,002
- Ward 2 – 7,502
- Ward 3 – 6,144

The population as it stands does not meet the 5% deviation and now must balance. It is the intent of the Election Commission to balance the Wards without creating confusion among the electorate.

The following proposed change will shift the southernmost census tract in Ward 2 Precinct 4 (Figure 1) to Ward 3 Precinct 1. This census tract contains student housing, specifically Phelps, Sellers, Walton, and Putnam Halls. This shift would increase Ward 3 to a population of 6,870 and decreases Ward 2 to a population of 6,776. By shifting this one census tract all three Wards would become balanced by a 5% deviation.

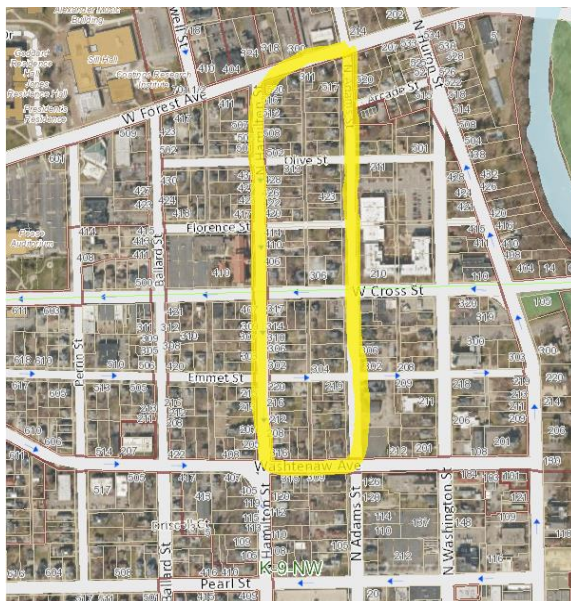
Figure 1



Voting Precincts

State law requires that all voting precincts maintain no more than 2,999 active voters (MCL 168.658/168.661). While Ward 3 Precinct 1 only currently has 1,610 active voters, shifting a population of 726 to that precinct could create a scenario that increases the active voters in that precinct higher than that threshold. In order to avoid that possibility, it is proposed to shift the two must southwest census tracts from Ward 3 Precinct 1 to Ward 3 Precinct 3 (Figure 2). This will remove the possibility of that precinct from increasing its active voter population above 2,999.

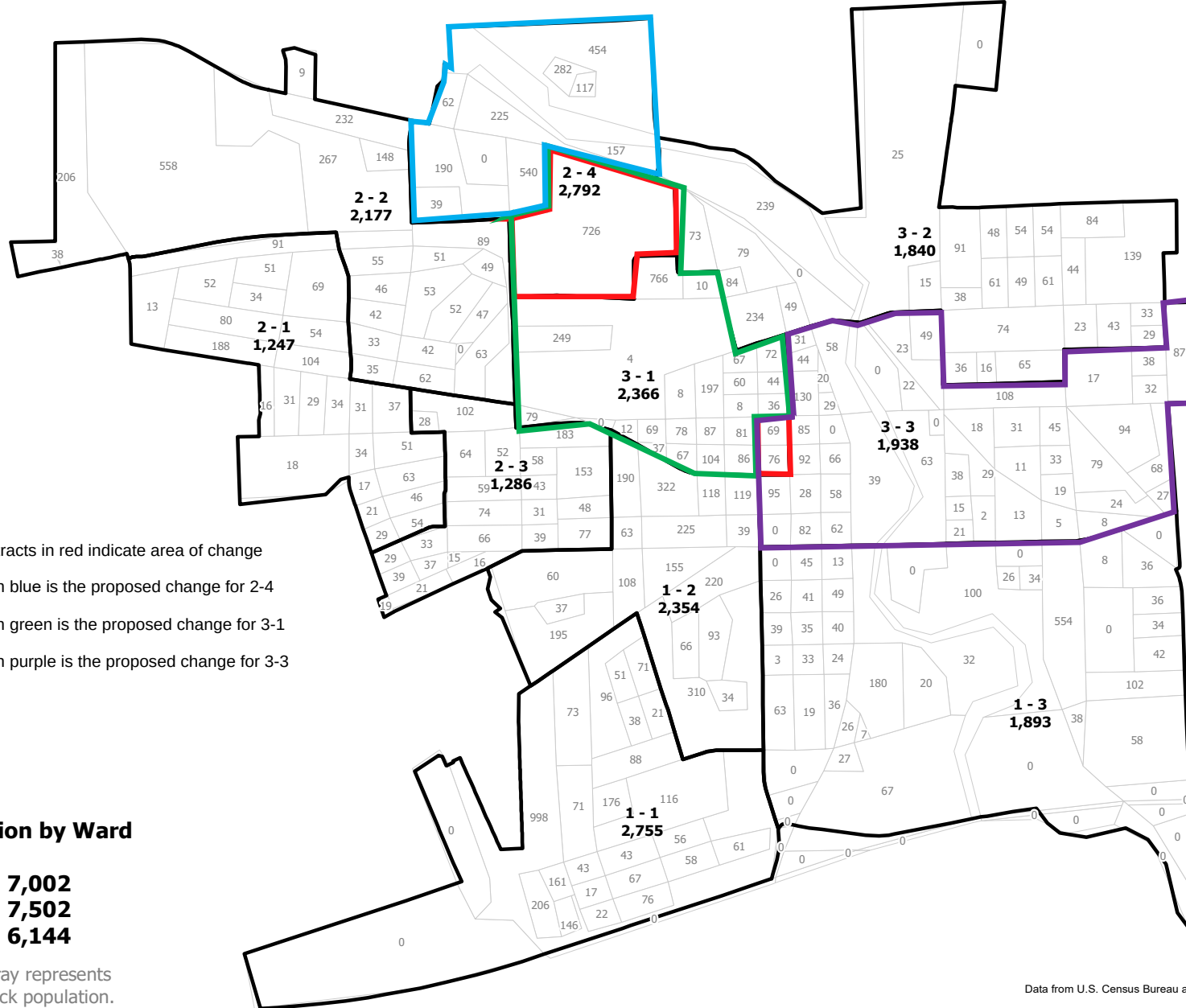
Figure 2



Other Attachments

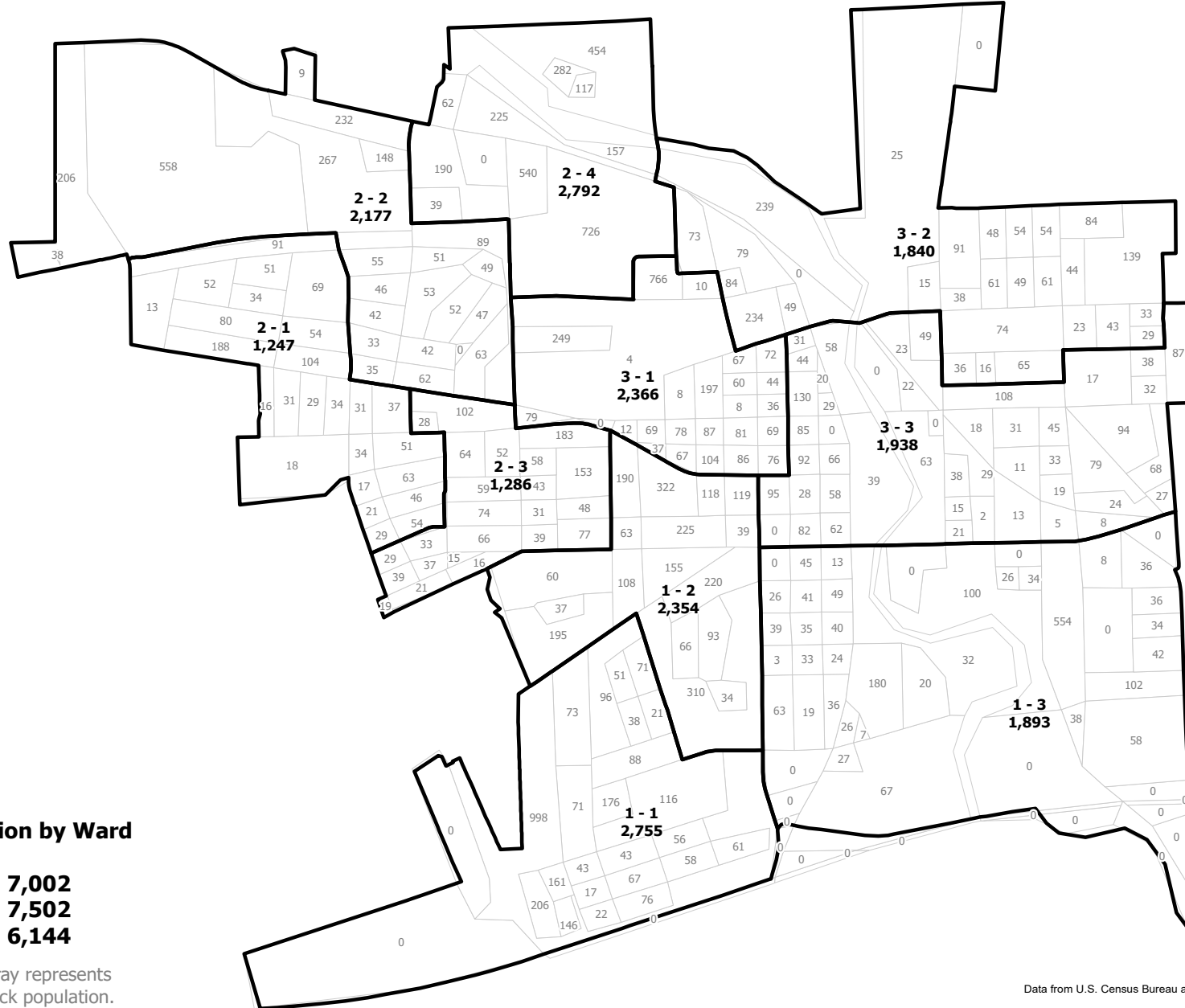
2020 Voting Precinct Map as currently drawn and 2021 Voting Precinct Map as Proposed.

Ypsilanti Population by Voting Precincts (2020 Census)



Data from U.S. Census Bureau and Washtenaw County GIS
October 26, 2021

Ypsilanti Population by Voting Precincts (2020 Census)



Data from U.S. Census Bureau and Washtenaw County GIS
October 26, 2021



City of Ypsilanti

Election Commission

Resolution No. 2021-001
December 13, 2021

RESOLVED BY THE ELECTION COMMISSION OF THE CITY OF YPSILANTI:

WHEREAS, the Election Commission has reviewed 2020 U.S. Census data describing the current population of the City of Ypsilanti and its wards as last established by Ypsilanti City Council in 2010; and

WHEREAS, the Commission finds the Census 2020 data shows that the populations of Ypsilanti City Wards 1, 2, and 3 are not within the standard of 95% to 105% of the optimal ward population in accordance MCL 4.261 (1) (d) and the population distribution between Wards 2 and 3 must be realigned as is practicable in accordance with Section 117.27a of the Michigan Home Rule City Act.

NOW THEREFORE BE IT RESOLVED that the Election Commission hereby recommends Ypsilanti City Council act approve the attached plan for redistricting.

OFFERED BY: _____

SUPPORTED BY: _____

Yes: No: Absent: Vote:



Resolution No. 2022-002
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

That the public hearing for the 2020 Proposed redistricting plan be officially closed.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this
11 day of January 2022

#Resolution No. 2022-002



REQUEST FOR LEGISLATION

TO: Mayor and City Council
FROM: John Barr
DATE: January 11, 2022
SUBJECT: Ducks in the City

DESCRIPTION:

Ducks in the City

SUMMARY:

Councilmembers Wilcoxon and Sommerville request that the Chicken Ordinance, Section 14-5, be amended to include ducks. An ordinance to amend the Code to allow ducks is attached, drafted by Councilman Wilcoxon and approved by me.

ATTACHMENTS: Proposed Ordinance

RECOMMENDED ACTION: Adoption of the ordinance

CITY MANAGER APPROVAL: _____ COUNCIL AGENDA DATE: _____

CITY MANAGER COMMENTS: _____

FISCAL SERVICES DIRECTOR APPROVAL: _____



Resolution No. 2022-003
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

"An ordinance to allow Ducks and Drakes in the City" to amend Section 14-5 of the Ypsilanti City code to allow ducks and drakes in the City be approved on first reading.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this 11 day of January 2022

#Resolution No. 2022-003



**CITY OF YPSILANTI
NOTICE OF ADOPTED ORDINANCE
Ordinance No. 1384**

An ordinance to allow Ducks and Drakes in the City.

1. THE CITY OF YPSILANTI HEREBY ORDAINS that Section 14-5 of the Ypsilanti City Code be amended to allow the keeping of ducks and drakes in the City of Ypsilanti and to read as follows:

Sec. 14-5. Keeping of female chickens (hens) and ducks (male/drake and female/duck).

- (a) Any person who keeps hens in the City of Ypsilanti shall obtain a permit from the city prior to acquiring the hens and pay a permit fee set by city council. This permit shall be kept by the owner and presented upon demand by any city official or police officer. Permits are non-transferable and do not run with the land. A permit may be obtained by any property owner of a property whose principle use is as a single-family or two-family zoned property within the City of Ypsilanti. Permits issued prior to June 1, 2010 will expire on July 1, 2011 and be renewable for two-year periods. Permits shall provide a limited license for the activity, and no vested zoning rights shall arise from said permit issuance.
- (b) Notwithstanding the issuance of a permit by the city, private restrictions on the use of property shall remain enforceable and take precedence over a permit. Private restrictions include, but are not limited to, deed restrictions, condominium master deed restrictions, and covenant deeds. A permit issued to a person whose property is subject to private restrictions that prohibit keeping of hens is void. The interpretation and enforcement of the private restriction is the sole responsibility of the private parties involved.
- (c) A person who keeps or houses hens, ducks, and drakes on his or her property shall comply with the following requirements:
 - (1) Must obtain a permit pursuant to subsection (a) of this section.
 - (2) Keep no more than a total of four fowl, in any combination of hens, ducks, or drakes.
 - (3) The principal use of the person's property must be for a single-family dwelling or two-family dwelling.

- (4) No person shall keep a male chicken (rooster).
 - (5) No person shall slaughter any hens, ducks, or drakes on the property described in Sec. 14-5 (c)(3) above.
 - (6) Any person keeping hens, ducks, or drakes shall remain subject to public nuisance animal controls codified in section 14-11 of the Ypsilanti Code of Ordinances.
 - (7) The hens, ducks, or drakes shall be provided with a covered enclosure and must be kept in the covered enclosure (flighted species) or a fenced enclosure at all times (flightless species). Fenced enclosures are subject to the provisions of section 122-635, fences and walls, of this Code.
 - (8) A person shall keep hens, ducks, or drakes in the backyard only. For this subsection, "backyard" means the portion of a lot enclosed by the property's rear lot line and the side lot lines to the points where the side lot lines intersect with an imaginary line established by the rear of the single-family or two-family structure and extending to the side lot lines.
 - (9) All enclosures for the keeping of hens, ducks, or drakes shall be constructed, repaired and maintained in a manner to prevent rats, mice, or other rodents from being harbored underneath, within, or within the walls of the enclosure.
 - (10) All feed and other items associated with the keeping of hens, ducks, or drakes that are likely to attract or to become infested shall be so protected so as to prevent rats, mice, or other rodents from gaining access to or coming into contact with them.
 - (11) Chicken coops, duck houses, and enclosures shall be at least 20 feet from any residential structure not owned by the permittee unless written permission is granted from the owner of the affected residential structure.
- (d) If the requirements of subsection (c) are not fully complied with, the city may revoke any permit granted under this section and/or initiate prosecution for a civil infraction violation.

2. Severability. If any clause, sentence, section, paragraph, or part of this ordinance, or the application thereof to any person, firm, corporation, legal entity, or circumstances, shall be for any reason adjudged by a court of competent jurisdiction to be unconstitutional or invalid, such judgment shall not effect, impair, or invalidate the remainder of this Ordinance and the application of such provision to other persons, firms, corporations, legal entities, or circumstances by such judgment shall be confined in its operation to the clause, sentence, section, paragraph, or part of this Ordinance thereof directly involved in the case or controversy in which such judgment shall have been rendered and to the person, firm, corporation, legal entity, or circumstances then

and there involved. It is hereby declared to be the legislative intent of this body that the Ordinance would have been adopted had such invalid or unconstitutional provisions not have been included in this Ordinance.

3. Repeal. All other Ordinances inconsistent with the provisions of this Ordinance are, to the extent of such inconsistencies, hereby repealed.

4. Savings Clause. The balance of the Code of Ordinances, City of Ypsilanti, Michigan, except as herein or previously amended, shall remain in full force and effect. The repeal provided herein shall not abrogate or affect any offense or act committed or done, or any penalty or forfeiture incurred, or any pending fee, assessments, litigation, or prosecution of any right established, occurring prior to the effective date hereof.

5. Copies to be available. Copies of the Ordinance are available at the office of the city clerk for inspection by, and distribution to, the public during normal office hours.

6. Publication and Effective Date. The City Clerk shall cause this Ordinance, or a summary of this Ordinance, to be published according to Section 11.13 of the City Charter. This Ordinance shall become effective after publication at the expiration of 30 days after adoption.

MADE, PASSED AND ADOPTED BY THE YPSILANTI CITY COUNCIL THIS _____ DAY OF _____, 2020.

Andrew Hellenga, City Clerk

Attest

I do hereby confirm that the above Ordinance No. _____ was published according to Section 11.13 of the City Charter on the _____ day of _____, 2020.

Andrew Hellenga, City Clerk

CERTIFICATE OF ADOPTING

I hereby certify that the foregoing is a true copy of the Ordinance passed at the regular meeting of the City Council held on the _____ day of _____, 2020.

Andrew Hellenga, City Clerk

Notice Published: _____

First Reading: _____

Second Reading: _____

Published: _____

Effective Date: _____



Resolution No. 2022-004
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

That the public hearing for "An ordinance to allow Ducks and Drakes in the City" to amend Section 14-5 of the Ypsilanti City code to allow ducks and drakes in the City be officially closed.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this
11 day of January 2022

#Resolution No. 2022-004



Resolution No. 2022-005
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

That the following items be approved:

1. **Resolution No. 2022-006, approving the minutes of December 21, 2021.**
2. **Resolution No. 2022-007, approving appointments to boards and commissions.**

OFFERED BY: _____

SECONDED BY: _____

YES:

NO:

ABSENT:

VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this
11 day of January 2022

#Resolution No. 2022-005



Resolution No. 2022-006
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

THAT the minutes of December 21, 2021 be approved.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this
11 day of January 2022

#Resolution No. 2022-006



MINUTES REGULAR COUNCIL Meeting

7:00 PM - Tuesday, December 21, 2021
Zoom Meeting

The REGULAR COUNCIL of the City of Ypsilanti was called to order on Tuesday, December 21, 2021, at 7:00 PM, on the Zoom Platform, with the following members present:

PRESENT: Mayor Lois Richardson (Washtenaw County, City of Ypsilanti), Council Member Steven Wilcoxon (Washtenaw County, City of Ypsilanti), Council Member Anthony Morgan (Washtenaw County, City of Ypsilanti), Council Member Annie Somerville (Washtenaw County, City of Ypsilanti), and Mr. Brian Jones-Chance (Washtenaw County, City of Ypsilanti), Council Member Jennifer Symanns (Washtenaw County, City of Ypsilanti), Mayor Pro-Tem Nicole Brown (Washtenaw County, City of Ypsilanti)

1 CALL TO ORDER

The meeting was called to order at 7:00 PM

2 ROLL CALL

Council Member Steve Wilcoxon moved, seconded by Mr. Brian Jones-Chance to excuse Council Member Jennifer Symanns. On a voice vote, the motion carried.

3 AGENDA APPROVAL

Council Member Steve Wilcoxon moved, seconded by Mr. Brian Jones-Chance to approve the agenda as submitted. On a voice vote, the motion carried.

4 PUBLIC COMMENT (3 MINUTES)

None

5 PRESENTATIONS

- a) Presentation regarding regulating marijuana facilities through zoning. – Joe Meyers, Economic and Community Development Director

6 RESOLUTIONS/MOTIONS/DISCUSSIONS

- a) Resolution No. 2021-269, approving the minutes of December 7, 2021.

Council Member Brian Jones-Chance moved, seconded by Council Member Anthony Morgan, to approve Resolution No. 2021-269

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

THAT the minutes of December 7, 2021 be approved.

RESULT:	CARRIED.
MOVER:	Council Member Brian Jones-Chance
SECONDER:	Council Member Anthony Morgan
AYES:	Jennifer Symanns, Steven Wilcoxon, Nicole Brown, Lois Richardson, Anthony Morgan, Annie Somerville, and Brian Jones-Chance

- b) Resolution No. 2021-270, requesting that the Michigan Legislature create and approve a bill to consolidate expungements in the State of Michigan.

Council Member Brian Jones-Chance moved, seconded by Council Member Steven Wilcoxon, to approve Resolution No. 2021-270

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

Whereas, on November 18, 2021, the Ypsilanti Police Advisory Commission approved a resolution requesting that the State of Michigan create legislation that would allow those convicted of crimes in more than one jurisdiction, the ability to apply for expungements in their home jurisdiction; and

Whereas, the City Council of the City of Ypsilanti believes that expungements should be a streamlined process, and allow petitioners to apply for expungements as one action in the Circuit Court of the county of their residence; and

WHEREAS, estimated time for a criminal conviction to be expunged in the State of Michigan is roughly six months, and having to file requests in several jurisdictions further lengthens that time, and creates an unnecessary burden on the petitioner.

WHEREAS, criminal convictions on an individual's record can have adverse effects on the petitioners ability to find employment, and creates an environment that is more conducive to recidivism.

Now therefore be it resolved that the City Council of the City of Ypsilanti requests that the Michigan Legislature create and approve legislation allowing for those petitioning for expungements of criminal records be able to consolidate their expungements into a single request in the county of their residence.

BE IT FURTHER RESOLVED, That the City Council of the City of Ypsilanti direct the City Clerk to forward this approved resolution to the Michigan House, Michigan Senate, Governor Whitmer, The Washtenaw County Bar Association, and the city lobbyist.

RESULT:	CARRIED.
MOVER:	Council Member Brian Jones-Chance
SECONDER:	Council Member Steven Wilcoxon
AYES:	Jennifer Symanns, Steven Wilcoxon, Nicole Brown, Lois Richardson, Anthony Morgan, Annie Somerville, and Brian Jones-Chance

- c) Resolution No. 2021-271, approving an update to parking rules in the City of Ypsilanti.

Council Member Steven Wilcoxon moved, seconded by Council Member Anthony Morgan, to approve Resolution No. 2021-271

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

WHEREAS, the Ypsilanti City Council established a Parking Violations Bureau for the purpose of handling all alleged parking violations within the City of Ypsilanti pursuant to the Revised Judicature Act, Public Act 154 of 1968, as amended (MCL 600.8395); and

WHEREAS, the Ypsilanti City Council had adopted rules in 2016 governing the operation of the Parking Violations Bureau with Resolution 2016-005; and

WHEREAS, the Rules and Regulations have been updated to reflect updates and changes in the system since 2016; and

WHEREAS these Rules and Regulations are consistent with the Ypsilanti City Code, resolutions adopted by this City Council, the rules and procedures of the 14A-2 District Court, and the laws of the State of Michigan;

NOW THEREFORE BE IT RESOLVED that Ypsilanti City Council approves the attached Rules and Regulations of the Parking Violations Bureau.

RESULT:	CARRIED.
MOVER:	Council Member Steven Wilcoxon
SECONDER:	Council Member Anthony Morgan
AYES:	Jennifer Symanns, Nicole Brown, Lois Richardson, Anthony Morgan, Annie Somerville, and Brian Jones-Chance
NAYS:	Steven Wilcoxon

- d) Resolution No. 2021-272, approving a contract for an art project in City Parks with Embracing Our Differences.

Council Member Anthony Morgan moved, seconded by Council Member Steven Wilcoxon, to approve Resolution No. 2021-272

IT IS RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI that:

The certain contract for art project in City parks with EMBRACING OUR DIFFERENCES SE MICHIGAN, INC. with provision that City provide insurance be approved, and the Mayor and City Clerk are authorized to sign for and on behalf of the City of Ypsilanti.

RESULT:	CARRIED.
MOVER:	Council Member Anthony Morgan
SECONDER:	Council Member Steven Wilcoxon
AYES:	Jennifer Symanns, Steven Wilcoxon, Nicole Brown, Lois Richardson, Anthony Morgan, Annie Somerville, and Brian Jones-Chance

- e) Resolution No. 2021-273, approving the 2022 amended City Council 2022 Meeting Schedule. (added)

Council Member Annie Somerville moved, seconded by Council Member Brian Jones-Chance, to approve Resolution No. 2021-273

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

The Ypsilanti City Council will hold Regular Meetings at 7:00 p.m. in the City Council Chambers, located at One South Huron Street, Ypsilanti, Michigan 48197, for the year 2022 on the following dates:

<u>January 11</u>	<u>July 12</u>
<u>January 25</u>	<u>July 26</u>
<u>February 1</u>	<u>July 28 (YPAC)</u>
	<u>August 9</u>
<u>February 15</u>	<u>August 23</u>
<u>March 1</u>	<u>September 13</u>
<u>March 15</u>	<u>September 27</u>
<u>April 5</u>	<u>October 4</u>
<u>April 19</u>	<u>October 18</u>
<u>May 10</u>	<u>November 1</u>
	<u>November 14</u>
<u>May 24</u>	<u>November 15</u>
<u>June 7</u>	<u>December 6</u>
<u>June 21</u>	<u>December 20</u>

The City of Ypsilanti encourages persons with disabilities to participate and will provide necessary reasonable auxiliary aids and services, such as signed for the hearing impaired, Limited English Proficiency (LEP) services, and audios of printed materials being considered at the meeting to individuals with disabilities upon two (2) days notice to the City. Individuals with disabilities requiring auxiliary aids or services should contact the City by writing or calling the following:

City Clerk's Office
One South Huron Street
Ypsilanti, Michigan 48197-5420

(734) 483-1100

All persons are welcome to attend. Additional information may be obtained at the City Clerk's Office and written comments may be sent to the City Clerk's Office at the above listed address.

RESULT:	CARRIED.
MOVER:	Council Member Annie Somerville
SECONDER:	Council Member Brian Jones-Chance
AYES:	Jennifer Symanns, Steven Wilcoxon, Nicole Brown, Lois Richardson, Anthony Morgan, Annie Somerville, and Brian Jones-Chance

- f) **Resolution No. 2021-274, authorizing the City Manager Frances McMullan to sign the opioid settlement agreement. (added)**

Council Member Brian Jones-Chance moved, seconded by Council Member Annie Somerville, to approve Resolution No. 2021-274

IT IS RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI that:

Whereas, The State of Michigan will receive a settlement in Opioid law suits and is sharing proceeds with Michigan municipalities that "opt in" to the settlement. The estimated funds that would come to the City of Ypsilanti over the next 18 years is \$160,484, and

Whereas, staff has researched the matter and registered for the City, and Settlement agreements will be coming in the next few days that will need to be signed for by the City, and

Whereas, there of short time limit to sign the agreements, (January 2, 2022) and the City will have a holiday shut down, City Council does hereby authorize the City Manager to sign the opioid settlement agreements, subject to the approval of the City Attorney, for and on behalf of the City of Ypsilanti.

RESULT:	CARRIED.
MOVER:	Council Member Brian Jones-Chance
SECONDER:	Council Member Annie Somerville
AYES:	Jennifer Symanns, Steven Wilcoxon, Nicole Brown, Lois Richardson, Anthony Morgan, Annie Somerville, and Brian Jones-Chance

- g) **Discussion of the City of Ypsilanti joining a lawsuit regarding an EMU Fraternity. (added)**

Council Member Brian Jones-Chance moved, seconded by Council Member Anthony Morgan, to authorize the city attorney to join in the lawsuit

RESULT:	CARRIED.
MOVER:	Council Member Brian Jones-Chance
SECONDER:	Council Member Anthony Morgan
AYES:	Jennifer Symanns, Steven Wilcoxon, Nicole Brown, Lois Richardson, Anthony Morgan, Annie Somerville, and Brian Jones-Chance

7 BOARD AND COMMISSION - NOMINATIONS

a) Human Relations Commissions (added)

Justin Harper
1730 Washtenaw
Ypsilanti, MI 48197

8 BOARD AND COMMISSION - LIAISON REPORTS

1. Police Advisory Commission. Meeting on Thursday. Thanked YPAC for bringing a resolution for expungement. Talked about the Commissioner annual report
2. Human Relations Commission. Working to gather information regarding application for council to discuss.
3. Arts Commission. None
4. Parks and Recreation Commission. Last meeting on the 14th. Discussion on new employees. Received over \$3,000 for coat raffle. Drive thru celebration for 60th Anniversary. Discussed annual report
5. Sustainability Commission. U of M Group working with commission for a year has a survey that was sent out.
6. Historic District Commission. None
7. Planning Commission. Discussed site plan for new marijuana facility that will go in the Farm Bureau building. Stated there are potential parking issues.
8. Zoning Board of Appeals None

9 LIAISON REPORTS

1. SEMCOG Update None
2. Washtenaw Area Transportation Study None
3. Urban County None
4. Ypsilanti Downtown Development Authority Stated there will be public voting for favorite Holiday storefront in Downtown Depot Town and W Cross
5. Friends of Rutherford Pool Stated the board is trying to figure out ways to increase donations

10 COUNCIL PROPOSED BUSINESS

Wilcoxon

- Stated he recently went on a ride along with the Police Department. He thanked the officers for their service.
- Informed Council about the initial Community Benefits Ordinance, and stated there will be a second on January 17th.

Morgan

- Reminded Council he is working pm how to retain talent in the city.
- Stated he is working to reengage the group discussing violence in the city.
- Congratulated Justin Harper on his nomination to the Human Relations Commission

Jones-Chance

- **Thanked DPS for handling a matter in the Park.**

Symanns

- **None**

Brown

- **Wished all a Happy Holiday.**

11 COMMUNICATIONS FROM THE MAYOR

- **Stated that the Men and women Working for a Change yearly dinner will be occurring over the holidays.**
- **Thanked those for donating to the Resiliency Center.**

12 COMMUNICATIONS FROM THE CITY MANAGER

- a) Update on Resolution to approve the Washtenaw Community College freestanding sign at Parkridge Community Center. **(Tabled December 7, 2021)**
- **Will be moving forward with freestanding sign at Parkridge Park Community Center. Staff is working with DPS and will do something similar to the signs that we have at other buildings and WCC is in agreement.**

13 COMMUNICATIONS

- a) Sustainability Commission Annual Report
- b) Parks and Recreation Annual Report
- c) 2022 Goal Session Dates - January 6th and 18th beginning at 6:00 pm

14 ADJOURNMENT

- a) Resolution No. 2021-275, adjourning the City Council Meeting.

Council Member Anthony Morgan moved, seconded by Mayor Pro-Tem Nicole Brown to adjourn the meeting at 8:11 PM. On a voice vote, the motion carried.

- b) Please click [here](#) to access the City Council Contact Form. This form can be used to submit any comments/concerns you might have about this agenda.



Resolution No. 2022-007
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

THAT, the following residents be appointed to the City of Ypsilanti Boards and Commissions as indicated below:

<u>NAME</u>	<u>BOARD</u>	<u>EXPIRATION</u>
Justin Harper 1730 Washtenaw Ypsilanti, MI 48197 New Member	Human Relations Commission	7/1/2025

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this 11 day of January 2022

#Resolution No. 2022-007



Resolution No. 2022-008
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

That the City Council of the City of Ypsilanti approved the attached amendment to the Ypsilanti Community Utility Authority, and authorize the Mayor and City Clerk to sign on behalf of the City, subject to the City Attorney.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this 11 day of January 2022

#Resolution No. 2022-008



Dedicated to Providing Top Quality, Cost Effective, and
Environmentally Safe Water and Wastewater Services to Our Customers

YPSILANTI COMMUNITY UTILITIES AUTHORITY

2777 STATE ROAD
YPSILANTI, MICHIGAN 48198-9112
TELEPHONE: 734-484-4600
WEBSITE: www.ycua.org

January 4, 2022

VIA EMAIL

CITY OF YPSILANTI
City Council
One South Huron Street
Ypsilanti, Michigan 48197-5400

CHARTER TOWNSHIP of YPSILANTI
Board of Trustees
7200 South Huron Street
Ypsilanti, Michigan 48198

Re: **Amendment to the YCUA Articles of Incorporation**

Dear City Council Members and Township Trustees:

The YCUA Board of Commissioners has expressed a desire to increase the \$50 stipend that is received by them for their attendance at our monthly Board meetings. Article VII of the YCUA Articles of Incorporation, adopted in 1974, provides that each Commissioner shall be paid the sum of \$50 for each meeting he or she attends, not to exceed 12 meetings per year. The attached proposed amendment to Article VII includes a provision to allow the Board to approve all future pay increases by resolution so that the Articles do not require amendment every time there is a pay increase. The proposed amendment would require a unanimous vote of the Board. The Board approved this amendment at their regular meeting on December 15, 2021.

Under Article XIX of YCUA's Articles of Incorporation, the proposed amendment requires adoption by the legislative body of each constituent municipality of which YCUA is composed, that being the Township of Ypsilanti and the City of Ypsilanti. If the amendment is adopted, the fact of the adoption shall be endorsed by the signatures of the Township's Supervisor and Clerk, and the City's Mayor and Clerk, respectively. The signed/endorsed amendment will then need to be published at least once in the Washtenaw County Legal News, and one printed copy of the amendment certified as a true copy by the recording officer of the Authority, with the date and place of publication, shall be filed with the secretary of state and the clerk of Washtenaw County.

Please place this item on your next upcoming agendas for consideration and forward the supporting material attached for use in considering the amendment request. If you have any questions, please contact me.

Sincerely,

LUTHER BLACKBURN, Executive Director
Ypsilanti Community Utilities Authority

LB/kks
Enclosures
cc w/encl.: YCUA Board of Commissioners

**AMENDMENT TO ARTICLE VII OF THE ARTICLES OF INCORPORATION OF
THE YPSILANTI COMMUNITY UTILITIES AUTHORITY**

WHEREAS, on September 3, 1974, the Articles of Incorporation of the Ypsilanti Community Utilities Authority ("Authority") were adopted by the Township of Ypsilanti and the City of Ypsilanti, a true and correct copy of which is attached hereto as **Exhibit A**;

WHEREAS, the last paragraph of Article VII of the Articles of Incorporation (**Exhibit A**, pg. 4) provides that the Commissioners serving on the Authority's Commission shall serve without compensation except that each Commissioner shall be paid the sum of Fifty (\$50.00) Dollars for each meeting which he may attend not in excess of twelve (12) meetings per year, and except that if any Commissioner shall serve as Secretary or Treasurer, or Secretary-Treasurer, he may receive for such services such reasonable compensation as may be fixed by the Commission, and further provided that each Commissioner shall be entitled to reimbursement for all expenditures made by him in carrying out his official duties, including a reasonable allowance for traveling expenses;

WHEREAS, pursuant to Article IX of the Articles of Incorporation, the Board of Commissioners of the Authority has unanimously approved, at a regular meeting of the Commission, a motion to amend the foregoing provisions of Article VII of the Articles of Incorporation to change how Commissioners are to be paid for serving on the Commission so that the Commissioners may now be compensated within limits set by a unanimous vote of the Board of Commissioners;

WHEREAS, pursuant to Article XIX of the Articles of Incorporation, the above-mentioned amendment may be made to Article VII of the Articles of Incorporation if adopted by the legislative body of each constituent municipality of which the Authority is composed.

NOW, THEREFORE, it is hereby provided that the last paragraph of Article VII of the Authority's Articles of Incorporation (**Exhibit A**, p.4), which states as follows, is deleted in its entirety:

The Commissioners shall serve without compensation except that each Commissioner shall be paid the sum of Fifty (\$50.00) Dollars for each meeting which he may attend not in excess of twelve (12) meetings per year, and except that if any Commissioner shall serve as Secretary or Treasurer, or Secretary-Treasurer, he may receive for such services such reasonable compensation as may be fixed by the Commission. Each Commissioner shall be entitled to reimbursement for all expenditures made by him in carrying out his official duties, including a reasonable allowance for traveling expenses.

and is replaced with the following:

The Commissioners may be compensated for their service on the Commission within limits set by a unanimous vote of the Commissioners. Each Commissioner shall be entitled to

reimbursement for actual and necessary expenditures made in carrying out his or her official duties, including a reasonable allowance for traveling expenses.

It is further provided that all other remaining provisions of Article VII of the Articles of Incorporation shall remain in full force and effect;

The foregoing Amendment to Article VII of the Authority's Articles of Incorporation was adopted by the Township Board of the Township of Ypsilanti, Washtenaw County, Michigan, at a regular meeting duly held on the _____ day of _____, 2022.

TOWNSHIP OF YPSILANTI

By: _____
Supervisor

By: _____
Township Clerk

The foregoing Amendment to Article VII of the Authority's Articles of Incorporation was adopted by the City Council of the City of Ypsilanti, Washtenaw County, Michigan, at a regular meeting duly held on the _____ day of _____, 2022.

CITY OF YPSILANTI

By: _____
Mayor

By: _____
City Clerk

EXHIBIT A

ARTICLES OF INCORPORATION

OF

YPSILANTI COMMUNITY UTILITIES AUTHORITY

These Articles of Incorporation are adopted by the incorporating municipal corporations for the purpose of creating an Authority under the provisions of Act 233, Public Acts of Michigan, 1955, as amended.

ARTICLE I

The name of this Authority is "Ypsilanti Community Utilities Authority." The principal office of the Authority will be located at 7200 S. Huron River Drive, Ypsilanti, Michigan, 48197.

ARTICLE II

The names of the municipal corporations creating this Authority are: The Township of Ypsilanti, and the City of Ypsilanti, which are located in the County of Washtenaw, Michigan, which are hereby designated as the constituent municipalities.

ARTICLE III

The purpose of this Authority is to acquire, own, improve, enlarge, extend and operate a sewage disposal system and a water supply system in accordance with the authorization of Act 233, Public Acts of Michigan, 1955, as amended. Further, that it is the foremost purpose of this Authority to serve residents of the Township and City efficiently, economically, and to reduce costs where reasonably possible, with a good quality and uniform system for water and wastewater treatment that will adequately serve their needs.

ARTICLE IV

This Authority is a body corporate with power to sue or to be sued in any court of this State. It shall be comprised of all of the territory embraced within the corporate boundaries of its constituent municipalities. It shall possess all of the powers granted by statute and by these Articles, and those incident thereto. The enumeration of any powers herein shall not be construed as a limitation upon its general powers unless the context shall clearly indicate otherwise. It shall have a corporate seal.

ARTICLE V

This Authority shall continue in existence perpetually or until dissolved by act of the parties or by law: Provided, However, that such Authority shall not be dissolved if such dissolution could operate as an impairment of any of its contracts.

ARTICLE VI

The fiscal year of the Authority shall commence on the first day of September in each year and end on the 31st day of August of the following year.

ARTICLE VII

The governing body of the Authority shall be a Commission, which shall be made up of three representatives from the Township of Ypsilanti and two representatives from the City of

Ypsilanti. Each Commissioner after the first Commission shall be appointed to serve for a term of three years beginning with the first day of January next following his respective appointment. Each Commissioner shall qualify by taking the constitutional oath of office and filing it with his respective Township of City Clerk. The first Commission shall be appointed by the legislative bodies of the constituent municipalities within twenty days after the effective date of the incorporation of this Authority and the terms thereof shall be staggered as follows: The first Ypsilanti Township representative and the first Ypsilanti City representative shall serve for initial terms of office expiring December 31, 1975; the second Ypsilanti Township representative and the second Ypsilanti City representative shall serve for initial terms of office expiring December 31, 1976; and the third Ypsilanti Township representative shall serve for initial terms of office expiring December 31, 1977. Successor Commissioners shall be appointed by the legislative bodies of the respective constituent municipalities on or before the 15th day of December of each year that a term of office expires. Within thirty days after the effective date of the incorporation of the Authority the members of the first Commission shall qualify by taking the constitutional oath of office and shall meet for the purpose of organization. At such organizational

meeting the Commission shall select a Chairman and Vice Chairman, who shall be members of the Commission, and a Secretary and a Treasurer, or a combined Secretary-Treasurer, who shall be members, or a member, of the Commission. Such officers shall serve until the organizational meeting of the following year, which shall be held annually on the first business day of February of each year, or until their respective successors shall be selected and qualify. No appointment to the Commission and no selection of an officer of the Commission shall be deemed to be invalid because it was not made within or at the time specified in these Articles. Any Commissioner may be removed at any time without cause and at the will of the legislative body of the municipality which such Commissioner represents.

The Commissioners shall serve without compensation except that each Commissioner shall be paid the sum of Fifty (\$50.00) Dollars for each meeting which he may attend not in excess of twelve (12) meetings per year, and except that if any Commissioner shall serve as Secretary or Treasurer, or Secretary-Treasurer, he may receive for such services such reasonable compensation as may be fixed by the Commission. Each Commissioner shall be entitled to reimbursement for all expenditures made by him in carrying out his official duties, including a reasonable allowance for traveling expenses.

ARTICLE VIII

In the event of a vacancy on the Commission the legislative body of the municipality selecting such representative shall fill the vacancy for the unexpired term. In event of a vacancy in any office of the Commission, such vacancy shall be filled by the Commission for the unexpired term. In case of the temporary absence or disability of any officer, the Commission may appoint some person temporarily to act in his stead except that in the event of the temporary absence or disability of the Chairman, the Vice Chairman shall so act.

ARTICLE IX

Meetings of the Commission shall be held at least monthly at such time and place as shall be prescribed by resolution of the Commission. Special meetings of the Commission may be called by the Chairman or any three Commissioners, by serving written notice of the time, place and purpose thereof, upon each Commissioner, personally, or by leaving it at his place of residence, at least twenty-four hours prior to the time of such meeting, or by depositing the same in a United States Post Office or mail box within the limits of the Authority, at least seventy-two hours prior to the time of such meeting, enclosed in a sealed envelope properly addressed to him at his home or office address, with postage fully prepaid. Special meetings of the Commission at which all members are present, or which all absent members receive

notice, shall be deemed to be valid even though no written notice thereof may be given as above specified. At least three members of the Commission shall be required for a quorum. The Commission shall act by motion, resolution or ordinance. For the passage of any resolution or ordinance providing for the issuance of bonds, or the execution of any contract wherein contractual payments are to be pledged as security for bonds, there shall be required a favorable vote of 3 Commissioners. For all other matters, a vote of a majority of the Commissioners present shall be sufficient for passage. The Commission shall have the right to adopt rules and by-laws governing its procedure which are not in conflict with the terms of any statute or of these Articles. The Commission shall keep a journal of its proceedings, which shall be signed by the Chairman. All votes shall be "yeas" and "nays", except that where the vote is unanimous it shall only be necessary to so state.

ARTICLE X

The Chairman of the Commission shall be the presiding officer thereof. Except as herein otherwise provided, he shall not have any executive or administrative functions other than as a member of said Commission. In the absence or disability of the Chairman, the Vice Chairman shall perform the duties of the Chairman. The Secretary-Treasurer shall be the recording officer of the Commission and shall

be custodian of the funds of the Authority and shall give to it a bond conditioned upon the faithful performance of the duties of his office. The cost of said bond shall be paid by the Authority. All monies shall be deposited in a bank or banks, to be designated by the Commission. The officers of the Commission shall have such other powers and duties as may be conferred upon them by the Commission.

The Commission shall prepare, adopt, and submit to the legislative bodies of the constituent municipalities ~~an annual budget~~ covering the proposed expenditures to be made for the organizing and operation of such Authority, and for the ~~necessary funds~~ required from each municipality for the next fiscal year beginning September 1st, such budget to be submitted on or before ~~August 1st~~ of each calendar year.

ARTICLE XI

The Authority shall possess all the powers necessary to carry out the purposes thereof and those incident thereto. It may acquire private property by purchase, lease, gift, devise or condemnation, either within or without its corporate limits, and may hold, manage, control, sell, exchange or lease such property. For the purpose of condemnation it may proceed under the provisions of Act

149, Public Acts of Michigan, 1911, as now or hereafter amended, or any other appropriate statute.

ARTICLE XII

The Authority and its constituent municipalities may enter into a contract or contracts providing for the acquisition, purchase, construction, improvement, enlargement, extension, operation and financing of a sewage disposal system and/or a water supply system, as authorized and provided in Act 233, Public Acts of Michigan, 1955, as amended. The Authority may enter into contracts with any non-constituent municipality, as authorized and provided in said Act, for the furnishing of sewer or water service from any facilities owned or operated by the Authority, which contract shall provide for reasonable charges or rates for such service furnished. No contracts shall be for a period exceeding forty years.

ARTICLE XIII

For the purpose of obtaining funds for the acquisition, construction, improving, enlarging or extending of a sewage disposal system and/or a water supply system, the Authority may, upon ordinance or resolution duly adopted by it, issue its negotiable bonds, secured by the contractual full faith and credit pledges of each contracting municipality, in accordance with and subject to the provisions of Act 233, Public Acts of Michigan, 1955, as amended.

ARTICLE XIV

The Authority may issue self-liquidating revenue bonds in accordance with the provisions of Act 94, Public Acts of Michigan, 1933, as amended, being Sections 141.101 to 141.139, inclusive, of the Compiled Laws of 1948, or any other act providing for the issuance of revenue bonds, which bonds shall be payable solely from the revenues of the sewage disposal and/or water supply system. The charges specified in any contract or contracts securing said bonds shall be subject to increase by the Authority at any time if necessary in order to provide funds to meet its obligations. Any contract authorized herein shall be for a period of not exceeding forty years.

ARTICLE XV

The Authority may employ such personnel and employees as it may consider desirable, and may retain from time to time the services of attorneys and engineers, and fix the compensation therefor.

ARTICLE XVI

The Authority shall cause an annual audit to be made of its financial transactions by a certified public accountant and shall furnish at least three copies thereof to each constituent municipality.

ARTICLE XVII

These Articles shall be published once in The Ypsilanti Press, which newspaper has general circulation within the limits of the Authority. One printed copy of such Articles of Incorporation, certified as a true copy thereof, with the date and place of publication shall be filed with both the Secretary of State and the County Clerk of the County of Washtenaw within thirty days after the execution thereof has been completed.

The Township Clerk of the Township of Ypsilanti, Michigan, is hereby designated as the person to cause these Articles to be published, certified and filed as aforesaid. In the event he shall be unable to act or shall neglect to act, then the City Clerk of the City of Ypsilanti, Michigan, shall act in his stead.

ARTICLE XVIII

This Authority shall become effective upon the filing of certified copies of these Articles, as provided in the preceding Article.

ARTICLE XIX

These Articles of Incorporation may be amended at any time so as to permit any municipality, as defined in the Act, to become a member of this Authority, if such amendment to and the Articles of Incorporation are adopted by

the legislative body of such municipality proposing to become a member, and if such amendment is adopted by the legislative body of each constituent municipality of which the Authority is composed. Other amendments may be made to these Articles of Incorporation at any time if adopted by the legislative body of each constituent municipality of which the Authority is composed. Any such amendment shall be endorsed, published, and certified, and printed copies thereof filed in the same manner as the original Articles of Incorporation, except that the filed and printed copies shall be certified by the recording officer of the Authority.

These Articles have been adopted by the several incorporatin municipalities, as hereinafter set forth in the following endorsements, and in witness whereof the Supervisor and Township Clerk of the Township of Ypsilanti and the Mayor and City Clerk of the City of Ypsilanti have endorsed thereon the statement of such adoption.

The foregoing Articles of Incorporation were adopted by the Township Board of the Township of Ypsilanti, Washtenaw County, Michigan at a regular meeting duly held on the 3rd day of September, 1974.

TOWNSHIP OF YPSILANTI

BY:

William H. Kley
Supervisor

BY:

Anna H. Stepp
Township Clerk

The foregoing Articles of Incorporation were adopted by the City Council of the City of Ypsilanti, Washtenaw County, Michigan, at a regular meeting duly held on the third day of September, 1974.

CITY OF YPSILANTI

BY: *[Signature]*

Mayor

BY: *[Signature]*

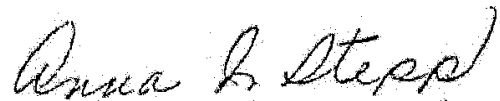
City Clerk

Legal Notice
Publish September 7, 1974

BE IT HEREBY RESOLVED by the Township of Ypsilanti that the attached Articles of Incorporation of the Ypsilanti Community Utilities Authority be declared adopted.

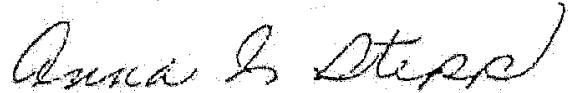
FURTHER BE IT RESOLVED, that the Supervisor and Clerk are hereby authorized to endorse hereon the statement of said adoption on behalf of the Township of Ypsilanti.

RESOLUTION DECLARED ADOPTED.



Anna J. Stepp
Ypsilanti Township Clerk

I hereby certify that the foregoing resolution was duly adopted by the Ypsilanti Township Board at a Regular Meeting held on September 3, 1974, at 7200 South Huron River Drive, Ypsilanti, Michigan.



Anna J. Stepp
Ypsilanti Township Clerk



REQUEST FOR LEGISLATION

TO: Mayor and City Council
FROM: Andrew Hellenga
DATE: January 11, 2022
SUBJECT: Fireworks Display Permit Application from Eastern Michigan University

DESCRIPTION:

Fireworks Display Permit Application from Eastern Michigan University

SUMMARY:

A request for a Fireworks Display Permit was received from DeAnne Anderson of High Tech Special Effects, on behalf of the Skillet Winter Jam Tour 2022. The applicant is requesting indoor pyrotechnics at the EMU Convocation Center, 799 N. Hewitt Road, on January 30, 2022.

Attached is proof of public liability insurance for the proposed display with coverage set at \$4,000,000 and with the City being added as an additional insured.

The City Clerk's office recommends approval of the application subject to inspection and approval of the Ypsilanti Fire Department.

CITY MANAGER APPROVAL: _____ COUNCIL AGENDA DATE: _____

CITY MANAGER COMMENTS: _____

FISCAL SERVICES DIRECTOR APPROVAL: _____



Resolution No. 2022-009
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

WHEREAS, DeAnne Anderson of High Tech Special Effects, on behalf of the Skillet Winter Concert Tour 2022 has applied for a fireworks permit to allow indoor pyrotechnics at the Eastern Michigan Convocation Center; and

WHEREAS, High Tech Special Effects will operate the display and has obtained public liability insurance in the amount of \$4,000,000 and has added the City of Ypsilanti as an additional insured.

NOW THEREFORE BE IT RESOLVED THAT the Ypsilanti City Council approves indoor pyrotechnics to be displayed on January 30, 2022 at the EMU Convocation Center, subject to the inspection and approval of the Ypsilanti Fire Department.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this 11 day of January 2022

#Resolution No. 2022-009



Skillet / Winterjam Tour 2022

The documentation contained in this package has been compiled to provide you with all the required information necessary for the approving of a pyrotechnic / flame permit for the effects being provided and used on this tour. The documentation provided and the operation of the tour meets or exceeds NFPA 1126 and NFPA 160 requirements.

The pyrotechnic operator in charge are as follows:

Mike Kinard Cell - 321 323-6814

Email - merlyn1005@hotmail.com

We would like to request that the demonstration / walk-through be scheduled at:

Demo - 2pm (every day)

SKILLET set times are as follows:

Weekday Shows: Thursday and Friday - Start 9:59pm

Weekend Shows: Sat and Sunday - Start 8:59pm

If you have any questions or concerns, please feel free to contact High Tech Special Effects at the numbers listed below

President

Randy Bast

Office - 901 850-5522

Cell - 901 481-1741

Email: randybast@bellsouth.net

Tour Coordinator

Deanna Anderson

Office - 901 235-7211

Cell - 760 985-1149

Email: deannaandersonhightechsfx@yahoo.com



The point of on-site assembly of pyrotechnic devices & the manner and place of storage of the pyrotechnic materials and devices

All handling of pyrotechnic materials and devices shall be by a trained Pyrotechnic Operator. All pyrotechnic materials shall be in a locked, secure room to be provided by either the venue or Promoter for each event. Temporary Day storage of pyrotechnic materials will be in a type 3 magazine / "Day Box".

Fire Extinguishers

We will have 2 - CO2 Fire Extinguishers and 2 - Pressurized H2O Fire Extinguisher on site. The Fire Extinguishers shall be placed on each side of the stage wings or as the Authority Having Jurisdiction sees fit.

Pyrotechnic Devices

The Pyrotechnic Operator shall have a clear line of sight to all Pyrotechnic devices and to all performers on stage. He also has the unquestioned authority to not fire any pyro cues at any time if he or the Authority Having Jurisdiction determines it is unsafe to do so. Final placement or clearance issues shall have to be addressed by the Pyrotechnic Operator and Authority Having Jurisdiction on-site.

Safety Briefing

The Pyrotechnic Operator will cover the pyro effects being used and the placement with all working personnel and band members in his safety briefing and effects demonstration.



Skillet - Winterjam Tour 2022

Table of Contents

Section 1 - Effects List

Section 2 - Effect Plots

Section 3 - Experience / Qualifications

Licenses / Compliance

Event Personnel

Company Resume

Section 4 - MSDS / Technical Information

Section 5 - Flame Effects Plans / Technical Information

Section 6 - Insurance



Section 1 - Effects List



Effects List

All close proximity effects will be designed to produce little or no fallout. All close proximity effects will be manufactured by Next Fx. All effects will be in accordance to N.F.P.A. 1126 and N.F.P.A. 160.

06 - G Flames w/ forklift tanks or Canister Fluid

03 - Report Mortars x 2

03 - Gerb Spinners w/ 2 - 10sec x 10' gerbs per spinner

Provided by / Maintained By / Owned by: Skillet

06 - Sparkular Fountain Machines

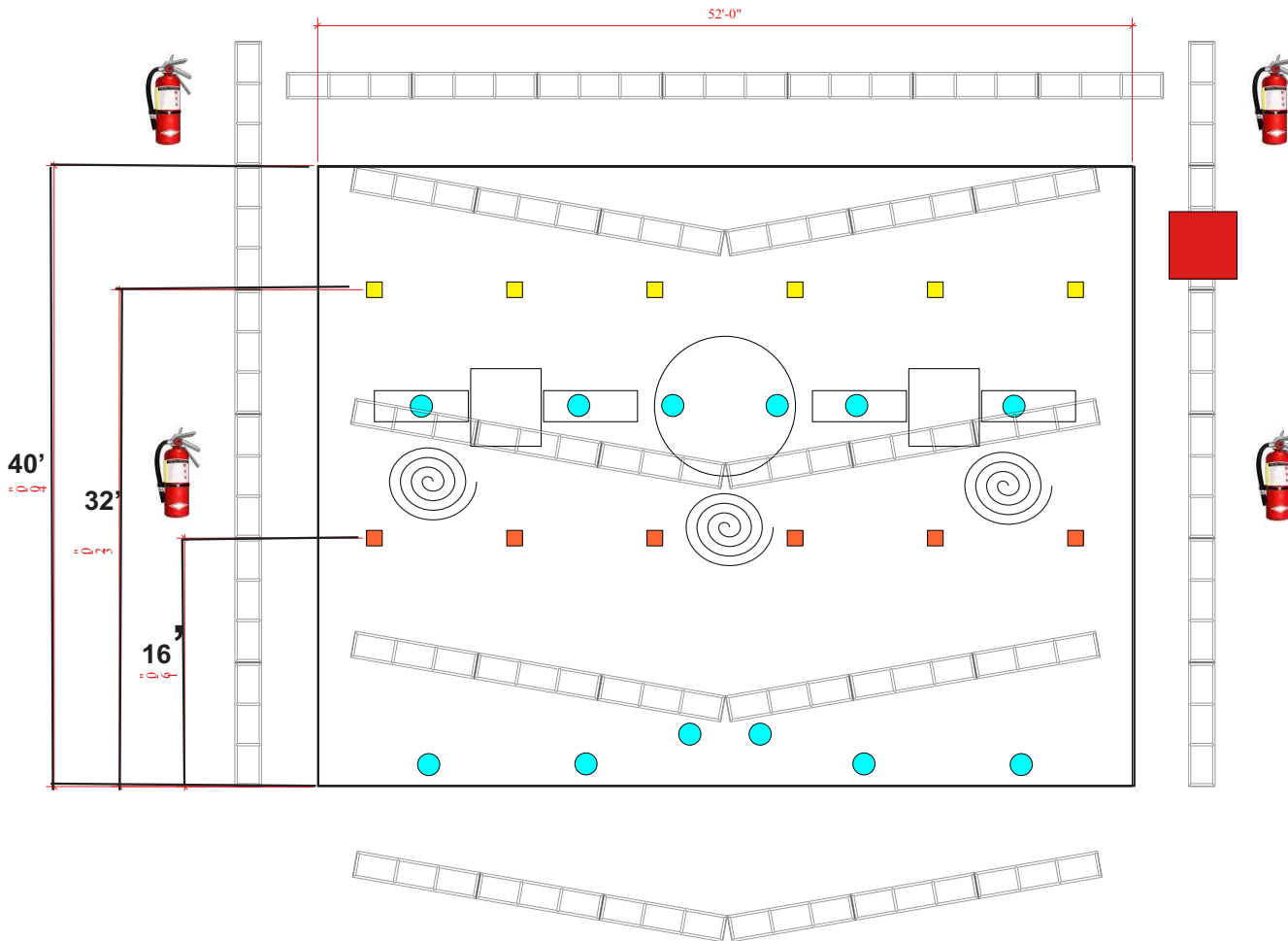
Note - There will be a minimum of 4 fire extinguishers present for the show, as well as a trained Fire Inspector

If you have any questions or concerns, please contact me at the numbers listed below.

Sincerely,
Randy Bast
High Tech Special Effects



Section 2 - Effect Plots / Maps



**SKILLET WJ2022
PYRO PLOT**

PROD MANAGER:

SCOTT FLANNERY

+1.718.644.3637

scottrock2000@gmail.com

LIGHTING DESIGNER:

JOHN HANSEN

john@enhansendesign.com

DRAWN BY:

SCOTTY ROCK

DATE:

13-DEC-2021

DRAWING #:

001

This drawing and all copies remain
the property of
SKILLET TOURING LLC

- PROPANE
- CRYO
- SPARKLERS
- CONCUSSION
-  Spinner



Section 3: Experience / Qualification

HIGH TECH SPECIAL EFFECTS

SPECIAL EVENTS

KUHN WEDDING
FISHER WEDDING
HORSESHOE CASINO 15TH ANNIVERSARY
MUELLER WEDDING
MEMPHIS HARD ROCK GUITAR DROP NEW YEARS EVE
GRAND OPENING - ROCK A BILLY HALL OF FAME
GERMANTOWN BAPTIST CHURCH
BIG BROTHERS BIG SISTERS SPORTS BALL
TENNESSEE FIELDS GRAND OPENING
MEMPHIS AIRPORT CRASH SIMULATION
55TH PRESIDENTIAL INAUGURATION
MEMPHIS ARTS COUNCIL
STEVEN SEAGAL CHRISTMAS EVENT
SAM'S TOWN CASINO NEW YEARS EVE
HOLIDAY INN - PRIVATE PARTY
MEMPHIS ZOO
WOLFCHASE MALL
CATALYST - ATLANTA
FEDEX FORUM GRAND OPENING
KERRY EDWARDS CAMPAIGN
ROBBIE KNEIVEL
BRIARCREST AUCTION
MEMPHIS MOTOR SPORTS PARK ECONOMIC IMPACT
BEALE STREET NEW YEAR'S EVE
WINTERFEST
JERRY LAWLAR BIRTHDAY BASH
75TH ANNIVERSARY OF THE ORPHEUM THEATER
MEMPHIS IN MAY WORLD CHAMPIONSHIP BARBEQUE
FESTIVAL
BRIDGES GROUND BREAKING
MEMPHIS FIRE DEPARTMENT TRAINING
GRAND CASINO NEW YEARS EVE EVENT
MEMPHIS JEWISH COMMUNITY CENTER
GROUND BREAKING CEREMONIES ELVIS RANCH
LENNOX LEWIS PARADE / RECEPTION
WILSON WEDDING
KOZMIC LASER / WEDDING EVENT
BROOKS MUSEUM
ISSAC HAYES CLUB NEW YEARS EVE
THE SHELL NEW YEARS EVE
PEABODY PLACE TREE LIGHTING
BLUES BALL
TRINITY BAPTIST CHURCH
SOULSVILLE GROUND SHAKING
LAUSANNE COLLIGATE SCHOOL 75TH ANNIVERSARY
NEW YEAR'S EVE - BALLROOM AT GOLD STRIKE CASINO
CITY OF WEST MEMPHIS TREE LIGHTING
HANDY PARK AMPHITHEATER GRAND OPENING
PORTER - LEATH CHILDREN CENTER
THE MYSTIC SOCIETY OF MEMPHI
JOE'S LIQUOR - SPUTNIK SIGN
COOK CONVENTION CENTER DEMOLITION
SOUTHERN GOVERNOR'S CONFERENCE
NUTCRACKER BALL
WMC-TV COUNTDOWN ON BEALE - NEW YEARS EVE
HOLLYWOOD CASINO TITANIC GRAND OPENING
DONNINGTON FESTIVAL - ENGLAND
MISS HAWAIIAN TROPIC FINALS

SPORTING EVENTS

WORLD OF OUTLAWS - LOWES FOOD WORLD FINALS
RICHMOND INTERNATIONAL RACEWAY - NASCAR
WORLD OF OUTLAWS 2010
DIAMOND JAXX BASEBALL TEAM
MAJOR LEAGUE OF MONSTER TRUCKS
BRIARCREST FOOTBALL 2007 SEASON
GERMANTOWN FOOTBALL 2007 SEASON
CONFERENCE USA BASKETBALL
BALL GAMES OF AMERICA
PORTLAND TRAIL BLAZERS MASCOT
COACHES VS CANCER TOURNAMENT
MEMPHIS MOTOR SPORTS PARK - NASCAR BUSCH
RACE AND NASCAR CRAFTSMAN TRUCK RACE
NHRA MID SOUTH NATIONALS
ROY JONES JR. VS GLENN JOHNSON
WORLD TAE KWON DO CHAMPIONSHIPS
SPORTS FIGHTING USA
SUPER BOWL PRE GAME SHOW
MOTORFEST - MEMPHIS MOTOR SPORTS PARK
MEMPHIS GRIZZLIES SEASON
MEMPHIS GRIZZLIES PLAYOFFS
50TH ANNIVERSARY OF SPORTS ILLUSTRATED
SPRING FLING AT AUTOZONE PARK
JCC MACCABI GAMES OPENING CEREMONIES
AXA LIBERTY BOWL
SNICKERS U.S. YOUTH SOCCER CHAMPIONSHIPS
THE MEMPHIS RIVERKINGS
LEBONHEUR ALL STAR SOCCER GAME
KELE WORLD CHALLENGE AT KNOXVILLE
SPEEDWAY
SNOWDEN GROVE PARK
MIKE ROSE SOCCER COMPLEX
MEMPHIS XPLOERS ARENA FOOTBALL
MEMPHIS MERCURY SOCCER TEAM
THE MEMPHIS REDBIRDS
THE MEMPHIS REDBIRDS PLAYOFF SERIES 2000
THE MEMPHIS REDBIRDS FIREWORK DISPLAYS
SHREVEPORT CAPTAINS NAME CHANGE
SHREVEPORT SWAMP DRAGONS
MEMPHIS HOUN' DAWGS HOME OPENER
OLE MISS BASKETBALL
OLE MISS FOOTBALL TEAM
BIG RIVER CHUTE OUT BULL RIDING
SUPERBULL RODEO
HARDING ACADEMY FOOTBALL
MEMPHIS TIGERS FOOTBALL HOME GAMES
MEMPHIS TIGERS BASKETBALL HOME GAMES
UNIVERSITY OF MEMPHIS - MIDNIGHT MADNESS
UNIVERSITY OF MEMPHIS - MEMPHIS MADNESS
UNIVERSITY OF MEMPHIS TIGERS MASCOT
SWEET SIXTEEN BASKETBALL TOURNAMENT
NASHVILLE NOISE BASKETBALL TEAM
POWER PRO WRESTLING - MEMPHIS
DESOTO CENTRAL HIGH SCHOOL BASKETBALL
MEMPHIS WRESTLING

CONCERTS & TOURS

WINTERJAM 2011 TOUR - RED / NEWSONG
TOBY MAC / SKILLET 2010 TOUR
WINTERJAM 2010 TOUR FEATURING THRID DAY
MARTINA MCBRIDE 2010 SHINE ALL NIGHT TOUR
NEW SONG 2009 CHRISTMAS TOUR
MARTINA MCBRIDE 2009 CHRISTMAS TOUR
ALIVE FESTIVAL FEATURING RED
WINTERJAM 2009 TOUR FEATURING TOBY MAC
TOBY MAC NORTH AMERICAN TOUR
HAWK NELSON NORTH AMERICAN TOUR
311
EGYPT CENTRAL
JOAN RED
DAVID ALLAN COE - SAM'S TOWN CASINO
WILLIE NELSON - SAM'S TOWN CASINO
MUCK STICKY - NEW DAISY THEATER
DAVID GEST ALL STAR HOLIDAY EXTRAVAGANZA
JEREMY CAMP
SALIVA - MEMPHIS IN MAY
MARTINA MCBRIDE CHRISTMAS TOUR
LORRIE MORGAN CHRISTMAS TOUR
BATTLE OF THE BANDS FEATURING TYRESE AND GINUWINE
SALIVA AT NEW DAISY THEATER
NEWSBOYS NORTH AMERICAN TOUR
NEWSBOYS AUSTRALIAN TOUR
LONDON SYMPHONY ORCHESTRA
BOBBY WOMACK
LEE GREENWOOD AT THE GRAND CASINO
FINIS AT GOLD STRIKE CASINO
WASP NORTH AMERICAN TOUR
BREAKING POINT
GABBY JOHNSON BAND
BRETT DANIELS AT GOLD STRIKE CASINO
MARTINA MCBRIDE AT BLUESVILLE
JERRY LEE LEWIS AT SAM'S TOWN CASINO
92.9 WMFS CHRISTMAS PARTY - BROKEN AND EVERLAST
THE CREATION FESTIVAL
AUDIO ADRENALINE NORTH AMERICAN TOUR
FESTIVAL CON DIAS TOUR
PLAYER'S INC FEATURING MAC REDD
DRU HILL AT THE MID-SOUTH FAIR
GAP BAND NORTH AMERICAN TOUR
92.9 WMFS CHRISTMAS PARTY FEATURING GODSMACK,
SALIVA AND KINGS X

FIREWORK DISPLAYS

ISR GROUP - FIREWORKS
BEALE STREET MERCANTS ASSOC. NEW YEARS EVE
CLARK TOWER NEW YEARS EVE FIREWORKS
CAOHOMA COMMUNITY COLLEGE
BEALE STREET MERCHANTS ASSOC. - JULY 4
TURF GRASS PRODUCERS INTERNATIONAL
STEVEN SEGAL PRIVATE PARTY
MEMPHIS REDBIRDS SEASON FIREWORKS
MEMPHIS COUNTRY CLUB - JULY 4 FIREWORKS
WINDYKE COUNTRY CLUB
LAKELAND JULY 4 FIREWORKS
WALNUT GROVE LAKE - JULY 4 FIREWORKS
MEMPHIS TIGERS FOOTBALL HOME GAMES
FAITH BAPTIST CHURCH - JULY 4 FIREWORKS
OLD NATCHEZ COUNTRY CLUB - JULY 4 FIREWORKS
PICKWICK DAM / HARDIN COUNTY TOURISM - JULY 4
CITY OF MILLINGTON - JULY 4 FIREWORKS
CITY OF BATESVILLE - JULY 4 FIREWORKS
CITY OF SOUTHAVEN - JULY 4 FIREWORKS
CITY OF BARTLETT - JULY 4 FIREWORKS
CITY OF GERMANTOWN - JULY 4 FIREWORKS
CITY OF MUNFORD - JULY 4 FIREWORKS
CITY OF FULTON JULY 4 FIREWORKS
CITY OF PEARL JULY 4 FIREWORKS
CITY OF GREENWOOD JULY 4 FIREWORKS
CITY OF OLIVE BRANCH JULY 4 FIREWORKS
CITY OF MONROE JULY 4 FIREWORKS
CITY OF GREENWOOD CHRISTMAS PARADE
CITY OF CLARKSDALE CHRISTMAS PARADE
TOWN OF SOMERVILLE FIREWORKS DISPLAY
TOWN OF COLLIERVILLE FIREWORKS DISPLAY
CITY OF CLARKSDALE SUMMER FAIR
SOUTHLAND MALL TREE LIGHTING
COLUMBUS AIR FORCE BASE JULY 4 FIREWORKS
BLUES BALL - FIREWORKS DISPLAY
ELLENDALE CHURCH FIREWORKS
NATCHITOCHE FIREWORKS
BOOMTOWN CASINO SIGN REVEAL - FIREWORKS
WORLD OVERCOMERS CHURCH FIREWORKS
CHUCK BOLTON PRIVATE PARTY FIREWORKS
BILL DUNAVANT PRIVATE PARTY FIREWORKS
UNIVERSITY OF KANSAS FIREWORKS
PERFORMA ENTERTAINMENT - FIREWORKS DISPLAY
MEMPHIS IN MAY / SUNSET SYMPHONY
CITY OF MADISON - JULY 4

CORPORATE SHOWS

SHERWIN - WILLIAM
MARK THOMSON PRODUCTIONS / SAFETY ENGINEERS
IMPACT AT FORD FIELD
SNAP ON TOOLS DEALER MEETING
MERRY MAIDS CONVENTION - MEMPHIS
BODYSHOPMALL.COM WEBSITE LAUNCH - MEMPHIS
PANACHE PRODUCTIONS - ADAMS MARK HOTEL
SOUTHLAND MALL TREE LIGHTING
MEMPHIS VISITOR AND CONVENTION BUREAU MEETING
SEDGWICK BUILDING GRAND OPENING
AMWAY CONVENTION - TAMPA, NORTH CAROLINA
FEDEX "RUMBLE ON THE RAMP"
MARIAH BOATS DEALER MEETING - MEMPHIS
CORTEL CO SYSTEMS DEALER MEETING - LA
ORGILL INC. DEALER MEETING - MEMPHIS
BELL EQUIPMENT PRODUCT LAUNCH - MEMPHIS
TIME WARNER COMMUNICATIONS PRODUCT LAUNCH
FEDEX BUILDING GRAND OPENING - MEMPHIS
TVS SUZUKI MILLENNIUM SHOW - INDIA
MUTUAL LIFE BUILDING GRAND OPENING- KITCHENER

SUPPORT SERVICES

GET MOTIVATED SEMINAR 2011
NICKELBACK TOUR 2010- ALL TENNESSEE DATES
STRIKEFORCE / CBS
STAR WARS TOUR 2010
MILEY CYRUS TOUR 2009
THE WIZARD OF OZ - ORPHEUM THEATRE
KISS TOUR 2010
SKILLET - NASHVILLE SHOW 2010, 2009
WIZARD OF OZ - TPAC 2009
ACDC TOUR 2009 - ALL TENNESSEE DATES
NICKELBACK TOUR 2008- ALL TENNESSEE DATES
MONSTER TRUCKS
DISNEY ON ICE
MONTY PYTHON'S "SPAMALOT" 2008 ALL TENNESSEE DATES
HANNAH MONTANA THE MOVIE
HANNAH MONTANA "BEST OF BOTH WORLDS" TOUR 2008 -
ALL TENNESSEE DATES

MOVIES - VIDEOS - TELEVISION

MOVIE "SCOURNED"
MOVIE "AFTER"
MOVIE "WAY FAR GONE"
HR BLOCK COMMERCIAL
WRAP PARTY FOR THE MOVIE "THE HELP"
CELLULAR SOUTH "YALL VS US"
SKILLET VIDEO - "HERO"
KINGS OF LEON VIDEO - "NOTION"
DIERKS BENTLEY VIDEO - "FEEL THAT FIRE"
MOVIE "JUNKYARD DOG"
SPEED CHANNEL SEASON FINALE - "BLOW IT UP"
KRISTYLE VIDEO - "RIDE IT"
CLAY DAVIDSON VIDEO - "I CAN'T LIE TO ME"
TITAN / GOODYEAR TIRE COMMERCIAL
CBS TV MOVIE - "ELVIS LIVES"
LINCOLN / MERCURY INTERNET COMMERCIAL
HBO
SALIVA VIDEO - "CLICK CLICK BOOM"
MISS TENNESSEE PAGEANT
PEPSI COMMERCIAL
VH-1 SPECIAL
DOVE AWARDS
MORGAN - KEEGAN TV COMMERCIAL
MTV MUSIC AWARDS
DISCOVERY CHANNEL DOCUMENTARY
THRILL OF A LIFE TIME T.V. SPECIAL
RON MANN FILM - THE TWIST
RONNIE HAWKINS T.V. DOCUMENTARY
PETER NOONE OF HERMAN'S HERMITS T.V. SPECIAL

THEATER PRODUCTIONS

ALICE IN WOONDERLAND - BRIARCREST
LES MISERABLES - BRIARCREST
LES MISERABLES - DESOTO YOUTH THEATER
SLEEPIN BEAUTY - PLAY HOUSE ON THE SQUARE
BEAUTY AND THE BEAST - BRIARCREST
PETER PAN - BALLET ARTS OF JACKSON
KNOXVILLE BALLET
THE WIZARD OF OZ - DESOTO YOUTH THEATRE
UNIVERSITY THEATRE - OLE MISS
THE FORD THEATER AT OLE MISS
THE NUTCRACKER BALLET - ORPHEUM THEATER
THE WIZARD OF OZ - HARREL THEATER
THE WIZARD OF OZ - BRAIRCREST
PASSION PLAY - BELLEVUE BAPTIST CHURCH

INSTALLATIONS

AUTOZONE PARK - WIRELESS CRYOGENIC SYSTEM
AUTOZONE PARK - WIRELESS PYROTECHNIC SYSTEM
NEW LIFE CHURCH - LIGHTING SYSTEM
MEMPHIS GRIZZLIES - PYRO SYSTEM FOR MASCOT
MEMPHIS GRIZZLIES - PYRO SYSTEM
PORTLAND TRAIL BLAZERS MASCOT - CRYOGENIC
SYSTEM

Florida DRIVER LICENSE 

1a ID **K563-542-63-365-0** 1b CLASS **E**

2a NAME **KINARD**
2b MICHAEL BOYD
3a 801 WICKHAM LAKES DR
3b MELBOURNE, FL 32940-2233

7a DOB **10/05/1963** 7b SEX **M** 7c SAFE DRIVER

1b EXP **10/05/2026** 16 HGT **6'-00"**

2a REST **NONE** 2b END **NONE**

4a ISS **08/14/2018**
4b DD **X631808143422**

 Operation of a motor vehicle constitutes consent to any sobriety test required by law.



MICHAEL KINARD

4762 Crew Circle Apt.#3 • West Melbourne, FL 32940 • (321)-323-6814 • merlyn1005@hotmail.com

THEATRICAL TOURING TECHNICIAN/ LOGISTICS COORDINATOR

Theatrical Touring Technician experienced working in a fast-paced environment with strong organizational, interpersonal and technical skills. Maintaining excellent communication standards, problem resolution abilities and a high level of confidentiality.

Capabilities:

- Personnel Supervision
- Administrative Office Duties
- On-Site Fabrication
- Show Control Systems
- Stage Management
- Detail Oriented

COMPUTER SKILLS

Microsoft Office/ Word, Excel, Publisher and Power Point, Sonar X Platinum Media Applications, Media Show Software Designer Pyrotechnic/Fireworks Programming Show Design Software, DMX Control Software. Smart Phone Logistics Applications

Professional Experience:

March 2020 to Present

Aerial Art Incorporated P.O. Box 411755, Melbourne, Florida 32941 PH. 321-323-6814

Logistics Coordinator/Special Effects Technician/Carpenter

Foreigner – Greatest Hits Tour 2021

Package and Equipment Logistics Pickup & Delivery Coordination

Responsibilities: Implement Special Effects Stage Design, Installation and maintenance of pyrotechnic devices used for touring event productions, firing computerized/show control systems.

Installation of touring stage setup, crew supervision.

Pyrotechnic Product and Equipment Logistics Coordination.

January 2020 to March 2020

Hi-Tech Special Effects Inc. 14905 Hwy 64 Somerville, TN 38068 (901) 235-7211

Special Effects/Propane Flame Technician – Brantley Gilbert Fire It Up, US Tour 2020

Aerial Art Inc. P.O. Box 411755 Melbourne, Florida 32940 PH 321-323-6814

Responsibilities: Implement Pyrotechnic/Special FX Stage Design, Installation and maintenance of pyrotechnic devices used for the tours, firing computerized/show control systems, Installation of touring stage setup, crew supervision. Pyrotechnic Product and Equipment Logistics Coordination.

March 2019 to November 2019

SGPS Show Group Production Services, 2845 Coleman Street, N. Las Vegas, Nevada 89032 PH. 702-270-4240

Lead Production Carpenter/Stage Manager – Carrie Underwood Cry Pretty USA Tour 2019

Responsibilities: Installation of touring stage setup, crew supervision

October 2016 to January 2019 - Independent Contractor

Aerial Art Incorporated P.O. Box 411755, Melbourne, Florida 32941 PH. 321-323-6814

Special Effects Technician/Carpenter - Foreigner Juke Box Hero USA Tour 2018

Responsibilities: Implement Pyrotechnic/Special Effects Stage Design, Installation and maintenance of pyrotechnic devices used for the tour, firing computerized/show control systems.

Installation of touring stage setup, crew supervision. Pyrotechnic Product and Equipment Logistics Coordination.

Production Carpenter – Rolling Stones No Filter European Tour (May – July 2018)

Team Tours Companies, 901 W. Alameda Avenue Suite 100, Burbank CA. 91506-2801 PH. 818-558-3261

Responsibilities: Installation of touring stage setup, crew supervision

Aerial Art Incorporated P.O. Box 411755, Melbourne, Florida 32941 PH. 321-323-6814

Special Effects Technician/Carpenter

Foreigner 40 Anniversary USA Tour 2017, Scorpions Crazy World Tour USA Tour 2017, Snoop Dogg USA Tour 2017

Responsibilities: Implement Pyrotechnic/Special FX Stage Design, Installation and maintenance of pyrotechnic devices used for the tours, firing computerized/show control systems, Installation of touring stage setup, crew supervision. Pyrotechnic Product and Equipment Logistics Coordination.

February 2015 to October 2016 - Independent Contractor

Dirty Deeds LTD. C/O Prager & Metis. 675 3rd Ave., New York N.Y. 10017 PH. 212-972-7555

Production Carpenter – AC/DC Rock or Bust World Tour 2015/2016

Responsibilities: Installation of touring stage setup. special effects setup, crew supervision

November 2014 to February 2015 - Independent Contractor

SGPS Show Group Production Services, 2845 Coleman Street, N. Las Vegas, Nevada 89032 PH. 702-270-4240

Lead Production Carpenter – Foo Fighters South America / Australian Tour 2014/2015

Responsibilities: Installation of touring stage setup, crew supervision

May 2014 to July 2014 - Independent Contractor

Counter Productions, C/O Prager & Metis. 675 3rd Ave., New York N.Y. 10017 PH. 212-972-7555

Production Special Effects Technician/Carpenter – Foreigner Sound of Summer Tour USA 2014

Responsibilities: Special Effects Setup, Installation of touring stage setup, crew supervision

February 2014 to March 2014 - Independent Contractor

Promotours BV 566 Herengracht, Amsterdam The Netherlands

Production Carpenter – Rolling Stones 14 On Fire, Far East/Japan Tour 2014

Responsibilities: Installation of touring stage setup, crew supervision

July 2013 to August 2013 - Independent Contractor

Here We Go Again Inc., 10960 Wilshire Blvd. Ste. 2150, Los Angeles, CA 90024-3726 PH. 310-914-1600

Production Carpenter – Black Sabbath 13 Tour USA 2013

Responsibilities: Installation of touring stage setup, crew supervision

April 2013 to June 2013 - Independent Contractor

Promotours BV 566 Herengracht, Amsterdam The Netherlands

Production Carpenter – Rolling Stones European GRR Europe Tour 2013

Responsibilities: Installation of touring stage setup, crew supervision

January 2013 – April 2013 - Independent Contractor

Team Tours Incorporated, 2950 N. Hollywood Way Burbank CA. 91505-1072. 818-558-3261

Production Carpenter - Maroon 5 Tour USA 2013

Responsibilities: Installation of touring stage setup, crew supervision

November 2012 – December 2012 - Independent Contractor

Promotours BV 566 Herengracht, Amsterdam The Netherlands

Production Carpenter – Rolling Stones Fifty Years and Counting Tour 2012

Responsibilities: Installation of touring stage setup, crew supervision

July 2012 – October 2012 - Independent Contractor

SHPANTS INC. P.O. Box 340020, Nashville, TN 37203-0020

Production Carpenter – Kelly Clarkson Stronger World Tour 2012

Responsibilities: Installation of touring stage setup, crew supervision

May 2012 – July 2012 - Independent Contractor

Stage Effects & Engineering Inc., 608 General Chennault St. SE, Albuquerque, NM 87123 PH. 505-275-5441

Special Effects Technician/Carpenter Ozzy Osbourne & Friends European Tour 2012

Responsibilities: Implement Pyrotechnic/Special FX design for the tour.

Installation and maintenance of pyrotechnic devices used for the tour, firing computerized/show control systems.

Installation of touring stage setup, crew supervision. Pyrotechnic Product and Equipment Logistics Coordination.

January 2012 – April 2012 - Independent Contractor

SHPANTS INC. P.O. Box 340020, Nashville, TN 37203-0020

Production Carpenter – Kelly Clarkson Stronger World Tour 2012

Responsibilities: Installation of touring stage setup, crew supervision

December 2011 – January 2012 - Independent Contractor

Live Nation Concerts: Livenation.com

Lead Production Carpenter, Prince Canadian Tour 2011

Responsibilities: Supervision & Installation of touring stage setup, crew supervision, logistics coordination

April 2011 – November 2011 - Independent Contractor

RM Enterprises Inc, P.O. Box 13345, San Juan, Puerto Rico 00908-3345

Production Carpenter/Special FX Technician – Ricky Martin MAS World Tour 2011

Responsibilities: Installation of touring stage setup, and special effects setup, crew supervision, logistics coordination.

EXPERIENCE HIGHLIGHTS

Theatrical Touring Technician

- Using Computerized Automation Control Systems for Set Pieces and Staging Elements
- Installation of Touring Stage Setup
- Production Logistical Coordination
- Carpentry, On-Site Stage Element Modification/Fabrication, Crew Supervision, Equipment Logistics Coordination

Special Effects Touring Technician

- Using Computerized Automation Control Systems for Pyrotechnic Firing Systems, Equipment and Pyrotechnic Explosives
- Supervision and Maintenance of Pyrotechnics and Special Effects and Fireworks
IE: Custom Pyrotechnic Control Systems & Products, Propane & Cannister Based Fuel Flame Machines, Low Fog (LSG) Machines, LED (Co2) Cyro Jets, Confetti & Confetti Streamer Systems, DMX Control Systems
- Administrative Coordination, Pyrotechnic Products, Permit & Licensing, Equipment Logistics Coordination.
- Crew Supervision, BATF Explosive License and Insured.

Awards

1996 Montreal International Fireworks Competition (Silver Medal Award)

EDUCATION & TRAINING

Basic Studies AIX/UNIX Computer Operating Language, Columbia University, New York, NY

Brevard Community College, Brevard County, FL

References/Credit List: Furnished upon request



U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives
Federal Explosives Licensing Center
244 Needy Road
Martinsburg, West Virginia 25405

901090: CRR/FLS
5400
File Number: **1FL00997**

01/14/2020

SUBJECT: **RESPONSIBLE PERSON LETTER OF CLEARANCE** for:

MICHAEL B KINARD

OWNER AND PRESIDENT
(321)368-4669

801 WICKHAM LAKES DRIVE
MELBOURNE, FL 32940

and is **ONLY** valid under the following Federal explosives license/permit:

1-FL-009-34-3B-00997

AERIAL ART INCORPORATED
801 WICKHAM LAKES DR
MELBOURNE, FL 32940

Dear **MICHAEL KINARD**:

You have been approved as a responsible person under the above-listed Federal explosive license or permit. You may lawfully direct the management or policies of the business or operations as they pertain to explosives. You may also lawfully transport, ship, receive or possess explosive materials incident to your duties as a responsible person. **This clearance is only valid under the license or permit referenced above.**

Sincerely,

Christopher R. Reeves
Chief, Federal Explosives Licensing Center (FELC)

FELC Customer Service. If you believe that information on your "Letter of Clearance" is incorrect, please return a COPY of the letter to the Chief, Federal Explosives Licensing Center (FELC), with a statement showing the nature of the error. The Chief, FELC, shall correct the error, and return an amended letter to you.

Mail: ATF
Chief, FELC
Attn.: LOC Correction
244 Needy Road
Martinsburg, West Virginia 25405

Fax: 1-304-616-4401
Chief, FELC
Attn.: LOC Correction

Call toll-free: 1-877-283-3352

WWW.ATF.GOV

1FL00997-R-01/14/2020-KINARD-MICHAEL B-OWNER AND PRESIDENT

MICHAEL B KINARD

Responsible Person Letter of Clearance for:



U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives
Federal Explosives Licensing Center (FELC)
www.atf.gov

Federal Explosives Licensing Center
244 Needy Road
Martinsburg, West Virginia 25405
telephone: (877)283-3352 fax: (304)616-4401

12/03/2019

NOTICE OF CLEARANCE

for individuals transporting, shipping, receiving, or possessing explosive materials.

ISSUED TO: AERIAL ART INCORPORATED

Federal Explosives license/permit no.: 1-FL-009-34-3B-00997

NOTICE DATE: 12/03/2019

Expiration Date: February 1, 2023

Explosives License/Permit Type: 34-USER OF EXPLOSIVES

EXPIRATION DATE: This Notice expires when superseded by a newer Notice which will list all current responsible persons and employee possessors, or when the license or permit expires - whichever comes first.

- 1 **WARNING.** Only those individuals listed below as RESPONSIBLE PERSONS and EMPLOYEE POSSESSORS with a background clearance status of "CLEARED" or "PENDING" are authorized to transport, ship, receive, or possess explosive materials in the course of employment with you.
- 2 **"DENIED" STATUS.** If an employee possessor has a background clearance status of "DENIED", you MUST take immediate steps to remove the employee from a position requiring the transporting, shipping, receiving, or possessing of explosive materials. Also, if the employee has been listed as a person authorized to accept delivery of explosive materials, you MUST remove the employee from such list and immediately, and in no event later than the second business day after such change, notify distributors of such change, as stated in 27 CFR 555.33(a).
- 3 **CHANGE IN RESPONSIBLE PERSONS.** You MUST report any change in responsible persons to the Chief, Federal Explosives Licensing Center, within 30 days of the change and new responsible persons MUST include "appropriate identifying information" as defined in 27 CFR 555.11. Fingerprints and photos are NOT required, however they will be required upon renewal of the license or permit.
- 4 **CHANGE OF EMPLOYEES.** You MUST report any change of employee/possessors to the Chief, FELC, within 30 days. Reports relating to newly hired employees must be submitted on ATF Form 5400.28 for EACH employee.

Premises Address: 801 WICKHAM LAKES DR
MELBOURNE, FL 32940

Mailing Address:

AERIAL ART INCORPORATED
801 WICKHAM LAKES DR
MELBOURNE, FL 32940

This 'Notice of Clearance' is provided to you as required by 18 U.S.C. 843(h) and MUST be retained as part of your permanent records and be made available for examination or inspection by ATF officers as required by 27 CFR 555.121. If you receive a Notice subsequent to this Notice, this Notice will no longer be valid.

In accordance with 27 CFR 555.33, Background Checks and Clearances, and 27 CFR 555.57, Change of Control, Change in Responsible Persons, and Change of Employees, ATF's Federal Explosives Licensing Center (FELC) has conducted background checks on the individual(s) you identified as a responsible person(s) and an employee/possessor(s) on your application, or reported after the issuance of your license/permit.

The following is a SUMMARY of the results of the background checks conducted on the individuals you reported as responsible persons and employee/possessors. ATF will be notifying ALL individuals listed on this document of their respective status by separate letter mailed to their residence address.

PLEASE BE ADVISED THAT IT IS UNLAWFUL FOR ANY PERSON REFLECTING A STATUS OF "DENIED" TO TRANSPORT, SHIP, RECEIVE, OR POSSESS EXPLOSIVE MATERIALS.

Please carefully review this Notice to ensure that all the information is accurate. If this Notice is incorrect, please return the Notice to the Chief, FELC, with a statement showing the nature of the error(s). The Chief, FELC, shall correct the error, and return a corrected Notice.

Number of RESPONSIBLE PERSON(S) : 1
Number of EMPLOYEE POSSESSOR(S): 0

continued

LAST NAME, First Name, Middle Name Clearance Status

LAST NAME, First Name, Middle Name Clearance Status

RESPONSIBLE PERSONS:

1

0001 KINARD, MICHAEL B

Cleared

EMPLOYEE POSSESSORS:

0

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

Federal Explosives License/Permit
(18 U.S.C. Chapter 40)

In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 555), you may engage in the activity specified in this license or permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. **THIS LICENSE IS NOT TRANSFERABLE UNDER 27 CFR 555.53.** See "WARNINGS" and "NOTICES" on reverse.

Direct ATF
Correspondence To
ATF - Chief, FELC
244 Needy Road
Martinsburg, WV 25405-9431

License/Permit
Number

1-FL-009-34-3B-00997

Chief, Federal Explosives Licensing Center (FELC)

Expiration
Date

February 1, 2023

Christopher R. Reers

Name

AERIAL ART INCORPORATED

Premises Address (Changes? Notify the FELC at least 10 days before the move.)

801 WICKHAM LAKES DR
MELBOURNE, FL 32940-

Type of License or Permit

34-USER OF EXPLOSIVES

Purchasing Certification Statement

The licensee or permittee named above shall use a copy of this license or permit to assist a transferor of explosives to verify the identity and the licensed status of the licensee or permittee as provided by 27 CFR Part 555. The signature on each copy must be an original signature. A faxed, scanned or e-mailed copy of the license or permit with a signature intended to be an original signature is acceptable. The signature must be that of the Federal Explosives Licensee (FEL) or a responsible person of the FEL. I certify that this is a true copy of a license or permit issued to the licensee or permittee named above to engage in the business or operations specified above under "Type of License or Permit."

Mailing Address (Changes? Notify the FELC of any changes.)

AERIAL ART INCORPORATED
801 WICKHAM LAKES DR
MELBOURNE, FL 32940-

Licensee/Permittee Responsible Person Signature

Position/Title

Printed Name

Date

Previous Edition is Obsolete AERIAL ART INCORPORATED; 801 WICKHAM LAKES DR; 32940-1 FL-009-34-3B-00997; February 1, 2023; 34-USER OF EXPLOSIVES

ATF Form 5400.14/5400.15 Part I
Revised October 2011

Federal Explosives License (FEL) Customer Service Information

Federal Explosives Licensing Center (FELC)
244 Needy Road
Martinsburg, WV 25405-9431

Toll-free Telephone Number: (877) 283-3352
Fax Number: (304) 616-4401
E-mail: FELC@atf.gov

ATF Homepage: www.atf.gov

Change of Address (27 CFR 555.54(a)(1)). Licensees or permittees may during the term of their current license or permit remove their business or operations to a new location at which they intend regularly to carry on such business or operations. The licensee or permittee is required to give notification of the new location of the business or operations not less than 10 days prior to such removal with the Chief, Federal Explosives Licensing Center. The license or permit will be valid for the remainder of the term of the original license or permit. **(The Chief, FELC, shall, if the licensee or permittee is not qualified, refer the request for amended license or permit to the Director of Industry Operations for denial in accordance with § 555.54.)**

Right of Succession (27 CFR 555.59). (a) Certain persons other than the licensee or permittee may secure the right to carry on the same explosive materials business or operations at the same address shown on, and for the remainder of the term of, a current license or permit. Such persons are: (1) The surviving spouse or child, or executor, administrator, or other legal representative of a deceased licensee or permittee; and (2) A receiver or trustee in bankruptcy, or an assignee for benefit of creditors. (b) In order to secure the right provided by this section, the person or persons continuing the business or operations shall furnish the license or permit for that business or operations for endorsement of such succession to the Chief, FELC, within 30 days from the date on which the successor begins to carry on the business or operations.

(Continued on reverse side)

Cut Here ✂

Federal Explosives License/Permit (FEL) Information Card

License/Permit Name: AERIAL ART INCORPORATED

Business Name:

License/Permit Number: 1-FL-009-34-3B-00997

License/Permit Type: 34-USER OF EXPLOSIVES

Expiration: February 1, 2023

Please Note: Not Valid for the Sale or Other Disposition of Explosives.

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

Federal Explosives License/Permit
(18 U.S.C. Chapter 40)

In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 555), you may engage in the activity specified in this license or permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. **THIS LICENSE IS NOT TRANSFERABLE UNDER 27 CFR 555.53.** See "WARNINGS" and "NOTICES" on reverse.

Direct ATF Correspondence To	ATF - Chief, FELC 244 Needy Road Martinsburg, WV 25405-9431	License/Permit Number	1-TN-047-19-2A-12536
Chief, Federal Explosives Licensing Center (FELC)	<i>Christopher R. Reers</i>	Expiration Date	January 1, 2022

Name
HIGH TECH SPECIAL EFFECTS INC

Premises Address (Changes? Notify the FELC at least 10 days before the move.) 14905 HWY 64 SOMERVILLE, TN 38068-
--

Type of License or Permit

19-MANUFACTURER OF EXPLOSIVES

Purchasing Certification Statement

The licensee or permittee named above shall use a copy of this license or permit to assist a transferor of explosives to verify the identity and the licensed status of the licensee or permittee as provided by 27 CFR Part 555. The signature on each copy must be an original signature. A faxed, scanned or e-mailed copy of the license or permit with a signature intended to be an original signature is acceptable. The signature must be that of the Federal Explosives Licensee (FEL) or a responsible person of the FEL. I certify that this is a true copy of a license or permit issued to the licensee or permittee named above to engage in the business or operations specified above under "Type of License or Permit."

Mailing Address (Changes? Notify the FELC of any changes.)

**HIGH TECH SPECIAL EFFECTS INC
PO BOX 478
OAKLAND, TN 38060-**

Licensee/Permittee Responsible Person Signature

Position Title

Printed Name

Date

Previous Edition is Obsolete HIGH TECH SPECIAL EFFECTS INC 14905 HWY 64 SOMERVILLE, TN 38068-1-TN-047-19-2A-12536 January 1, 2022 19-MANUFACTURER OF EXPLOSIVES

ATF Form 5400.14/5400.15 Part I
Revised October 2011

Federal Explosives License (FEL) Customer Service Information

Federal Explosives Licensing Center (FELC)
244 Needy Road
Martinsburg, WV 25405-9431

Toll-free Telephone Number: (877) 283-3352
Fax Number: (304) 616-4401
E-mail: FELC@atf.gov

ATF Homepage: www.atf.gov

Change of Address (27 CFR 555.54(a)(1)). Licensees or permittees may during the term of their current license or permit remove their business or operations to a new location at which they intend regularly to carry on such business or operations. The licensee or permittee is required to give notification of the new location of the business or operations not less than 10 days prior to such removal with the Chief, Federal Explosives Licensing Center. The license or permit will be valid for the remainder of the term of the original license or permit. **(The Chief, FELC, shall, if the licensee or permittee is not qualified, refer the request for amended license or permit to the Director of Industry Operations for denial in accordance with § 555.54.)**

Right of Succession (27 CFR 555.59). (a) Certain persons other than the licensee or permittee may secure the right to carry on the same explosive materials business or operations at the same address shown on, and for the remainder of the term of, a current license or permit. Such persons are: (1) The surviving spouse or child, or executor, administrator, or other legal representative of a deceased licensee or permittee; and (2) A receiver or trustee in bankruptcy, or an assignee for benefit of creditors. (b) In order to secure the right provided by this section, the person or persons continuing the business or operations shall furnish the license or permit for that business or operations for endorsement of such succession to the Chief, FELC, within 30 days from the date on which the successor begins to carry on the business or operations.

(Continued on reverse side)

Cut Here ✂

Federal Explosives License/Permit (FEL) Information Card	
License/Permit Name: HIGH TECH SPECIAL EFFECTS INC	
Business Name:	
License/Permit Number: 1-TN-047-19-2A-12536	
License/Permit Type: 19-MANUFACTURER OF EXPLOSIVES	
Expiration:	January 1, 2022
Please Note: Not Valid for the Sale or Other Disposition of Explosives.	

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

Federal Explosives License/Permit
(18 U.S.C. Chapter 40)

In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 555), you may engage in the activity specified in this license or permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. **THIS LICENSE IS NOT TRANSFERABLE UNDER 27 CFR 555.53.** See "WARNINGS" and "NOTICES" on reverse.

Direct ATF ATF - Chief, FELC
Correspondence To 244 Needy Road
Martinsburg, WV 25405-9431

License/Permit
Number **1-TN-047-51-2A-00057**

Chief, Federal Explosives Licensing Center (FELC)

Expiration
Date **January 1, 2022**

Name
HIGH TECH SPECIAL EFFECTS INC

Premises Address (Changes? Notify the FELC at least 10 days before the move.)

**14905 HWY 64
SOMERVILLE, TN 38068-**

Type of License or Permit

51-IMPORTER OF EXPLOSIVES

Purchasing Certification Statement

The licensee or permittee named above shall use a copy of this license or permit to assist a transferor of explosives to verify the identity and the licensed status of the licensee or permittee as provided by 27 CFR Part 555. The signature on each copy must be an original signature. A faxed, scanned or e-mailed copy of the license or permit with a signature intended to be an original signature is acceptable. The signature must be that of the Federal Explosives Licensee (FEL) or a responsible person of the FEL. I certify that this is a true copy of a license or permit issued to the licensee or permittee named above to engage in the business or operations specified above under "Type of License or Permit."

Mailing Address (Changes? Notify the FELC of any changes.)

**HIGH TECH SPECIAL EFFECTS INC
PO BOX 478
OAKLAND, TN 38060-**

Licensee/Permittee Responsible Person Signature

Position/Title

Printed Name

Date

Previous Edition is Obsolete HIGH TECH SPECIAL EFFECTS INC:14905 HWY 64:38068 1-TN-047-51-2A-00057:January 1, 2022:51-IMPORTER OF EXPLOSIVES

ATF Form 5400.14-5400.15 Part I
Revised October 2011

Federal Explosives License (FEL) Customer Service Information

Federal Explosives Licensing Center (FELC)
244 Needy Road
Martinsburg, WV 25405-9431

Toll-free Telephone Number: (877) 283-3352
Fax Number: (304) 616-4401
E-mail: FELC@atf.gov

ATF Homepage: www.atf.gov

Change of Address (27 CFR 555.54(a)(1)). Licensees or permittees may during the term of their current license or permit remove their business or operations to a new location at which they intend regularly to carry on such business or operations. The licensee or permittee is required to give notification of the new location of the business or operations not less than 10 days prior to such removal with the Chief, Federal Explosives Licensing Center. The license or permit will be valid for the remainder of the term of the original license or permit. **(The Chief, FELC, shall, if the licensee or permittee is not qualified, refer the request for amended license or permit to the Director of Industry Operations for denial in accordance with § 555.54.)**

Right of Succession (27 CFR 555.59). (a) Certain persons other than the licensee or permittee may secure the right to carry on the same explosive materials business or operations at the same address shown on, and for the remainder of the term of, a current license or permit. Such persons are: (1) The surviving spouse or child, or executor, administrator, or other legal representative of a deceased licensee or permittee; and (2) A receiver or trustee in bankruptcy, or an assignee for benefit of creditors. (b) In order to secure the right provided by this section, the person or persons continuing the business or operations shall furnish the license or permit for that business or operations for endorsement of such succession to the Chief, FELC, within 30 days from the date on which the successor begins to carry on the business or operations.

(Continued on reverse side)

Cut Here ✂

Federal Explosives License/Permit (FEL) Information Card

License/Permit Name: **HIGH TECH SPECIAL EFFECTS INC**

Business Name:

License/Permit Number: **1-TN-047-51-2A-00057**

License/Permit Type: **51-IMPORTER OF EXPLOSIVES**

Expiration: **January 1, 2022**

Please Note: Not Valid for the Sale or Other Disposition of Explosives.



DEPARTMENT OF JUSTICE

Bureau of Alcohol, Tobacco,
Firearms and Explosives

Martinsburg, WV 25405

January 3, 2022

HIGH TECH SPECIAL EFFECTS INC
PO BOX 478
OAKLAND, TN 38060

901090: MH/AJB
5400
File Number: 1-BL-12536

Premises Address: 14905 HWY 64 SOMERVILLE, TN 38068

Dear Sir/Madam:

This letter acknowledges receipt of your timely application to renew your Federal explosives license/permit.

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) is not able to process your application prior to the expiration date of your license/permit. However, Federal law allows you to continue operations under your current license/permit until such time as ATF completes processing your application. See 5 U.S.C. § 558. This letter, or as explained below, a follow-up letter, will serve as your license/permit until we complete action on your renewal. It is referred to as a Letter of Authorization (LOA).

Since we have not completed processing your application, you may supply a copy of this letter to other licensees/permittees, e.g., your distributors, for the next six months (or until we complete action on your renewal, if that occurs in less than six months) as evidence of your licensed/permitted status. If we have not completed processing your application for renewal within six months of the date of this letter, we will send you another letter, which will also be valid for six months (or until we complete action on your renewal, if that occurs in less than six months). This is of course contingent upon your remaining entitled to continue operations under your current license/permit.

Please direct questions or concerns regarding this letter to

Sincerely,

Marna B. Howard

Chief, Federal Explosives Licensing Center

ATF web address: www.atf.gov



DEPARTMENT OF JUSTICE

Bureau of Alcohol, Tobacco,
Firearms and Explosives

Martinsburg, WV 25405

January 4, 2022

HIGH TECH SPECIAL EFFECTS INC
PO BOX 478
OAKLAND, TN 38060

901090: MH/AJB
5400
File Number: 1-TN-00057

Premises Address: 14905 HWY 64 SOMERVILLE, TN 38068

Dear Sir/Madam:

This letter acknowledges receipt of your timely application to renew your Federal explosives license/permit.

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) is not able to process your application prior to the expiration date of your license/permit. However, Federal law allows you to continue operations under your current license/permit until such time as ATF completes processing your application. See 5 U.S.C. § 558. This letter, or as explained below, a follow-up letter, will serve as your license/permit until we complete action on your renewal. It is referred to as a Letter of Authorization (LOA).

Since we have not completed processing your application, you may supply a copy of this letter to other licensees/permittees, e.g., your distributors, for the next six months (or until we complete action on your renewal, if that occurs in less than six months) as evidence of your licensed/permitted status. If we have not completed processing your application for renewal within six months of the date of this letter, we will send you another letter, which will also be valid for six months (or until we complete action on your renewal, if that occurs in less than six months). This is of course contingent upon your remaining entitled to continue operations under your current license/permit.

Please direct questions or concerns regarding this letter to

Sincerely,

Marna B. Howard

Chief, Federal Explosives Licensing Center

ATF web address: www.atf.gov



THIS LICENSE MUST BE CONSPICUOUSLY DISPLAYED IN A PLACE OF BUSINESS



Arkansas State Police

Number
FW.0000802

State Fire Marshal's Office

Date of Issue
05/01/2021

FIREWORKS LICENSE

This is to certify that

High Tech Special Effects

is duly licensed to transact business in the State of Arkansas as a Fireworks:

Importer

LICENSE EXPIRES

04/30/2022

COLONEL WILLIAM J BRYANT
DIRECTOR



Major Lindsey Williams
MAJOR LINDSEY WILLIAMS
STATE FIRE MARSHAL

NON TRANSFERABLE

FWS No:

STATE OF ARKANSAS

Pyrotechnic Shooter

1031



This is to certify that

Mike Kinard

Is a duly authorized Pyrotechnic Shooter in accordance with ACT 2204 of 2005. This card shall expire 5 (five) years from date of issuance.

Issued: 12/29/2021

Expires: 12/29/2026

Major Lindsey Williams

State Fire Marshal



JOHN F. KING
COMMISSIONER OF INSURANCE
SAFETY FIRE COMMISSIONER

STATE OF GEORGIA
OFFICE OF
GEORGIA SAFETY FIRE COMMISSIONER

License No. **PAF21-000019**

620 West Tower, 2 Martin Luther King, Jr. Drive
Atlanta, Georgia 30334

PROXIMATE AUDIENCE FIREWORKS AND/OR PYROTECHNICS DISPLAY

Pursuant to O.C.G.A. Title 25, Chapter 10, and the Rules and Regulations of the Safety Fire Commissioner, this license is issued for the purpose of conducting Proximate Audience Fireworks and/or Pyrotechnics Displays only for the following company and listed operators thereof:

High Tech Special Effects

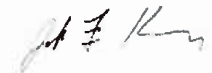
**PO Box 478
Oakland, TN 38060**

This license is revocable and may be suspended upon violation of any of the provisions of the Rules and Regulations promulgated thereunder.

Date Issued: May 11, 2021
Expiration Date: Dec 31, 2021

Regulatory Fee: \$1,500.00

OPERATORS

By: 
Safety Fire Commissioner/Designee

Any changes in information must be submitted within 30 days to:

Bureau of Testing & Registration
PO BOX 529
Reynoldsburg, Ohio 43068
614-752-7126
614-995-4206 (fax)
webfmtr@com.state.oh.us

Holder shall possess this permit at all times in the course of shipping fireworks into Ohio

A shipping permit is not transferable or assignable.

Mike DeWine
Governor

State of Ohio
Department of Commerce
Division of State Fire Marshal

Sheryl Maxfield
Director

2021 Fireworks Out-of State Shipping Certificate

This fireworks out of state shipper has met the requirements of Ohio Revised Code 3743.40 and is permitted to ship fireworks of the following type(s) listed below directly into this state to a licensed wholesaler, manufacturer, or an exhibitor at a properly permitted exhibition site

02.89.0060
HIGH TECH SPECIAL EFFECTS
PO BOX 478
OAKLAND, TN 38060-0478

Expiration Date: 04/13/2022
License is non-transferable

1.3 G; 1.4 G; 1.4 S



Ohio Department of Commerce
Division of State Fire Marshal
Bureau of Testing & Registration
8895 E Main Street, PO Box 529
Reynoldsburg, Ohio 43068

HIGH TECH SPECIAL EFFECTS
PO BOX 478
OAKLAND, TN 38060-0478



Fireworks Displays or Exhibitions Certificate of Registration

Be it known that: **High Tech Special Effects**
 d/b/a Fireworks and Pyrotechnics Special Effect
 PO Box 478
 Oakland, TN 38060
 President: Randy Bast

is registered with the Office of Attorney General, Commonwealth of Pennsylvania,
to perform, provide or supervise fireworks displays for profit within this
Commonwealth.

This Certificate is evidence of registration with the Office of Attorney General only.
The competence, financial fitness and compliance with local requirements by the
above individual or entity are not herein certified.

Jennifer Selber
Executive Deputy Attorney General
Director, Criminal Law Division

March 29, 2021
Date

Registration Expires: March 29, 2022



STATE OF TENNESSEE
DEPARTMENT OF
COMMERCE AND INSURANCE



HIGH TECH SPECIAL EFFECTS

ID NUMBER: 2

LIC STATUS: LICENSED

EXPIRATION DATE: April 30, 2022

TENNESSEE FIREWORKS PERMITS

DISPLAY EXHIBITOR

371

THIS IS TO CERTIFY THAT ALL REQUIREMENTS
OF THE STATE OF TENNESSEE HAVE BEEN MET

ATTN:RANDY BAST
HIGH TECH SPECIAL EFFECTS
PO BOX 478
OAKLAND, TN 38060

State of Tennessee

371

12560242

TENNESSEE FIREWORKS PERMITS

DISPLAY EXHIBITOR

HIGH TECH SPECIAL EFFECTS

*This is to certify that all requirements of the State of Tennessee have been
met by virtue of Chapter 118, Public Acts of 1961, as amended by Chapter 146,
Public Acts of 1969.*

ID NUMBER: 2

LIC STATUS: LICENSED

EXPIRATION DATE: April 30, 2022



IN-1313
DEPARTMENT OF
COMMERCE AND INSURANCE

DISTRIBUTER
CFRS CERTIFICATE



4/1/2021 - 3/31/2022

HIGH TECH SPECIAL EFFECTS

14905 HWY 64

SOMERVILLE, TN 38068

WV0000030



Section 4 - MSDS / Technical Information



Safety Data Sheet

According to regulation (EC) 1907/2006

MULTIGAS 300

Page 2 / 8

ROTHENBERGER Werkzeuge GmbH
Industriestr. 7
65779 Kelkheim

Tel.: + 49 (0) 6195 – 800 1
Fax: + 49 (0) 6195 – 7 44 22

Mail: zentrale@rothenberger.com
Web: www.rothenberger.com

Safety Data Sheet according to regulation (EC) 1907/2006	Creation date: 13.03.2012 Reviewed on: 13.03.2012 Printing date: 27.04.2012	 ROTHENBERGER
	Art.-No.: 03.5110-A	MULTIGAS 300

1. Identification of the substance / preparation and of the company

Identification:	MULTIGAS 300
Use of the substance/preparation:	Burning gas
Company:	ROTHENBERGER Werkzeuge GmbH Industriestr. 7 65779 Kelkheim Phone: + 49 (0) 6195 – 800 1
Emergency telephone:	Phone: + 49 (0) 6195 – 800 1 08.00 a.m. – 05.00 p.m.

2. Hazards identification

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008



GHS02 flame

Flam. Gas 1 H220 Extremely flammable gas.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC



F+; Extremely flammable

R12: Extremely flammable.

Information concerning particular hazards for human and environment:

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Warning! Pressurized container.

Classification system:

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

Label elements

Labelling according to EU guidelines:

The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials.

Code letter and hazard designation of product:



F+ Extremely flammable

Hazard-determining components of labelling: Mixture of propane-butane

Risk phrases:

12 Extremely flammable.

Special labelling of certain preparations:

Pressurized container: Protect from direct sunlight and do not expose to temperatures exceeding 50°C. Do not puncture/pierce or incinerate, even after use. Keep container in a well-ventilated place. Keep away from sources of ignition-No smoking. Keep out of the reach of children.

Safety Data Sheet according to regulation (EC) 1907/2006	Creation date: 13.03.2012 Reviewed on: 13.03.2012 Printing date: 27.04.2012	 ROTHENBERGER
	Art.-No.: 03.5110-A	MULTIGAS 300

Other hazards

Flammable liquified gas cartridge equipped with valve type 1 according EN 417. This cartridge complies with EN417. This cartridge shall only be used with propane/butane appliances suitable for valves of type 1 according EN 417. Follow the instructions for use supplied with the appliance. Changing the cartridge: perform this operation in a well ventilated area, free from ignition sources. Close the appliance valve. Remove the appliance from the cartridge. Replace the connection seal if it is damaged or lost. Avoid crossthreading.

Screw down hand tight only. WARNING: DO NOT REFILL!

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

3. Composition / information on ingredients

Chemical characterization: Mixtures

Description: Mixture: consisting of the following components.

Dangerous components:

CAS: 106-97-8 EINECS: 203-448-7	butane	 F+R12  Flam. Gas 1, H220;  Press. Gas, H280	65 - 75%
CAS: 74-98-6 EINECS: 200-827-9	propane	 F+R12  Flam. Gas 1, H220;  Press. Gas, H280	25 - 35%
CAS: 75-28-5 EINECS: 200-857-2	isobutane	 F+R12  Flam. Gas 1, H220;  Press. Gas, H280	0 - 5%

Additional information: For the wording of the listed risk phrases refer to section 16.

4. First-aid measures

Description of first aid measures

General information:

Take affected persons out into the fresh air.

Do not leave affected persons unattended.

After inhalation: Supply fresh air; consult doctor in case of complaints.

After skin contact: Generally the product does not irritate the skin.

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: If symptoms persist consult doctor.

Information for doctor:

Most important symptoms and effects, both acute and delayed No further relevant information available.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing agents:

CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

For safety reasons unsuitable extinguishing agents: Water with full jet

Special hazards arising from the substance or mixture Risk of bursting in case of fire heat

Advice for firefighters

Protective equipment: Do not inhale explosion gases or combustion gases.

Additional information Cool endangered receptacles with water spray.

Safety Data Sheet according to regulation (EC) 1907/2006	Creation date: 13.03.2012 Reviewed on: 13.03.2012 Printing date: 27.04.2012	 MULTIGAS 300
	Art.-No.: 03.5110-A	

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources.

Environmental precautions: No special measures required.

Methods and material for containment and cleaning up:

Ensure adequate ventilation.

Allow to evaporate.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7. Handling and storage

Handling:

Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

Information about fire - and explosion protection:

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C, i.e. electric

lights. Do not pierce or burn, even after use.

Do not spray onto a naked flame or any incandescent material.

Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles:

Store in a cool location.

Observe official regulations on storing packagings with pressurized containers.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Protect from heat and direct sunlight.

Recommended storage temperature: 15 - 35 °C, max. 50 °C

Specific end use(s) No further relevant information available.

8. Exposure controls / personal protection

Additional information about design of technical facilities: No further data; see item 7.

Control parameters

Ingredients with limit values that require monitoring at the workplace:

106-97-8 butane

WEL	Short-term value: 1810 mg/m ³ , 750 ppm Long-term value: 1450 mg/m ³ , 600 ppm Carc (if more than 0.1% of buta-1.3-diene)
-----	---

Additional information: The lists valid during the making were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures: Do not inhale gases / fumes / aerosols.

Respiratory protection: Not necessary if room is well-ventilated.

Protection of hands:

Material of gloves Leather gloves

Penetration time of glove material > 480 min / 0,4 mm thickness

Eye protection: Not required.

Safety Data Sheet according to regulation (EC) 1907/2006	Creation date: 13.03.2012 Reviewed on: 13.03.2012 Printing date: 27.04.2012	 MULTIGAS 300
	Art.-No.: 03.5110-A	

9. Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form:	Compressed liquefied gas
Colour:	Colourless
Odour:	Characteristic

Change in condition

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	-44 °C

Flash point:	Not applicable, as aerosol.
Ignition temperature:	365 °C
Self-igniting:	Product is not selfigniting.
Danger of explosion:	Risk of bursting at temperatures > 50 °C. Damage of the container may lead to the formation of explosive mixtures of gas/vapors with air.

Explosion limits:

Lower:	1.5 Vol %
Upper:	10.9 Vol %
Pressure (20 °C)	5,0 - 5,6 bar
Density at 20 °C:	0.55 g/cm ³
Solubility in / Miscibility with water:	Insoluble.

Solvent content:

Organic solvents:	0.0 %
VOC (EC)	100 %
	100.00 %

Other information

No further relevant information available.

Additional information

Vapors are heavier than air.

10. Stability and reactivity

Reactivity

Chemical stability

Thermal decomposition / conditions to be avoided: Risk of bursting at temperatures >50 °C.

Possibility of hazardous reactions No dangerous reactions known.

Conditions to avoid No further relevant information available.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: No dangerous decomposition products known.

Additional information: Stable for a storage time of min. 24 months

11. Toxicological information

Information on toxicological effects

Acute toxicity:

Primary irritant effect:

on the skin: No irritant effect.

on the eye: No irritating effect.

Sensitization: No sensitizing effects known.

Safety Data Sheet according to regulation (EC) 1907/2006	Creation date: 13.03.2012 Reviewed on: 13.03.2012 Printing date: 27.04.2012	 ROTHENBERGER
	Art.-No.: 03.5110-A	MULTIGAS 300

12. Ecological information

Toxicity

Aquatic toxicity: No further relevant information available.

Persistence and degradability No further relevant information available.

Behaviour in environmental systems:

Bioaccumulative potential No further relevant information available.

Mobility in soil No further relevant information available.

Additional ecological information:

General notes: Generally not hazardous for water

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects No further relevant information available.

13. Disposal considerations

Waste treatment methods

Recommendation

empty cans: material recycling

filled cans: remove in accordance with local regulations

European waste catalogue

16 00 00	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 05 00	gases in pressure containers and discarded chemicals
16 05 05	gases in pressure containers other than those mentioned in 16 05 04

Uncleaned packaging:

Recommendation: Disposal must be made according to official regulations.

14. Transport information

UN-Number

ADR, IMDG, IATA

UN2037

UN proper shipping name

ADR

2037 RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES)

IMDG, IATA

RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES)

Transport hazard class(es)

ADR



Class

2 5F Gases.

Label

2.1

IMDG, IATA



Class

2.1

Label

2.1

Packing group

ADR, IMDG, IATA

Void

Safety Data Sheet according to regulation (EC) 1907/2006	Creation date: 13.03.2012 Reviewed on: 13.03.2012 Printing date: 27.04.2012	 MULTIGAS 300
	Art.-No.: 03.5110-A	

Environmental hazards:	
Marine pollutant:	No
Special precautions for user	Warning: Gases.
Danger code (Kemler): -	-
EMS Number:	F-D,S-U
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
ADR	
Limited quantities (LQ)	1L
Transport category	2
Tunnel restriction code	D
Remarks:	Transportation as "LIMITED QUANTITIES" (LQ2) according chapter 3.4 ADR is possible. Marking at the box: UN 2037 (rhombe) Entry in the in the transportation document: Transportation according chapter 3.4 ADR.
UN "Model Regulation":	UN2037, RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES), 2.1

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Labelling according to EU guidelines:

The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials.

Code letter and hazard designation of product:



F+ Extremely flammable

Risk phrases:

12 Extremely flammable.

Special labelling of certain preparations:

Pressurized container: Protect from direct sunlight and do not expose to temperatures exceeding 50°C. Do not puncture/pierce or incinerate, even after use. Keep container in a well-ventilated place. Keep away from sources of ignition-No smoking. Keep out of the reach of children.

National regulations:

Information about limitation of use: Employment restrictions concerning juveniles must be observed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16. Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

H220 Extremely flammable gas.

Safety Data Sheet according to regulation (EC) 1907/2006	Creation date: 13.03.2012	 MULTIGAS 300
	Reviewed on: 13.03.2012 Printing date: 27.04.2012	
	Art.-No.: 03.5110-A	

H280 Contains gas under pressure; may explode if heated.

R12 Extremely flammable.

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International

Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the

International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

VOC: Volatile Organic Compounds (USA, EU)

. * **Data compared to the previous version altered.**



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Binary Kits– (All Types)

SECTION I: PRODUCT & MANUFACTURER IDENTIFICATION

Product Identifier Binary Kit – Concussion, Superflash, Fastburst and Hotburst, (Includes all Variants)		
Product Use; Theatrical Pyrotechnics and Special Effects. Specially formulated Binary Kit that once mixed produces a pyrotechnic / explosive effect.		
Manufacturers Name; Distributed By: Next FX, Inc. Mfg. By: Stage FX, Inc.		
Street Address; 184 McNaley Road		City; Columbus
		State MT – USA
Zip Code; 59019	Telephone Number; (406)322-1303	Emergency Numbers; Domestic – (800)255-3924 Inter. – +01 (813)248-0585

SECTION II: HAZARDS IDENTIFICATION

WHMIS Classification/GHS Classification: Explosive Class 1.4 (As Shipped) Explosive Class (Some kits may become Explosive Class 1.1, once mixed)	
 1.4  WARNING (As Shipped Classification) (Unmixed)	 DANGER – (Mixed)
Hazard statement: Fire or Projection Hazard	
Precautionary Statements: Prevention; (Once Mixed) – Keep away from heat/sparks/open flames/hot surfaces/stray electrical currents – “No Smoking”. (Before Mixing – as Shipped); One bottle contains an Oxidizing substance & the other normally contains a Flammable Solid. Handle each container as specific Hazard requires. Response; (Before Mixing – as Shipped) If on skin, Wash with plenty of water. Take off contaminated clothing and wash it before reuse. (Once Mixed) In case of Fire: Evacuate area Explosion Risk in case of fire Do NOT fight fire when fire has reached explosive product.	

Rev: B

Dated: 19 September 2017



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Binary Kits– (All Types)

Product Use:

Burning projections can and will ignite combustible materials. Radial safety distances should be applied. Refer to label or manufacturer for appropriate safety distances for specific product and intended use or application. "FOR PROFESSIONAL USE ONLY" not for consumer or retail sales. Ingredients should only be mixed together right before use. Mixed kits cannot be transported by any method unless prior approval has been sought through the US Department of Transportation or other federal or local national regulatory agency. These kits should only be used by professionals with specialized knowledge.

Sales to persons under (18) years prohibited.

Potential Acute Health Effects:

Mixed composition can cause serious burn / pressure injuries if incorrectly used. Unmixed product should not be ingested or inhaled.

Potential Chronic Health Effects:

There are no chronic affects from handling this product appropriately. See appropriate SDS for component ingredients.

National Fire Protection Association Ratings; (Mixed Binary Only)

Health Hazard – 1 Flammability – 1(Unmixed), 4 (Mixed)

Reactivity – 0 (Unmixed), 4 (Mixed) Special – 0

SECTION III: COMPOSITION/INGREDIENT INFORMATION

Hazardous Ingredients	%	CAS Number
(Part A)		
Silicon Dioxide, (Fumed Silica)	*	112945-52-5
Strontium Nitrate, (Red)	*	10042-76-9
Aluminum, (Spheriodal)	*	7429-90-5
Potassium Perchlorate	*	7778-74-7
Aluminum Oxide	*	1344-28-1
Magnesium	*	7439-95-4
Titanium	*	7440-32-6

* Ingredient percentages are company proprietary. This is an all-inclusive list. Not all chemicals are found in each variant. Compositions vary for type or effect ordered by customer.

Rev: B

Dated: 19 September 2017



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Binary Kits– (All Types) SECTION IV: FIRST AID MEASURES

Routes of Entry; X Skin contact – Skin Absorption X eye contact X Inhalation X Ingestion
<u>Skin contact;</u> (Mixed) – Serious burns or pressure injuries could take place if accidental ignition occurs. (Unmixed) – Contents should be washed immediately from exposed area with plenty of soap and water.
<u>Eye contact;</u> (Mixed) – Serious Eye injuries could result if accidental ignition occurs. (Unmixed) – Flush eyes for a minimum of 15 minutes. If irritation persists, seek medical attention.
<u>Inhalation;</u> (Mixed or Unmixed) – If overexposure has occurred, remove victim from area and seek fresh air. If irritation persists, seek medical attention immediately. Smoke from material burning may cause irritation if used within non-ventilated or small confined spaces.
<u>Ingestion;</u> (Mixed or Unmixed) – If contents are accidentally ingested, seek medical attention as soon as possible.
<u>Acute Health Effects;</u> Some ingredients are considered irritants and should be handled as such if exposed. Contents, (when mixed together) are explosive and will cause serious burn/pressure injuries if accidentally ignited.
<u>Chronic Health Effects;</u> There are no chronic affects from the handling of this product.

SECTION V: FIRE FIGHTING MEASURES & RELATED INFORMATION

Flammability; (Mixed) Binary Kit is explosive – Deflagration and/or detonation may occur! (Unmixed) Binary Kit contains an Oxidizing Agent that can contribute to combustion and a Flammable Solid (Powdered Metals). Very finely divided metals are flammable and can sometimes be pyrophoric.	NFPA Rating; 4 – Severe Hazard, (Mixed) 1 – Slight Hazard, (Unmixed)
General Fire hazards; (Mixed) – Pyrotechnic compositions burn violently and are self-oxidized. Faster burning compositions may reach detonation levels dependent upon composition, packaged configuration and/or containment. (Unmixed) – Ingredients are not generally considered fire hazards at these small quantities. Larger amounts could be classified as Flammable Solids and/or Oxidizers for transportation and emergency response.	

Rev: B

Dated: 19 September 2017



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Binary Kits– (All Types)

Means of Extinguishment:

Pyrotechnics are self-oxidized and cannot be extinguished with normal means. Do not fight fires involving the mixed binary. Incipient fires or fires involving unmixed ingredients may be fought. Do not use suffocation methods, clear area of personnel and flood with water, (unmixed Binary Kits only!).

SECTION VI: ACCIDENTAL RELEASE MEASURES

Containment Procedures:

Spilled ingredients, (unmixed) may be swept up and re-packaged in original packaging or equivalent. (Do not attempt to re-use cleaned up ingredient, contamination or grit will be present that will cause a significant risk of ignition when mixing with part 2 of kit). In case mixed pyrotechnic composition is spilled: Keep away from any possible ignition sources such as open flames, sparks and non-rated electrical devices. Prevent possible electrostatic discharges (for example: do not use a synthetic dustpan and brush).

Clean-Up Procedures:

Packaged materials can be picked up gently. For (unmixed) spilled material, which may be released accidentally, flood area with water and use conductive or natural material utensils for pick-up. Place into a closed conductive container for disposal. (Mixed) Flood with water, allow to soak for several minutes and then follow clean-up procedure.

SECTION VII: HANDLING AND STORAGE

Handling Procedures and equipment:

All pyrotechnics should be handled with caution. Avoid open flames, smoking, friction, impact, excessive heat, electrostatic discharges, radio frequency interference. Safety instructions included in packaging. Unmixed ingredients, (independently) are hazard classified as an Oxidizer and Flammable Solid and must be handled accordingly.

Storage Requirements:

Store in a cool, well ventilated, and dry area. Binary Kits, (as packaged) are classified as an Article, Pyrotechnic, Class 1.4

SECTION VIII: EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Limits:	ACGIH TLV = 10 mg/m ³	OSHA PEL = 10 mg/m ³	OTHER = Nuisance Dust
Engineering Controls: Exposure to the mixing process should be isolated and considered a one-time process. The following chemicals have exposure levels listed on specific SDS, (These PEL's are only applicable during manufacturing); Silicon Dioxide			

Rev: B

Dated: 19 September 2017



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Binary Kits– (All Types)

Personal Protective equipment;

Wear Protective Gloves and Face shield while mixing.

SECTION IX: PHYSICAL PROPERTIES

Physical state; Powder – Supplied in two separate containers	Odor & Appearance; Usually a White and Gray Powder – No Odor	Specific Gravity; N/A
Odor Threshold; N/A	Viscosity; N/A	Partition Coefficient; (n-Octanol/Water) N/A
Vapor Density; (Air=1) N/A	Vapor Pressure; (mm/Hg) N/A	Evaporation Rate; N/A
Boiling Point; (° C) N/A	Freezing Point; (° C) N/A	pH; N/A
Solubility in Water; Oxidizer may dissolve over length of time	Melting Point; (Mixed) will auto-ignite before melting	VOC; N/A
Flashpoint; N/A	Upper Flammable Limits; N/A	Lower Flammable Limits; N/A
Auto-Ignition Temperature; Approx. – 440° C	Sensitivity to Impact; Unknown	Sensitivity to Electrostatic; Unknown.

SECTION X: STABILITY & REACTIVITY

Chemical Stability; X Stable Unstable	If Unstable, Under what Conditions;
Incompatibilities or Conditions to Avoid; Ignition sources and strong alkali's.	
Possibility of Hazardous Reaction; Unmixed – Unlikely. Mixed – High if given source of ignition.	
Reactivity; Mixed composition is very reactive to sources of ignition. Unmixed – Slightly reactive, (Flammable solid).	
Hazardous Decomposition; Decomposition does not occur under normal circumstances during storage, transport and handling. Upon functioning, this material can produce nitrates and oxides.	

SECTION XI: TOXICOLOGICAL INFORMATION

Carcinogenicity – IARC; These devices may contain known or suspected carcinogens. The following list of chemicals are classifiable and you should	Carcinogenicity – ACGIH; These devices may contain known or suspected carcinogens. The following list of chemicals are classifiable and you should
---	--

Rev: B

Dated: 19 September 2017



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Binary Kits– (All Types)

refer to specific SDS for additional information; Silicon Dioxide	refer to specific SDS for additional information;
Routes of Entry; (Only Spilled Ingredients or Mixed Composition) Inhalation & Ingestion	
Measures of Toxicity; (Ingredients Only) Silicon Dioxide – (Oral), LD50 (Rat) 3160 mg/kg Strontium Nitrate – (Oral), LD50 (Rat) 1892 mg/kg Magnesium – (Oral), LD50 (Rat) 230 mg/kg	
Chronic Effects on Humans; (Ingredients Only) (See Ingredient SDS)	Acute Effects on Humans; (Ingredients Only) (See Ingredient SDS)
Other toxic Effects On Humans; (Skin Corrosion/Irritation, Eye Damage/Irritation, Respiratory or Skin Sensitizer, or Aspiration Hazards) (See Ingredient SDS)	
Germ Cell Mutagenicity; (See Ingredient SDS)	Reproductive Toxicity; (See Ingredient SDS)
STOT – Single Exposure; (See Ingredient SDS)	STOT – Repeated Exposure; (See Ingredient SDS)
Symptoms of Overexposure; No overexposure hazards associated with the product.	

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity; The following list of chemicals may have additional ecotoxicity information on their specific SDS;	BOD5 & COD; Not Available
Products of Degradation; Possibly hazardous short term, degradation products are not likely.	
Toxicity of the Products of Biodegradation; The products of degradation are less toxic than the product itself.	
Other Adverse Affects; Not Available	
Bioaccumulation; (See Ingredient SDS)	Mobility in Soil; (See Ingredient SDS)

SECTION XIII: DISPOSAL CONSIDERATIONS:

Epa Waste Codes Applicable; Mixed Binary will exhibit the characteristics of reactivity in accordance with 40 CFR. D003 would be applicable if <u>mixed</u> , <u>Binary</u> is considered hazardous waste. (Unmixed) Materials at this quantity (if bottled) may be placed within normal refuse container.

Rev: B

Dated: 19 September 2017



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Binary Kits– (All Types)

Waste disposal;

Wastes must be disposed of in accordance with Local, State and Federal regulations. As stated above, unused mixed composition does exhibit a RCRA characteristic as depicted by 40 CFR and/or other international regulations. Mixed Binary should be used in its entirety. Burnt material, (ash – if any) may be disposed of in regular refuse container.

SECTION XIV: TRANSPORTATION INFORMATION

Dot Classification & UN Identification; Article Pyrotechnic, UN0431, Class 1.4G	Proper Shipping Name & Technical Name; Article, Pyrotechnic (Binary Kit)
Special Provisions for Transport; In case of an accident, the ERG should be consulted for emergency procedures.	

SECTION XV: REGULATORY INFORMATION:

Federal & State Regulations; Regulations governing the manufacturing, use and sale of pyrotechnics and/or hazardous Chemicals are applicable to this product line.
Other Regulations; OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: Some of the compositional ingredients are on the European Inventory of Existing Commercial Chemical Substances. Ingredients may have specific Federal, State or local regulations governing thresholds and handling procedures and only apply to the manufacturing of these items. If one of the ingredients is Potassium Perchlorate, the state of California requires that this warning be given – “Some products may contain Perchlorates. Special Handling may apply! See www.dtsc.ca.gov/hazardouswaste/perchlorate .”

SECTION XVI: OTHER INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, expressed or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Next FX, Inc. or its affiliates be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Next FX, Inc. Affiliates or Consultants have been advised of the possibility of such damages.		
Date Prepared; 18 Sept. 2013	Prepared By; Dennis Slicer	Telephone Number; (406)322-1304

Rev: B

Dated: 19 September 2017



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Gerbs, Types 1, 2, 3 & 4 – (All colors)

SECTION I: PRODUCT & MANUFACTURER IDENTIFICATION

Product Identifier Gerbs Type(s) 1, 2, 3 & 4, Jets, Fountains, Smoke		
Product Use; Theatrical Pyrotechnics and Special Effects. Device will expel burning projections and will continue to burn for a short duration.		
Manufacturers Name; Distributed By: Next FX, Inc. Mfg. By: Stage FX, Inc.		
Street Address; 184 McNaley Road		City; Columbus
		State MT - USA
Zip Code; 59019	Telephone Number; (406)322-1303	Emergency Numbers; Domestic - (800)255-3924 Inter. - +01 (813)248-0585

SECTION II: HAZARDS IDENTIFICATION

WHMIS Classification/GHS Classification: Explosive Class 1.4	
	
WARNING	
Hazard statement: Fire or Projection Hazard	
Precautionary Statements: Prevention; Keep away from heat/sparks/open flames/hot surfaces/stray electrical currents – “No Smoking”	
Response; In case of fire: Evacuate area Explosion risk in case of fire Do NOT fight fire when fire has reached explosive product.	
Product Use: Burning projections can and will ignite combustible materials. Height & radial safety distances should be applied. Refer to label or manufacturer for appropriate safety distances for specific product. “FOR PROFESSIONAL USE ONLY” not for consumer or retail sales. Sales to persons under (18) years prohibited.	
Potential Acute Health Effects: Device could cause serious burn injuries if incorrectly used.	
Potential Chronic Health Effects: There are no chronic affects from handling this product appropriately. See appropriate SDS for component ingredients.	



184 McNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Gerbs, Types 1, 2, 3 & 4 – (All colors)

National Fire Protection Association Ratings:

Health Hazard – 1 Flammability – 3 Reactivity – 0 Special - 0

SECTION III: COMPOSITION/INGREDIENT INFORMATION

Hazardous Ingredients	%	CAS Number
Potassium Perchlorate	*	7778-74-7
Charcoal	*	7440-44-0
Sodium Benzoate	*	532-32-1
Dicyandiamide	*	125148-58-5
Sodium Bicarbonate	*	144-55-8
Potassium Nitrate	*	7757-79-1
Sulfur	*	7704-34-9
Titanium	*	7440-32-6
Saran Resin	*	9011-06-7
Strontium Carbonate	*	1633-05-2
Red Gum	*	
Magnesium	*	7439-95-4
Strontium Nitrate	*	10042-76-9
Dextrine	*	9004-53-9
Barium Nitrate	*	10022-31-8
VINSOL	*	
Magnesium Carbonate	*	546-93-0
Polyvinyl Chloride	*	9002-86-2
Zirconium	*	7704-99-6

* Ingredient percentages are company proprietary.

SECTION IV: FIRST AID MEASURES

Routes of Entry: X Skin contact - Skin Absorption X eye contact X Inhalation X Ingestion
<u>Skin contact:</u> Product itself does not have any skin contact hazards. Serious burns could take place if accidental ignition. Contents (if spilled) should be washed immediately from exposed area with plenty of soap and water.
<u>Eye contact:</u> Product itself does not have any eye contact hazards. Serious eye injuries could result if accidental ignition occurs. (If Contents are spilled) Flush eyes for a minimum of 15 minutes. If irritation persists, seek medical attention.
<u>Inhalation:</u> Product itself does not present an inhalation hazard. Smoke from device functioning may cause irritation if used within non-ventilated or small confined spaces.



184 mcNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Gerbs, Types 1, 2, 3 & 4 – (All colors)

Ingestion:

Product itself does not present an ingestion hazard. If contents are accidentally ingested, seek medical attention as soon as possible.

Acute Health Effects:

Some ingredients are considered irritants and should be handled as such if exposed.

Chronic Health Effects:

There are no chronic affects from the handling of this product.

SECTION V: FIRE FIGHTING MEASURES & RELATED INFORMATION

Flammability; All Pyrotechnics are highly flammable	NFPA Rating; 3 – Major Hazard
General Fire hazards; Pyrotechnic compositions/devices burn violently and are self-oxidized. Faster burning compositions may reach detonation levels dependent upon composition, packaged configuration and/or containment.	
Means of Extinguishment; Pyrotechnics are self-oxidized and cannot be extinguished with normal means. Do not fight fires involving the devices. Incipient fires may be fought. Do not use suffocation methods, clear area of personnel!	

SECTION VI: ACCIDENTAL RELEASE MEASURES

Containment Procedures; Devices may be gently picked up and re-packaged in original packaging or equivalent. In case pyrotechnic composition is spilled: Keep away from any possible ignition sources such as open flames, sparks and non-rated electrical devices. Prevent possible electrostatic discharges (for example: do not use a synthetic dustpan and brush).
Clean-Up Procedures; Packaged devices can be picked up gently. For spilled material, which may be released accidentally, flood area with water and use conductive or natural material utensils for pick-up. Place into a closed conductive container for disposal.

SECTION VII: HANDLING AND STORAGE

Handling Procedures and equipment; All pyrotechnics should be handled with caution. Avoid open flames, smoking, friction, impact, excessive heat, electrostatic discharges, radio frequency interference and moisture, (humidity). Items are meant to be used in water. Safety instructions included in packaging. In some cases, unpackaged or explosive/pyrotechnic materials packaged in other than original packaging may have to be handled as a higher hazard. i.e. 1.1 or 1.3 classification.
Storage Requirements; Store in a cool, well ventilated, and dry area. Dependent upon application, separation distances and security measures are to be complied with. Storage compatibility should be maintained in accordance with Federal regulations.



184 mcNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Gerbs, Types 1, 2, 3 & 4 – (All colors)

SECTION VIII: EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Limits:	ACGIH TLV = N/A	OSHA PEL = N/A	OTHER = N/A
Engineering Controls; Devices need to be used in a ventilated area for removal of smoke. Some ingredients may have exposure controls but are relegated to manufacturing processes only. Devices expel burning incandescent material that should be designed to fall upon flame resistant material or surfaces.			
Personal Protective equipment; Safety glasses are required when handling. Prevention or reduction of Static electricity should be accomplished by wearing all cotton clothing.			

SECTION IX: PHYSICAL PROPERTIES

Physical state; Solid	Odor & Appearance; Normally Black Tube - No odor	Specific Gravity; N/A
Odor Threshold; N/A	Viscosity; N/A	Partition Coefficient; (n-Octanol/Water) N/A
Vapor Density; (Air=1) N/A	Vapor Pressure; (mm/Hg) N/A	Evaporation Rate; N/A
Boiling Point; (°C) N/A	Freezing Point; (°C) N/A	pH; N/A
Solubility in Water; N/A	Melting Point; Pyrotechnics will reach auto-ignition temperature before melting	VOC; N/A
Flashpoint; N/A	Upper Flammable Limits; N/A	Lower Flammable Limits; N/A
Auto-Ignition Temperature; Approx. - 440° C	Sensitivity to Impact; N/A	Sensitivity to Electrostatic; Only when device is un-shunted.

SECTION X: STABILITY & REACTIVITY

Chemical Stability; X Stable Unstable	If Unstable, Under what Conditions;
Incompatibilities or Conditions to Avoid; Ignition Sources.	
Possibility of Hazardous Reaction; Very Low when device is shunted or short circuited. Low possibility when un-shunted.	
Reactivity; Loose composition is very reactive to sources of ignition.	
Hazardous Decomposition; Decomposition does not occur under normal circumstances during storage, transport and handling. Upon functioning, this device can produce Nitrates and other oxides.	



184 mcNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Gerbs, Types 1, 2, 3 & 4 – (All colors) SECTION XI: TOXICOLOGICAL INFORMATION

Carcinogenicity – IARC; These devices may contain known or suspected carcinogens. The following list of chemicals are classifiable and you should refer to specific SDS for additional information;	Carcinogenicity – ACGIH; These devices may contain known or suspected carcinogens. The following list of chemicals are classifiable and you should refer to specific SDS for additional information;
Routes of Entry; (Only Spilled Compositions) Inhalation & Ingestion	
Measures of Toxicity; (Ingredients Only) Potassium Nitrate – (Oral), LD50 (Rat) 3015 mg/kg Sulfur – (Inhalation), LC50 (Rat) >9.23 mg/L/4H, (Oral), LD50 (Rat) >3000 mg/kg: (Dermal), LD50 (Rabbit)>2000 mg/kg Sodium Benzoate – (Oral), LD50 - (Rat) 2100 mg/kg Sodium Bicarbonate – (Oral), LD50 - (Rat) 4220 mg/kg Charcoal – (Oral), LD50 (Rat) >10,000 mg/kg Strontium Nitrate – (Oral), LD50 (Rat) 1892 mg/kg Magnesium – (Oral), LD50 (Rat) 230 mg/kg Barium Nitrate – (Oral), LD50 (Rat) 355 mg/kg	
Chronic Effects on Humans; (Ingredients Only) (See Ingredient SDS)	Acute Effects on Humans; (Ingredients Only) (See Ingredient SDS)
Other toxic Effects On Humans; (Skin Corrosion/Irritation, Eye Damage/Irritation, Respiratory or Skin Sensitizer, or Aspiration Hazards) N/A	
Germ Cell Mutagenicity; N/A	Reproductive Toxicity; N/A
STOT – Single Exposure; N/A	STOT – Repeated Exposure; N/A
Symptoms of Overexposure; No overexposure hazards associated with the device or product.	

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity; The following list of chemicals may have additional ecotoxicity information on their specific SDS; Sulfur Sodium Benzoate Sodium Bicarbonate	BOD5 & COD; Not Available
Products of Degradation; Possibly hazardous short term, degradation products are not likely.	
Toxicity of the Products of Biodegradation; The products of degradation are less toxic than the product itself.	
Other Adverse Affects; Not Available	
Bioaccumulation; N/A	Mobility in Soil; N/A



184 mcNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Gerbs, Types 1, 2, 3 & 4 – (All colors)

SECTION XIII: DISPOSAL CONSIDERATIONS:

Epa Waste Codes Applicable;

Unused devices will exhibit the characteristics of reactivity in accordance with 40 CFR. D003 would be applicable if devices are considered waste.

Waste disposal;

Wastes must be disposed of in accordance with Local, State and Federal regulations. As stated above, unused device does exhibit a RCRA characteristic as depicted by 40 CFR and/or other international regulations. Best suited for incineration at a licensed experienced disposal facility. Used devices may be disposed of in standard refuse container.

SECTION XIV: TRANSPORTATION INFORMATION

Dot Classification & UN Identification;

Class 1.4G - UN0431

Explosive

Proper Shipping Name & Technical Name;

Articles, Pyrotechnic

Special Provisions for Transport;

In case of an accident, the ERG should be consulted for emergency procedures. Evacuation will be necessary if accident has involved multiple devices in a fire or the potential for a fire exists.

SECTION XV: REGULATORY INFORMATION:

Federal & State Regulations;

Regulations governing the manufacturing, use and sale of pyrotechnics and/or Chemicals are applicable to this product line. Please contact your distributor or the manufacturer for specific regulations if you have questions.

Other Regulations;

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
EINECS: Some of the compositional ingredients are on the European Inventory of Existing Commercial Chemical Substances. Ingredients may have specific Federal, State or local regulations governing thresholds and handling procedures and only apply to the manufacturing of these items. If one of the ingredients in these devices is Potassium Perchlorate, the state of California requires that this warning be given – “Some products may contain Perchlorates. Special Handling may apply!

See www.dtsc.ca.gov/hazardouswaste/perchlorate.”



184 mcNaley Road
Columbus, MT 59019
(406)322-1303

Next FX, Inc. SAFETY DATA SHEET

Gerbs, Types 1, 2, 3 & 4 – (All colors) SECTION XVI: OTHER INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, expressed or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Next FX, Inc. or its affiliates be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Next FX, Inc. Affiliates or Consultants have been advised of the possibility of such damages.

Date Prepared;
28 April 2015

Prepared By;
Dennis Slicer

Telephone Number;
(406)322-1304

Safety Data Sheet

Chemical Name: Propane

Synonyms: Dimethylmethane, Liquefied Petroleum Gas (LPG), Sales Propane, Commercial Propane, Refinery Propane, Product Propane (non-odorized)

Section 1 - Chemical Product and Company Identification

Company Information

Ferrellgas (Blue Rhino)
One Liberty Plaza
Liberty, MO 64068
Emergency # 800-424-9300 (CHEMTREC)
General SDS assistance # 855-738-9178 (Ferrellgas Safety Department)

Product Information

Product: Propane (odorized)
Chemical Name: Propane
Chemical Family: Liquefied Petroleum Gas (Paraffinic Hydrocarbons)
Chemical Formula: C₃H₈

Section 2 - Hazards Identification

GHS Classification:

Flammable Gas - Category 1
Gases Under Pressure - Liquefied Gas

GHS LABEL ELEMENTS

Pictogram(s)



Signal Word

Danger

Hazard Statements

H220 - Extremely flammable gas.
H280 - Contains gas under pressure, may explode if heated.

Precautionary Statements

Prevention

P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking

Response

P376 - Stop leak if safe to do so.

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 - Eliminate all ignition sources if safe to do so.

Storage

P403 - Store in a well-ventilated place.

P405 - Store locked up.

P410 - Protect from sunlight.

Disposal

P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

Safety Data Sheet

Material Name: Propane

Section 3 - Composition / Information on Ingredients

CAS #	Component	Percent
74-98-6	Propane	85 - 100
106-97-8	Butane and heavier	0 - 2.5
74-84-0	Ethane	0 - 5
115-07-1	Propylene	0 - 10
75-08-1	Ethyl Mercaptan	0 - 0.0025

Section 4 - First Aid Measures

First Aid: Eyes

Direct contact with liquid propane can result in eye burns.

In case of contact with eyes, hold eyelids open to allow liquid to evaporate and gently flush with lukewarm water.

Cover eyes to protect from light. Seek immediate medical attention.

First Aid: Skin

Direct contact with liquid propane can result in skin burns (frostbite).

Remove contaminated clothing. In case of blistering, frostbite or freeze burns seek immediate medical attention.

First Aid: Ingestion

Risk of ingestion is extremely low. However, if oral exposure occurs, seek immediate medical assistance.

First Aid: Inhalation

This product is classified as a simple asphyxiant. High vapor concentrations may produce a reversible central nervous system depression (anesthesia) and asphyxiation.

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

Section 5 - Fire Fighting Measures

General Fire Hazards

See Section 9 for Flammability Properties.

Liquid releases flammable vapors at well below ambient temperatures and readily forms a flammable mixture with air. Dangerous fire and explosion hazard when exposed to heat, sparks or flame. Vapors are heavier than air and may travel long distances to a point of ignition and flash back.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

Extinguishing Media

Use extinguishing media suitable for the surrounding material, preferably or, any extinguisher suitable for Class B fires, dry chemical, fire fighting foam, CO₂, and other gaseous agents. However, fire should not be extinguished unless flow of gas can be immediately stopped.

Unsuitable Extinguishing Media

None

Safety Data Sheet

Material Name: Propane

Fire Fighting Equipment/Instructions

Gas fires should not be extinguished unless flow of gas can be immediately stopped. Shut off gas source and allow gas to burn out. If spill or leak has not ignited, determine if water spray may assist in dispersing gas or vapor to protect personnel attempting to stop leak. Use water to cool equipment, surfaces and containers exposed to fire and excessive heat. For large fire the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Isolate area, particularly around ends of storage vessels. Let vessel, tank car or container burn unless leak can be stopped. Withdraw immediately in the event of a rising sound from a venting safety device. Large fires typically require specially trained personnel and equipment to isolate and extinguish the fire.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Section 6 - Accidental Release Measures

Recovery and Neutralization

Stop the source of the release, if safe to do so.

Materials and Methods for Clean-Up

Do not flush down sewer or drainage systems. Do not touch spilled liquid (frostbite/freeze burn hazard!). Consider the use of water spray to disperse vapors. Isolate the area until gas has dispersed. Ventilate and gas test area before entering.

Emergency Measures

Evacuate nonessential personnel and secure all ignition sources. No road flares, smoking or flames in hazard area. Consider wind direction, stay upwind and uphill, if possible. Evaluate the direction of product travel. Vapor cloud may be white, but color will dissipate as cloud disperses - fire and explosion hazard is still present!

Personal Precautions and Protective Equipment

Do not touch spilled liquid (frostbite/freeze burn hazard!).

Environmental Precautions

Do not flush down sewer or drainage systems.

Prevention of Secondary Hazards

None

Section 7 - Handling and Storage

Handling Procedures

Keep away from flame, sparks, ignition sources and excessive temperatures. Use only in well ventilated areas.

Storage Procedures

Store only in approved containers. Keep away from flame, sparks, excessive temperatures and open flame. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Incompatibilities

Keep away from strong oxidizers, ignition sources and heat. Explosion hazard when exposed to chlorine dioxide. Heating barium peroxide with propane causes violent exothermic reaction. Heated chlorine-propane mixtures are explosive under some conditions.

Safety Data Sheet

Material Name: Propane

Section 8 - Exposure Controls / Personal Protection

Component Exposure Limits

Propane (74-98-6)

ACGIH: 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)

OSHA: 1000 ppm TWA; 1800 mg/m³ TWA

NIOSH: 1000 ppm TWA; 1800 mg/m³ TWA

Ethane (74-84-0)

ACGIH: 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)

Propylene (115-07-1)

ACGIH: 500 ppm TWA

Engineering Measures

Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use explosion-proof equipment and lighting in classified/controlled areas.

Personal Protective Equipment: Respiratory

Use a NIOSH approved positive-pressure, supplied air respirator with escape bottle or self-contained breathing apparatus (SCBA) for gas concentrations above occupational exposure limits, for potential for uncontrolled release, if exposure levels are not known, or in an oxygen-deficient atmosphere. CAUTION: Flammability limits (i.e., explosion hazard) should be considered when assessing the need to expose personnel to concentrations requiring respiratory protection.

Personal Protective Equipment: Hands

Use cold-impervious, insulating gloves where contact with liquid may occur.

Personal Protective Equipment: Eyes

Where there is a possibility of liquid contact, wear splash-proof safety glasses and faceshield.

Personal Protective Equipment: Skin and Body

Where contact with liquid may occur, wear appropriate cold insulating protective clothing and faceshield.

Section 9 - Physical & Chemical Properties

Appearance:	Colorless	Odor:	Odorless
Physical State:	Gas	pH:	ND
Max Vapor Pressure:	208 psig @ 100 °F (37.8 °C)	Vapor Density:	1.56 @ 32°F (0°C)
Boiling Point:	-43.8°F (-42.1°C)	Molecular Weight:	44.096
Solubility (H ₂ O):	slight (0.1 to 1.0%)	Specific Gravity:	1.52 (Air = 1)
Expansion Ratio:	1 to 270 (from liquid to gas @ 14.7 psia)	Burning Rate:	ND
Evaporation Rate:	ND	VOC:	ND
Octanol/H ₂ O Coeff.:	ND	Flash Point:	-156°F (-104 °C)
Flash Point Method:	PMCC	Auto Ignition:	842°F (450°C)
Upper Flammability Limit (UFL):	9.6%		
Lower Flammability Limit (LFL):	2.15%		

Safety Data Sheet

Material Name: Propane

Section 10 - Chemical Stability & Reactivity Information

Chemical Stability

This is a stable material.

Hazardous Polymerization

Will not occur.

Conditions to Avoid

Keep away from strong oxidizers, ignition sources and heat.

Incompatible Products

Explosion hazard when exposed to chlorine dioxide. Heating barium peroxide with propane causes violent exothermic reaction. Heated chlorine-propane mixtures are explosive under some conditions.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke) may be formed during combustion.

Section 11 - Toxicological Information

Acute Toxicity

A: General Product Information

Propane exhibits some degree of anesthetic action and is mildly irritating to the mucous membranes. At high concentrations propane acts as a simple asphyxiant without other significant physiological effects. High concentrations may cause death due to oxygen depletion.

Potential Health Effects: Skin Corrosion Property/Stimulativeness

Vapors are not irritating. Direct contact to skin or mucous membranes with liquefied product or cold vapor may cause freeze burns and frostbite. Contact to mucous membranes with liquefied product may cause frostbite and freeze burns. Signs of frostbite include a change in the color of the skin to gray or white, possibly followed by blistering. Skin may become inflamed and painful.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

Vapors are not irritating. However, contact with liquid or cold vapor may cause frostbite, freeze burns, and permanent eye damage.

Potential Health Effects: Ingestion

Ingestion is unlikely. Contact with mucous membranes with liquefied product may cause frostbite and freeze burns.

Potential Health Effects: Inhalation

This product is considered to be non-toxic by inhalation. Inhalation of high concentrations may cause central nervous system depression such as dizziness, drowsiness, headache, and similar narcotic symptoms, but no long-term effects. Numbness, a "chilly" feeling, and vomiting have been reported from accidental exposures to high concentrations. This product is a simple asphyxiant. In high concentrations it will displace oxygen from the breathing atmosphere, particularly in confined spaces. Signs of asphyxiation will be noticed when oxygen is reduced to below 16%, and may occur in several stages. Symptoms may include rapid breathing and pulse rate, headache, dizziness, visual disturbances, mental confusion, incoordination, mood changes, muscular weakness, tremors, cyanosis, narcosis and numbness of the extremities. Unconsciousness leading to central nervous system injury and possibly death will occur when the atmospheric oxygen concentration is reduced to about 6% to 8% or less.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Safety Data Sheet

Material Name: Propane

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity

This product is not reported to have any mutagenic effects.

Carcinogenicity

A: General Product Information

This product is not reported to have any carcinogenic effects.

Reproductive Toxicity

This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Repeated Exposure

This product is not reported to have any specific target organ repeat effects.

Aspiration Respiratory Organs Hazard

This product is not reported to have any aspiration hazard effects.

Section 12 - Ecological Information

Ecotoxicity

A: General Product Information

Liquid release is only expected to cause localized, non-persistent environmental damage, such as freezing.

Biodegradation of this product may occur in soil and water. Volatilization is expected to be the most important removal process in soil and water. This product is expected to exist entirely in the vapor phase in ambient air.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data is available for this product's components.

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Mobility in Soil

No information available.

Section 13 - Disposal Considerations

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 14 - Transportation Information

DOT Information

UN #: 1075 or 1978 Hazard Class: 2.1

Shipping Name: Petroleum Gases, Liquefied

Placard:



Safety Data Sheet

Material Name: Propane

Section 15 - Regulatory Information

Regulatory Information

Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Propylene (115-07-1)

SARA 313: 1.0 % de minimis concentration

SARA Section 311/312 – Hazard Classes

Acute Health

--

Chronic Health

--

Fire

X

Sudden Release of Pressure

X

Reactive

--

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

INGREDIENT NAME (CAS NUMBER)
Propylene (115-07-1)

CONCENTRATION PERCENT BY VOLUME
30 max

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Propane	74-98-6	No	Yes	Yes	Yes	Yes	Yes
Ethane	74-84-0	No	Yes	Yes	Yes	Yes	Yes
Propylene	115-07-1	Yes	Yes	Yes	Yes	Yes	Yes

Component Analysis - WHMIS IDL

No components are listed in the WHMIS IDL.

Additional Regulatory Information

Component Analysis - Inventory

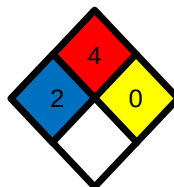
Component	CAS #	TSCA	CAN	EU
Propane	74-98-6	Yes	DSL	EINECS
Ethane	74-84-0	Yes	DSL	EINECS
Propylene	115-07-1	Yes	DSL	EINECS

Safety Data Sheet

Material Name: Propane

*** Section 16 - Other Information ***

NFPA® Hazard Rating Health 2
 Fire 4
 Reactivity 0



HMIS® Hazard Rating Health 2 Moderate
 Fire 4 Severe
 Physical 0 Minimal

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration.; NJTSR = New Jersey Trade Secret Registry; TSCA = Toxic Substance Control Act; EU = European Union; CAN = Canada

Literature References

None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

Issue Information

This Safety Data Sheet supersedes all previous editions.

Issued: January, 2015

Issued by: Ferrellgas Safety Department

Ferrellgas

One Liberty Plaza

Liberty, MO 64068



SAFETY DATA SHEET

This SDS complies with GHS Revision 5, OSHA 29CFR 1910.1200

Section 1: Chemical Product and Company Identification

MANUFACTURER'S NAME

Sparktacular Distribution Inc.
17698 Bee Line Hwy
Jupiter, FL 33478

EMERGENCY TELEPHONE

Chemtrec U.S.-Canada: 800-424-9300
Chemtrec International: 703-527-3887
Information: 954-792-1101

Safety Data Sheet Competent Person:

Max Freedman Sparkular@sparktacular.com

DATE PREPARED: January 29, 2017

REVISION DATE: February 13, 2017

PRODUCT NAME: **Granulated Grains**

FORMULA: Preparation/Mixture

PRODUCT USE: Fuel for Sparkular Machine

Section 2: Hazards Identification

GHS Hazard Class

Not Applicable. This product does not meet the physical, health, or environmental classification criteria of GHS (Globally Harmonized System).

Hazards not otherwise classified (HNOC) - None

HAZARD CLASSIFICATION

Not classified as flammable based on IATA, IMDG, and DOT.

FIRE AND EXPLOSION

Not considered flammable or combustible.

POTENTIAL HEALTH EFFECTS

<0 % of mixture consists of ingredients of unknown acute toxicity

APPEARANCE

Grey and white grain

NFPA Rating

Component	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
Granulated Grains	0	1	1	--

Section 3: Composition, Information on Ingredients

PRODUCT COMPOSITION	APPROX %	CAS NO.	EC NUMBER	CANADA DSL
Titanium (Ti)	80	7440-32-6	231-142-3	Y
Zirconium (Zr)	20	7440-67-7	231-176-9	Y

Some items on this SDS may be designated as trade secrets (TS). Bonafide requests for disclosure of trade secret information to medical personnel must be made in accordance with the provisions contained in 29 CFR 1910.1200 I 1-13.

Section 4: First Aid Measures

Description of First Aid Measures

Inhalation

Remove to fresh air. If not breathing, provide CPR (cardio pulmonary resuscitation). Get immediate medical attention.

Skin Contact

Wash skin with soap and water.

Product: Granulated Grains
SDS Page 1 of 5



Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.
Ingestion	If swallowed do NOT induce vomiting. Rinse mouth with water. Never give anything to an unconscious person. Get medical attention if you feel unwell.

Most important symptoms and effects, both acute and delayed

Symptoms/Injuries after Inhalation	May cause respiratory tract irritation if large amounts of dust are inhaled. May cause dizziness, headache, nausea, and mental confusion.
Symptoms/Injuries after Skin Contact	Not expected, but may cause skin irritation. Symptoms may include redness, drying, defatting, and cracking of the skin.
Symptoms/Injuries after Eye Contact	May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/Injuries after Ingestion	May be harmful if swallowed. May cause stomach distress, nausea, or vomiting.

Indication of any immediate medical attention and special treatment needed

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately.

Section 5: Fire-fighting Measures

Suitable extinguishing media	Class D fire extinguisher; sand; dry ground dolomite; or dry powder extinguishing agents. Do NOT use water directly on fire. Do NOT use carbon dioxide. Do NOT use halogenated extinguisher. Water on molten or burning titanium may result in an eruption. DO NOT SPRAY WATER ON BURNING TITANIUM
Special hazards arising from the substance or mixture	Wear standard protective equipment and self contained breathing apparatus for firefighting if necessary. Titanium fires have intense heat.
Protective actions fire-fighters	Flammability of product is related to the size of particle. The smaller the size the easier to burn. The particle size of 180-300µm does not burn easily.
Further information	

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

Wear proper personal protective equipment. Avoid generating and/or breathing dust or fine particulate.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent spills or contaminated rinse water from entering sewers or watercourses.

Methods and materials for containment and cleaning up

In case of spills, sweep up and shovel into a suitable container.

Reference to other Sections For personal protection reference section 8. For disposal reference section 13.

Section 7: Handling and Storage

Precautions for safe handling

Further processing of solid materials may result in the formation of combustible dusts.
Use only with adequate ventilation.
Wear proper protective equipment when handling this material.
Avoid contact with skin, eyes, or clothing.
Wash hands after handling this material.
For precautions see section 2.

Conditions for safe storage, including any incompatibilities

Store upright in a cool, dry place.
Avoid contact with oxidizing agents and acids.
Unutilized chemical segregation.

Bulk Storage:

When storing product in bulk take extra precaution to avoid ignition sources.

Product: Granulated Grains
SDS Page 2 of 5



Note* - Product is typically sold in small individual use packages should be considered low fire and exposure risk.

Specific uses

To be used as fuel for the Sparkular Machine.

Section 8: Exposure Controls/Personal Protection

Control Parameters

PRODUCT COMPOSITION	ACGIH TLV	OSHA PEL	NIOSH REL
Titanium (Ti)	--	--	--
Zirconium (Zr)	5 mg/m ³	TWA 5 mg/m ³	TWA 5 mg/m ³ ST 10 mg/m ³ [*Note: The REL applies to all zirconium compounds (as Zr) except Zirconium tetrachloride.]

*PNOR (Particulates Not Otherwise Regulated): OSHA 5 mg/m³ Respirable fraction (R), 15 mg/m³ Total Particulates

**PNOS (Particulates Not Otherwise Specified): ACGIH 3 mg/m³ Respirable fraction (R), 10 mg/m³ Total Particulates, total dust less than 1% quartz.

Exposure controls

VENTILATION:

Always provide adequate ventilation where this material is used.

SPECIAL VENTILATION CONTROLS:

None

RESPIRATORY PROTECTION:

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or the CEN European Standards (EU). Use a NIOSH/MSHA or European Standard (EN) approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Canadian CSA Standard Z94.4-93.

PROTECTIVE GLOVES:

Neoprene, butyl, or nitrile rubber gloves are recommended.

EYE PROTECTION:

Recommend eye protection using safety glasses or goggles.

SKIN PROTECTION:

Suitable protective clothing to reduce skin contact.

WORK/HYGIENE PRACTICES:

Avoid breathing dust. Avoid contact with eyes. Wash hands after handling.

OTHER EQUIPMENT:

Make safety shower, eyewash stations, and hand washing equipment available in the work area where large volumes of material are being processed.

Section 9: Physical and Chemical Properties

	PRODUCT CRITERIA
APPEARANCE - COLOR	Grey and white
PHYSICAL STAT	Solid
ODOR	Odorless
ODOR THRESHOLD	Data not available
PH	Data not available
MELTING POINT/FREEZING POINT	~1660°C (3020°C) (Titanium)
INITIAL BOILING POINT AND BOILING RANGE	> 3000°C (5432°C) (Titanium)
FLASH POINT	Data not available
EVAPORATION RATE	Data not available
FLAMMABILITY (Solid, gas)	Data not available
UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS	Data not available
VAPOR PRESSURE	Data not available
VAPOR DENSITY (AIR = 1)	Data not available
RELATIVE DENSITY (@25°C)	Data not available
SOLUBILITY(IES)	Insoluble
OXIDIZING PROPERTIES	Data not available
PARTITION COEFFICIENT: n-octanol/water	Data not available
AUTO IGNITION TEMPERATURE	Fines are spontaneously combustible in air
DECOMPOSITION TEMPERATURE	Data not available
VISCOSITY	Data not available
EXPLOSIVE PROPERTIES	Data not available

Product: Granulated Grains
SDS Page 3 of 5



Section 10: Stability and Reactivity

Reactivity	Not reactive.
Chemical Stability	Stable.
Possibility of Hazardous Reactions	May react violently with interhalogens, oxidizing agents, strong acids or halogenated compounds.
Conditions to Avoid	Contact with incompatible materials.
Incompatibility (Materials to Avoid)	Avoid contact with, acids, oxidizers and potassium nitrate
Hazardous Decomposition Products	Reactions with incompatible materials and decomposition may result in metallic oxides and irritating or toxic gases being released.

Section 11: Toxicological Information

GHS Required Criteria	Toxicity Criteria	Toxicity Information	Comments	Chemical Constituent
Acute Toxicity	ATE LD50 (Oral/Rat):	Data not available	Not applicable	Product
	ATE LD50 (Dermal/Rabbit):	Data not available	Not applicable	Product
	ATE LC50 (Inhalation/Rat):	Data not available	Not applicable	Product
	LD50 (Oral/Rat):	Data not available		
	LD50 (Abdominal Cavity/Mouse)	Data not available		
	LD50 (Dermal/Rabbit):	Data not available		
	LC50 (Inhalation/Rat):	Data not available		
Skin Corrosion/Irritation	The substance may induce skin sensitization involving epithelioid granulomas.		Not Classified	Zirconium
Serious Eye Damage / Eye Irritation		Data not available		
Respiratory or Skin Sensitization		Data not available		
Germ Cell Mutagenicity	In evaluation of the biocompatibility of pure titanium and two different titanium alloys, titanium alloys were implanted into the dorsal subcutaneous tissues of a guinea pig for 12 weeks and were immersed in calf serum or in Ringer's solution for 8 weeks. No evident surface changes were found		Not Classified	Titanium
Carcinogenicity	NTP	Not Listed		
	IARC	Not Listed		
	OSHA	Not Listed		
Reproductive Toxicity		Data not available		
STOT -- Single Exposure	May cause respiratory irritation.		Category 3 (respiratory tract)	Zirconium
STOT -- Repeated Exposure	Based on reports in various animal tests and epidemiological studies, the cause of respiratory disorders cannot be exclusively attributed to exposure to zirconium powder (metal).		Not Classified	Zirconium
Aspiration Hazard		Data not available		

STOT = Specific Target Organ Toxicity; ATE: Acute Toxicity Estimate calculation per OSHA 1910.1200

Section 12: Ecological Information

	Chemical Constituent
Toxicity	Data not available
Persistence and degradability	Data not available
Bioaccumulative potential	Data not available
Mobility in soil	Data not available
PBT and vPvB assessment	PBT/vPvB assessment not available as chemical assessment not required/not conducted
Other adverse effects	Data not available

Section 13: Disposal Considerations

Waste from residues/unused products: Follow the waste disposal requirements of your country, state, or local authorities.

Contaminated packaging: Contaminated packaging material should be disposed of as stated above for residues and unused product.

Rinsate: Do not dispose of rinse water containing product in a sanitary sewer system or stormwater drainage system.

Product: Granulated Grains
SDS Page 4 of 5



Section 14: Transport Information

<u>DOT TRANSPORT</u>		Not Regulated
<u>ADR = International Carriage of Dangerous Goods by Road</u>		Not Regulated
<u>SEA TRANSPORT</u>	IMDG	Not Regulated
<u>AIR TRANSPORT</u>	IATA/ICAO	Not Regulated

Section 15: Regulatory Information

TOXIC SUBSTANCE CONTROL ACT (TSCA) STATUS:

This product is in compliance with rules, regulations, and orders of TSCA. All components are either listed on a federal chemical inventory or are considered exempt.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III SECTION 313 SUPPLIER NOTIFICATION:

This regulation requires submission of annual reports of toxic chemical(s) that appear in section 313 of the Emergency Planning and Community Right To Know Act of 1986 and 40 CFR 372. This information must be included in all SDS's that are copied and distributed for the material.

The Section 313 toxic chemicals contained in this product are: None

CALIFORNIA PROPOSITION 65:

This regulation requires a warning for California Proposition 65 chemical(s) under the statute.
The California proposition 65 chemical(s) contained in this product are: None

STATE RIGHT-TO-KNOW TOXIC SUBSTANCE OR HAZARDOUS SUBSTANCE LIST:

Massachusetts's hazardous substance(s):	Not listed
Pennsylvania hazardous substance code(s):	Zirconium
New Jersey:	Titanium, Zirconium

CANADA:

~~WHMIS~~ 2015: This SDS is in compliance with WHMIS 2015 (HPR / new HPA).

EUROPEAN UNION:

~~This product has been~~ reviewed for compliance with the following European Community Directives: REACH 1907/2006; Regulation (EC) No 1272/2008 on classification, labeling, and packaging (CLP) of substances and mixtures.

Section 16: Other Information

Initial issue date:	January 29, 2017
Final revision date:	February 13, 2017
Revision Number:	0
Revision explanation:	Initial version
Information Sources:	RTECS, ECHA, REACH, OSHA 29CFR 1910.1200

"Disclaimer: This document is generated to distribute health, safety and environmental data. It is not a specification sheet and none of the displayed data should be construed as a specification. Information on this SDS sheet was obtained from sources which we believe are reliable, and we believe that the information is complete and accurate. However, the information is provided without any warranty, express or implied, regarding its correctness. Some of the information presented and conclusions drawn are from sources other than direct test data of the substance. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may also be beyond our knowledge. It is the user's responsibility to determine the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. If the product is used as a component in another product, this SDS information may not be applicable. For these reasons, we do not assume any responsibility and expressly disclaim liability for any loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product."



Product: Granulated Grains
SDS Page 5 of 5

SPARKULAR[®]

OWNERS MANUAL

THE FIRST
INDOOR
FOUNTAIN **MACHINE**



 **SPARKULAR**
DISTRIBUTION INC. TM

To Order 877-792-1101
www.sparkularfx.com


SHOWVEN

 TM
SHOWVEN

Safety

Warnings and Cautions

They are designed to alert your attention to hazards and important information to assist 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 alerting harmful or potentially dangerous activities. Description of the hazard advice is given to prevent mishap relating to incident and or an accident. Do not ignore advice.

Please note that the “Sparkular” Machines “are not allowed to be operated without timed intervals. The maximum operational running time is 60-90 seconds per single discharge cue. If need to operate the discharge functioning time of maximum 90 seconds. A 1 to 3 minute interval in between cues is recommended.

Eye Protection



Wear eye protection to avoid eye injury while filling the granules and the testing of Sparkular machine(s).

Injury Voltages



Warning: Under no circumstances is anyone allowed or should attempt to dismantle the machine and controller or attempt to remove or adjust any components fitted within the machine and controller. Only fully trained service engineers are qualified to diagnose and maintain the machine and controller.

Caution Against Liquids



Warning: Keep machines and granules away from liquids. Keep the machine and controller dry and not use on rainy or snowy weather.

Warning



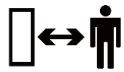
Ensure nothing drop(s) into the nozzle of Sparkular unit. Do Not Cover Fountain Port.

Warning on Granules



If the granules catch fire, the method to extinguish is by using large amount of granulated or fine sand or Class D extinguisher. Do not attempt to empty the machine as this will result in aggravating the granules.

Safe Distance



Audience at a minimum safe distance radius of 10 feet [3M] is recommended (unless approved by the AHJ). Keep away from combustible and flammable materials and the reach of children.

In Case of Emergency



If the machine needs to be shut off immediately in the case of emergency, press the “pause/stop” button on the controller and switch off power supply. Call for medical assistance help if necessary.

Noise Emission



The noise level generated from the Sparkular unit(s) is estimated at 80db depending on the point nearest to the machine(s) during operational discharge mode. Ear protection is not required while operating or using or standing nearby the Sparkular unit. Ear protection is recommended during multiple or for long duration “Testing of Machines”

Cleaning



Please inspect outlet nozzle of Sparkular unit before operation to ensure that there are no burnt granules clump(s) adhering to the inside wall of nozzle. Please turn the unit “upside down” to clean out the clump(s) if required. Using a “Soft Cleaning “bottle brush” is recommended if necessary. CLEAR MATERIAL process is required “Before & After” use this will aid in prolonging the service life of Sparkular unit.

Power Supply Requirement



Please select the proper power supply connector per the power supply of the Sparkular unit. Please note: One power supply cable can support maximum 6 Sparkular units. Each unit can be connected individually or with the power-con series cables provided.

Table of Contents

Sparkular Model (BT02)	Cover
Safety and Warnings – 2 pages	(Please read Prior use)
Introduction of Sparkular System	Page 1
Brief Introduction of the Functions	Page 1
Sparkular Operation Panel	Page 2 to Page 3
Interface	Page 3 to Page 5
DMX Channel Mode	Page 6
Host Controller (ZK 6200)	Page 7
Controller Operation Panel	Page 7 to Page 13
System Configuration and Connection	Page 14
System Prepare and Start	Page 15 to Page 18
End Notes for the Repeat Period	Page 19



1. Sparkular Unit

1) Description of Products

Sparkular is a revolutionary and innovative system producing special effect system. It uses a newly designed delivery control system for a fountain style special effect and uses DMX communication and is compatible with other DMX control equipment.

Sparkular	Model No.: BT02
	Parameters:
	Dimension: 7.87" × 8.47" × 11.22"
	Weight: 18.7 Pounds
	Input: 110VAC(BT02), 50/60Hz;
	Work Power: 365w
	Work Temp.: 14 Degrees F ~ 122 Degrees F
	Casing: Anti-flaming ABS
	Fountain Height: 5 Ft ~ 15 Ft
	Lifetime: >3 years
	Interface type : double DMX input interfaces, double AC power interfaces

2) Instructions

The Sparkular system has two main components. The Sparkular unit BT02 and the Host Control Console ZK6200. The BT02 incorporates all the safety features built into the smart feedback protocol that is readable on the Sparkular machine as well as the Host Control Console. *** Please note if DMX console is connected directly to Sparkular units (but not thru the ZK6200), the feedback from units will not be displayed on DMX screen. ***Please read the following description to understand the functions familiarizing the operating of the Sparkular unit and the Host Controller.

3) Brief Introduction of the Functions

- DMX controlling signal used needs to be international standard: DMX 512
- Fixture uses two or four channels (2 channel #1 controls effect & height; #2 controls the pre-heat and safety features. 4 channel #1 controls effects & height, #2 Preheat, #3 Clear material, #4 emergency stop).
- Adjustable effect height.
- Continuous feedback protection for overheating, redundant safety for heat protection.
- The Host Controller can fetch feedback from Sparkular unit and diagnose its working status.





4) DMX512 Signal Link:

Using DMX512 mode, the signals among those units are in parallel. Therefore Shielded-Twisted-Pair cable must be applied while connecting multiple units. Each unit is connected through the DMX signal receptacles (XLR connector) Input and output, and the three pin XLR plug terminals connecting the unit must be corresponding to each other. While connecting communication cables, it is suggested to use DMX signal terminal to avoid signal weakening caused by the signal reflection. DMX signal terminal is a three pin XLR plug with 120ohm/1m resistance. The terminator should be plugged into the DMX out port of the last unit being used.

The configuration of the three Pin XLR Plug: 1 Signal Ground line; 2 Signal-; 3 Signal+

Note:

1. After turning on the Sparkular unit, it takes time to warm up the unit to working temperature after pressing pre-heat button on the controller. When the **READY** sign lights up, it indicates that the Sparkular is ready.
2. To prevent anything that would affect the cooling or impede the operation, nothing is allowed to cover the top or sides of Sparkular unit, allow room for cooling and air vents to breathe.
3. Please add granules if observed producing insufficient effects during performance.

5) Operation Panel:



a) LCD: Display info of menu and working status of unit

b) LED :

READY: The indicator will change from flashing to solid status after heating is completed and it will enter ready-to-operate status.

DMX: Flashing indicator means DMX communication is successful. If indicator fails to "blink / light-up" this means, there is a failure in communication.

FAULT: Indicator lights up when any error is detected. The error will be displayed on panel or console.

HEAT : Indicator lights up / blinks when the system is heating.

c) Control Button Area :

MENU:	select to enter into menu
DOWN:	decrease parameter
UP:	increase parameter
ENTER:	confirm and save parameters





d) Interface and Plugging Area :

POWER IN: BT02 is 110Vac
POWER OUT: BT02 is 110Vac
DMX IN: DMX Communication Signal Input
DMX OUT: DMX Communication Signal Switching Output

e) Radio Frequency Identification Area :

The Product Identification Card provided with the spark granules determines the parameter and type of the product that is identified by swiping the card.

Note:

Please note that the card enables the unit for 10-20 minutes of operation time (which is the amount of time each pack / batch will last). The RFID card is valid for one time use only.

6) Interface

a) Main Interface :

- 1) Displays DMX Address.
- 2) Displays the present temperature of the inner core.
- 3) Displays the error information if any.

Error Code	Description
E0 System IC	Systematic error.
E1 Motor Protect	Over current protection of the motor.
E2 Temp. Sensor	Temperature sensor is not detected or break or malfunction.
E3 P Temp. Over	The equipment stops due to the over-temperature of the chassis.
E4 Time Remain	The remaining shot time on the machine is lower than 10 minutes.
E5 K Temp. Over	The equipment stops due to over-temperature of the mechanism.
E6 Heating Failure	May be issues of the heating system. Power off when this error occurs.
E7 Tip Over	The equipment stops due to tip over.

b) The Interface of Setting : Press “MENU” button, enter into the interface of setting. Each time the MENU is press, will show entries into different setting options before return to main interface.

Option	Scope	Illustration
Set DMX Address	1-512	Set DMX Address.
Fountain Height	1-10	Manually adjust the height of Sparkular.
Manual Heat	On/Off	Start by manual, only for test.
Manual Fountain	On/Off	Start by manual, only for test.





The following Chart is for the 2 Channel settings:

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: If the wrong address is on the Sparkular unit this will cause incorrect operation of the device.

- a) Advanced Interface : By holding down the MENU button for 3 seconds, it will enter the Advanced Menu. Each press of MENU button in this mode, will enter different setting options. Holding down the MENU button for another 3 seconds, will return back to main MENU.

Option	Scope	Illustration
Set Temperature	500-610	Default setting 580
LCD Backlight	On/Off	LCD Backlight Open/Off
Density@ Height 1	30-70	Adjusts the Value of the Granular feed or density #1*
Density@ Height 2	30-70	Adjusts the Value of the Granular feed or density #2*
Density@ Height 3	30-70	Adjusts the Value of the Granular feed or density #3*
Density@ Height 4	30-100	Adjusts the Value of the Granular feed or density #4*
Density@ Height 5	40-100	Adjusts the Value of the Granular feed or density #5*
Density@ Height 6	40-100	Adjusts the Value of the Granular feed or density #6*
Density@ Height 7	40-100	Adjusts the Value of the Granular feed or density #7*
Density@ Height 8	40-100	Adjusts the Value of the Granular feed or density #8*
Density@ Height 9	40-100	Adjusts the Value of the Granular feed or density #9*
Density@ Height 10	40-100	Adjusts the Value of the Granular feed or density #10*
Mode Selection	Factory Mode/ User Mode	Used for the factory to test the equipment
Default Parameter		The parameters of the equipment can be restored to the factory settings through pressing Enter
Motor Protect	On/Off	Default setting is Off
Power Selection	220/110Vac	Select input power supply voltage. Default setting for BT02 is 110VAC – DO NOT USE-
DMX Channel Mode	4 DMX Channel/2 DMX Channel	Default setting 2 DMX Channel
Tip Over Error	On/Off	Default setting is On

*****Density of granules at each height can be adjusted from 10-100%*****

Please note that Height 1-3 is 30%-70% to avoid fallout



7) **DMX Channel Mode:** 2 DMX Channel, when 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
0-10	Pre-heat Off
20-40	Emergency Stop
60-80	Clear Material
240-255	Pre-heat On

4 DMX Channel, when the system occupies four 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
0-20	Pre-heat Off
21-255	Pre-heat On
Third Channel	Function
0-20	Clear Material Off
21-255	Clear Material On
Fourth Channel	Function
0-20	Emergency Stop Off
21-255	Emergency Stop On

2. Host Controller (ZK6200)

1) Description of Hardware

ZK6200 Host Controller is an intelligent system specially designed for multi-effects and remote control of the Sparkular unit(s) to create the simulation and demonstration of Pyrotechnic Gerb effects. It incorporates a diversified port configuration, and can use Audio or MIDI time code to trigger the function to complete a music synchronized program. A LAN port is installed for future control extension.

Host Controller	Model No.: ZK6200
	Parameters:
	Dimension: 15.35" x 11.81" x 4.33"
	Weight: 8.16 Lbs.
	Input: 110-240Vac, 50/60Hz
	Work power: 15w
	Work Temp.: 14 degrees F – 122 degrees F
	Ports: 2 CAN communication ports, USB port, 2 media ports (music trigger), 2 MIDI ports (music trigger), 2 DMX512, 1 input& 1 output port, Ethernet (not currently available-for future application)
	Support max.200m of communication cable. (650 feet)
	3350mAH battery
	Lifetime: >3 years

2) Host Controller Introduction – Standard or Pro Version

- a) International standard DMX512 signal output
- b) Support 18 units Sparkular at the same time (Standard = 18 units / Pro Controller = 54 units).
- c) Incorporates Five" standard Dynamic modes: Synchronization (All Fire), Center to Ends, Ends to Center, left to right, Right to Left, Special Effects mode is a computer programmed set of effects. Each support 8 files and each file supports 36000 lines at maximum (the special effects can last for 30 minutes)
- d) There are multiple trigger options: Hand, Music, or Midi Inputs.
- e) Support simulation function and LED display.
- f) Monitoring function: The controller is designed to receive the feedback of the working status from each Sparkular unit and is display on its F1 screen. (like working temperature, Error code etc.)
- g) Emergency Stop: Is a Pause or Stop Button. (Earlier panel versions have Pause buttons)

3) Controller Operation Panel



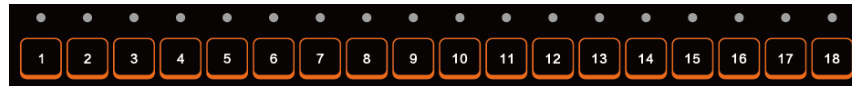
Controller Operation Panel

a) Cable Connection Area:

AC Input:	AC Power Input.
CAN:	CAN Communication Input/output Ports.
Tape In:	Audio signal input port of main sound track
Aux:	Audio signal port of sub sound track
Music:	Displaying the electrical level of audio signal.
MIDI In:	Time Synchronous Signal Input of MIDI & thru output.
DMX 512:	DMX Signal Options Output (top) /Input (bottom) is for DMX console control use.
LAN:	Network's Cascade Socket among Multi-Chassis, to link the remote-control feature.
Download:	SparkularEdit200 soft Port



b) Manual Operation Area



No.1 to No.18 is Sparkular number.

In this area, it offers ways of manually start & stop Sparkular units from No. 1-18. The Sparkular unit will enter READY-TO-SHOOT status after 4-5 minutes of warm up time when Pre-Heat function is activated. The green flash of indicator light means Heat Up is in process, and a solid green of indicator light means the process completed. Press the Fire button to activate the Sparkular unit, it will stop discharging / firing automatically after 30 seconds if not press off the Fire button. During firing status, the indicator light will turn to red.

c) Mode Selection Area



There are 5 standard dynamic modes and 1 special effects mode which can be initiated by selection via pressing the entries buttons on the console. These activate a pre-programmed page of functions that are displayed on each selection. They can be manually added. Manual operation will not be activated during special effects playback.

d) LCD Area

F1: Main Menu

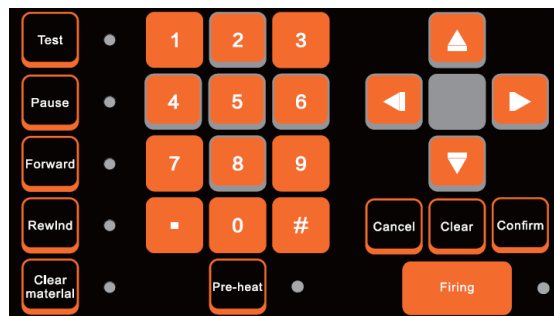
F2: File Selection Menu

F3: Configuration Menu

F4: Host controller



e) Edit/Control Area



Moving cursor into editing area, and parameters can be edited by pressing number keys or up/down keys.



Test

When pressing the Test button, the signal transmitted to Sparkular unit will cut off. Under this condition, if you press FIRING button, the Host Controller will run into simulation status. Indicators will light on and off per the file you programmed. "Note" that TEST button will not invalidate (or interfere) with the function of PRE-HEAT.

Pause /Stop

Pause/Stop button can be only applied in case of emergency or mis-operation. When this button is on the communication between Host Controller and Sparkular unit cut off, PRE-HEAT function stops. Please reboot PRE-HEAT function after you cancel the status of Pause/Stop.

Forward

Under the special effects mode, the operating time can be put forward.

Rewind

Under the special effects mode, the operating time can be put backward.

Clear Material

Clear Material button is to clear out those un-projected granules left in the heating chamber of Sparkular unit. Must turn on PRE-HEAT function to do Clear Material procedure. And it is necessary to do this Clear Material procedure after each show.

Pre-heat

Must turn on PRE-HEAT function before activating the Sparkular unit. The Sparkular unit enters Ready-to-Operate condition when all indicators are in solid status (which means PRE-HEAT is completed, it usually takes about 4-5 minutes). If there is extended wait between each display, it is recommended to turn off the PRE-HEAT button to help to prolong the service life of Sparkular unit.

Firing

When depressing the FIRING button the selected program file will be executed. Indicator of FIRING button will become red. If the FIRING button is pressed during firing status, shooting will stop and return to initial state.

4) Interface

A) F1 Main Menu

MODE: Displaying the Mode

GROUP: Displaying the total quantity of Sparkular units.

Battery Icon: Displays remaining battery information. And reminds you to recharge battery if only one grid of electricity is left.

F1 MAIN

MODE:Center ToEnds Group:12 

FILE NO.	FIRING HEIGHT	FIRING DURTN	TRIG DELAY	REPEAT DELAY	REPEAT COUNTS
1	9	1.2s	0.3s	4.0s	2
* Terminal Monitor					
1	1	3	4	5	6
7	7	9	10	11	12
13	13	15	16	17	18

MAIN
FILE SELECT
CONFIG
ABOUT

Left and right keys can move cursor to each parameter setting column.

Parameters can be edited through up/down keys and number keys.

Parameters will be saved automatically or press CONFIRM key to save changes.



Option	Scope	Illustration
File No.	1-8	File number
Firing height	1-10	Fountain Height. "." button can change to height10 directly.
Firing duration	0.1-30.0s	Duration of the Fountain
Trigger delay	0.1-30.0s	Time between trigger of each fixture
Repeat period or repeat delay	0.1-30.0s	Repeat Period: Repeat begins from the first fixture. The value must be greater than Duration. Repeat Delay: Repeat begins from the last fixture.
Repeat counts	1-5	Repeated times (Loop)

Note: When "Firing" button is on, Only "Pause or Stop, forward", "Rewind" buttons are unlocked.

Terminal Monitor:

Working status of each Sparkular unit will be displayed independently on the Terminal Monitor. Those statuses include info of each units working temperature, Error Code etc. For PRO version Host Controller, which controls 54units, that info will be displayed in scrolling pages. The standard operating temperature is 580-620 .

B) Error Message List

Error Code	Illustration
E0 System IC	Systematic error.
E1 Motor Protect	Over current protection of the motor.
E2 Temp. Sensor	Temperature sensor is not detected or break or malfunction.
E3 P Temp. Over	The equipment stops due to the over-temperature of the chassis.
E4 Time Remain	The remaining shot time on the machine is lower than 10 minutes.
E5 K Temp. Over	The equipment stops due to over-temperature of the mechanism.
E6 Heating Failure	May be issues from heating system. Power off when this error occurs.
E7 Tip Over	The unit stops working due to tip over.

C) File Edit: F2

F2 provides you a way to create and save 8 files. In each file, you can edit the height, duration, trigger delay, repeat mode, and repeat counts.

F2 FILE SELECT					
MODE: Synchronization					
FILE No.	FURING NEIGHT	FIRING DURTN	TRIG DELAY	REPEAT DELAY	REPEAT 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



Option	Range	Description
Sparkular Start and end number	1-18 units (standard) 1-54 units (pro)	The maximum allowed quantity of fixture/heads. Unless multiple controllers are used. * Please be aware, that each file in every mode can have an independent setting of Sparkular units. *
Trigger Source	HAND, AUDIO, MIDI	Trigger method under special effect mode
Audio Level	1,2,3,4	Voltage rating 1-4 under Audio Trigger Mode
Audio Filter Delay	10-100ms	The filtering time of trigger signals under Audio Trigger Mode
Audio Stop	Music Control stop or continue	This function allows the console to stop the program sequence or allow it to continue without music track.
Mode Selection	User Mode, Factory Mode	Factory mode only used for the factory test
LANGUAGE	ENGLISH/CHINESE	Different language options
REPEAT TIME MODE	Repeat period or Repeat Delay	Explained in End Note
DMX Input	On/Off	This allows user to control through DMX console and disables the Showven controller.
DMX Address	1-512	This gives the first fixture a start address for operation. It does not matter what the units are set to (low to high)
LAN	Communication Port	This port is for developing future functions.
DMX Channel Mode	4 DMX Channel 2 DMX Channel	Default setting is 2 DMX Channel

E) The Use of the Special Effect Mode:

Connect USB cable to computer to download the Sparkular Edit200 software (please refer to Sparkular Edit200 software manual)

Trigger Source: Hand Under this mode, the file can be executed by pressing FIRING button.

Trigger source: Audio This mode can be easily interfered, and can be triggered just once. It immediately triggers the command of executing files once it captures the Audio signal. Audio rating can be observed from the Music bar on the panel.

When set Audio Level as 1 and Audio Filter Delay as 50ms, the bottom light of the Music bar will light up once Audio signal captured and lasts for 50ms before executing file.

To prevent miss-operation, please follow those steps to use Audio: 1) Set trigger source as HAND; 2) Plug in audio cable and test audio input; 3) Change trigger source to AUDIO

Please set Audio Level and Audio Filter delay parameters suitable for the input audio signal,

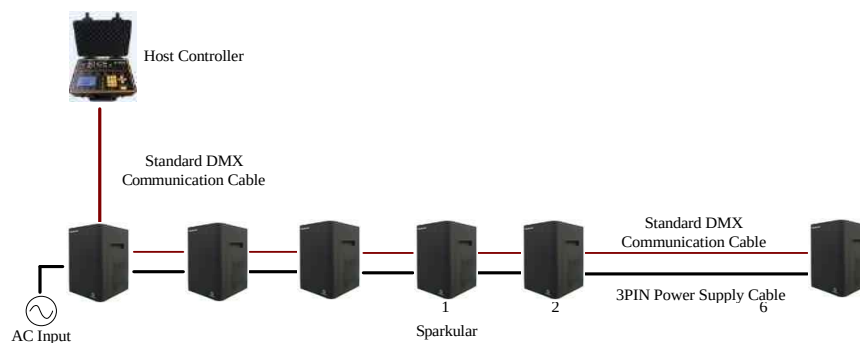
Trigger Source: MIDI This mode can synchronously start or stop operation from the MIDI time code.

Sparkular Edit200 can synchronously start or stop operation under all kinds of Trigger Source.

“NOTE” There is another manual for the operation of the Sparkular Edit 200 Software. Currently the software does not stop Sparkular operation if the music feed or track is stopped or connection of playback track has been interrupted. The program would need to be paused or stopped by the operator and restarted to resume operation of the Sparkular show. (Once again, the Pre-Heat function will turn off and would need to be reset to on position).

3. System Configuration and Connection

1) System Configuration



One set system configuration

1: six units of Sparkular; 2: one unit of Host Controller:

3: six pieces of communication cable; 4: six pieces of power supply cable



System Connection

a) Controller and Sparkular



Controller(ZK6200)



DMX Communication Cable
Sparkular (BT02)



b) Sparkular Power Main Supply Cable

Maximum of 6 units Sparkular in series with the Main power supply cable.



Sparkular (BT02)



Power Con Main Cable

c) Power Supply Cable Connection between Sparkular Units



Sparkular (BT02)



Power Extension Supply Cable



Sparkular (BT02)

d) Communication Cable Connection between Sparkular





Sparkular (BT02)

DMX Communication Cable

Sparkular (BT02)

4. System Preparation and Start

1) Fill the granules to Sparkular Unit

Please fill granules into the hopper on the top of Sparkular unit. Please note the hopper has maximum storage capacity of 200grams granules (one pouch).

Please Note that there are 3 styles of the granules 1) Small, 2) Medium and 3) Large. They are of different density, and the effect height varies from 5ft to 15ft.

	Small	Medium	Large
Fountain Height	5 ft~10 ft	5 ft~12 ft	6 ft~15 ft

a) Open the pouch of granules (please note small granules are for professional use only).



1 Small



#2 Medium



#3 Large

b) Fill in the granules



Open Lid



Funnel

Plug



Fill in granules

Close Lid





Warning: Please follow this process to fill in the granules. After filling the Granular materials, please close the Lid. Give a shake to the unit in preventing the granules clumping or caking.

2) Switch on the Host Controller ZK6200



3) Turn on the Sparkular unit



4) Set Parameters

Please refer to "Host controller" part to set all parameters of the fountain effects.

Sparkular Edit200 soft is designed for ZK6200 and can program lots of special effect.

5) Activate Sparkular machine



To activate the Sparkular unit, the RFID card needs to be scanned at the closest possible distance. Once activation succeeds, the remaining usage time of the machine will be displayed on the screen (20 minutes per RFID card, the total usage time will not exceed 30 minutes). When the remaining shooting time is less than 10 minutes E4 will be displayed on Host Controller.





6) Start system

After setting of parameters, please push the host controller's "Firing" button to start Sparkular. Files can be selected manually or can be selected in any of firing Modes. 8 Files per Mode are available. Once the firing has started the only buttons that will work is the height and pause or stop.

7) Shut off system

After operating, shut off Sparkular units and Host Controller. MUST cool down the unit to normal temperature before put it back into road case. Invalidating the PRE-HEAT button and keep the unit on will speed up the cooling process. Never put your fingers or anything nearby or into the nozzle.

HOT SURFACE!

1) Clear material

Step 1) Clear Material button is to clear out those un-projected granules left in the heating chamber of Sparkular unit. Must turn on PRE-HEAT function to do Clear Material procedure. And it is necessary to do this Clear Material procedure after each show.

Step 2) Pour the granules out of the hopper. This step can be skipped if the Sparkular unit if used high frequency in short time and when refilling is required.



Illustrations How to pour out the granules

Warning: Please follow this process to clear materials when necessary.

Please store the unused granular materials in a container (like jar bottle or bag) which should be kept dry and well-sealed condition. The Sparkular Granules should not be exposed to humid environment for long durations. If necessary, dispose of the granular materials by burning and make sure it is clear from foreign matters and refilled back into hopper using the machine in disposing of the granules.

End Note: Repeat Period/Delay – Explained

Repeat Delay Mode is default setting of the controller. Under this mode, Repeat begins from the last Sparkular unit. This creates a continuous loop of effects.



To enter Repeat Period Mode please press F3 on the controller then go to Repeat Time Mode option. Under Repeat Period mode, the repeat begins from the first Sparkular unit. The value of Repeat Period needs to be higher than the Firing Duration (for the Synchronize mode) or the sum time of the Firing duration and trigger delay.

FILE NO.	FIRING HEIGHT	FIRING DURIN	TRIG DELAY	REPEAT PERIOD	REPEAT COUNTS
1	3	0.6s	0.2s	3.0s	5



Please note that the Sparkular units are not allowed to run without intervals or exceeds single firing duration limit. It has a maximum of 60-90 second intervals. Its standard usage is for programmed sequences for up to 90 seconds. The units will over heat and slow down or stop projecting effects. They will need to cool down prior to continue their use. Continuous overheating will void all warranties. If clean is needed, please use a bottle brush to keep the fountain pipe free of debris.



In order to avoid physical injury, children are forbidden to touch the Sparkular and are only allowed to stay beyond the safe distance from the working Sparkular unit. This is a special effect that produces sparks and will injure the eyes if they are subjected to the emittance of the sparks.



The proper firefighting extinguishers are recommended as follows:

ANY TYPE OF SAND OR SUBSTANCE THAT CAN SUFFOCATE THE ACTIVE METALS.

ABC Chemical Extinguishers used very gently or

Class "D" Fire Extinguishers for Metal Substance Fires.

DO NOT USE HI PRESSURE, WATER OR CO2 AS THIS WILL AGGREGATE THE SITUATION!



Section 5 - Flame Effects Plans / Technical Information



Flame Effects Plan

to comply with the approval requirements of NFPA 160 Chapter 5, section 3.1.2

3.1.2(1) The Name of the person, group or organization responsible for the production
High Tech Special Effects

3.1.2(2) Production Dates and Times
All 2022 Tour Dates

3.1.2(3) Production Locations
All 2022 Tour Date Venues

3.1.2(4) Design Criteria: This section is not part of the requirements of the NFPA document, but is included for informational purposes only

Appendix B1

(A) Location

1: Indoor Flame Effects

- a. Ventilation - Ventilation air is not directly used to exhaust the products of combustion. Exhaust fans and Exhaust ventilation are provided by the venue
- b. Clearance to Combustible - No Combustibles in the area of the burn head.
- c. Egress - Nearest venue exit
- d. Environment - Indoor Arena
- e. Fire Protection - Fire Extinguishers provided by the operator.
- f. Life Safety Provisions - EMT'S provided by Venue / Production
- g. Intrusion - Intrusion detection is by security and operational personnel

(B) Flame Effects Operator Participation

1: Attended Effects

- a. Controlled by operator during operation - Yes
- b. Operator in attendance during effects - Yes
- c. Training of operators - Yes

3.1.2(5) Flame Effect Classifications
Class III Flame Effects

3.1.2(6) Site Plan

a. Narrative description of the flame effect.

G Flame Head - Produces a 10' to 15' column of fire or 5' balls of fire lasting approximately 1 to 2 seconds in duration.

b. Location of the flame effects, controls and control sequence

The G flame heads are located in front of the amp line left and right of the drum riser. The burn head controller will be located at the main control firing location.

The control sequence requires power to the controller, enabling the emergency stop button, arming / waiting for the arming led to flash, and finally pushing the momentary switch to fire the effects. The G Flame system is designed and manufactured by Galaxis.

c. Area affected by the flame effect

The area around the burn heads approx. 5' to 10'

d. Location of Audience

In the seats in front the stage over 15' from the effect.

e. Fuels used and their estimated consumption

Propane - estimated consumption of less than 5 gallons per head

Canister Fluid - estimated consumption of less than 4 cans per head

f. Air for combustion and ventilation for indoor effects

Will be supplied by the venue

g. Flammable materials piping

High pressure flexible hose with brass quick disconnect ends

h. Storage and holding areas

Storage areas - NA

Holding Area - NA

i. Supplemental fire protection features

Will be provided by local fire department (if needed)

j. Emergency response procedures

See local AHJ and venue

MSDS - On File

k. Means of egress

Nearest exit

3.1.2(7) MSDS sheets for combustible fuels and materials

On File

3.1.2(8) Documentation that the combustible materials used for the construction of the flame effects have been rendered flame retardant

The flame effects units are primarily constructed of aluminum, brass and stainless steel; by nature these materials are flame retardant

3.1.2(9) Names of Certified Flame Effect Operators

User Manual

Galaxis Showtechnik

PYRO TEC

G-Flame



Firmware V2.3

Revision date: October 17th 2012

Galaxis Showtechnik GmbH
Emmertinger Str. 2
84524 Neuötting / Germany

Tel.: +49 / 8671 / 73411
Fax: +49 / 8671 / 73513
www.galaxis-showtechnik.de info@galaxis-showtechnik.de

Table of contents:	Page
1. General safety regulations when using the G-Flame	6
2. Application fields and intended use	11
3. Requirements the operator has to fulfill and necessary qualification	11
4. Required approvals	11
5. Information regarding the firmware version	11
6. Illustration and description of indicators and control elements	12
6.1. Main unit	12
6.2. Carrying handle	14
6.3. Cover panel	14
6.4. Cartridge holder	14
7. Attention: High Voltage	15
8. Attention: Hot Surfaces	15
9. Nozzles for different types of fuel	16
10. Changing the nozzles and nozzle holder	16
11. Sealing of the nozzles or respectively of the nozzle thread	17
12. Approved fuels	17
12.1. Approved fuels and instructions if the gas bottle option is being used	17
12.2. Approved fuels and instructions if the gas cartridge option is being used	19
13. Fuel consumption	22
13.1. Fuel consumption if gas bottles are being used	22
13.2. Fuel consumption if gas cartridges are being used	22
14. Tilting the G-Flame	22
15. Additional regulations for permanent installations	23
16. Safety distances	23
16.1. Safety distances if gas bottles are being used, device standing vertically	24
16.2. Safety distances if gas cartridges are being used, device standing vertically	25
16.3. Safety distances if the device is being tilted	25
16.4. Safety distances if the device is mounted above the spectators	26
16.5. Reduction of the safety distances to actors	26
17. The various inputs and their compatibility and usage, pin assignments of connectors	26
17.1. Firing key input	26
17.2. Voltage input 12-24V	27
17.3. Operation with DMX512	28
17.3.1. The DMX512 input	28
17.3.2. Control via DMX512	28
17.4. Advanced wireless module, communication via radio or serial data cables	30
18. Switching on	30
19. Battery monitoring and warning message 'deep discharge' after powering up the device	31
20. Resetting the warning message 'Battery deeply discharged'	31
21. Safety timer	32
22. The LED indicators	32

	Page
22.1. The LED 'Operation'	32
22.2. The LED 'Flame'	32
22.3. The LED 'Charging'	33
22.4. The LED 'Low Battery'	33
22.5. Functional check of the LEDs	33
23. The warning LED 'Attention armed'	33
24. The menu	34
24.1. Standard menu items	34
24.1.1. The menu item 'Language'	34
24.1.2. The menu item 'Accumulator capacity'	34
24.1.3. The menu item 'Accumulator power'	34
24.1.4. The menu item 'Input'	35
24.1.5. The menu item '45° Tilt Switch'	35
24.1.6. The menu item 'Flame monitoring'	36
24.1.7. The menu item 'Acoustic Signals'	36
24.1.8. The menu item 'LCD Backlight'	36
24.1.9. The menu item 'Warning LED'	37
24.1.10. The menu item 'Battery measurement'	37
24.2. Menu items if DMX512 has been selected as an input	39
24.2.1. The menu item 'Flame Channel'	39
24.2.2. The menu item 'Safety Channel'	39
24.2.3. The menu item 'Power Supply for Wi-DMX'	40
24.3. Menu items if the Advanced wireless module has been installed and 'Cable (RS485 of PFC)' or 'Wireless (PFC or PFS)' has been selected as control method	40
24.3.1. The menu item 'RF Channel' (i.e. frequency selection)	40
24.3.2. The menu item 'Interfering Signal'	41
24.3.3. The menu item 'Last Range Test Result'	41
24.3.4. The menu item 'Device ID number'	42
24.3.5. The menu item 'Determine Hazard Zone'	42
24.3.6. The menu item 'Terminal Programming'	43
24.3.6.1. Overview regarding the parameters of the Terminal programming	43
24.3.6.2. The selection menu of the Terminal programming	43
24.3.6.3. The menu item 'Terminal programming: Keep up & Exit'	44
24.3.6.4. The menu item 'Terminal programming: Edit'	44
24.3.6.5. The menu item 'Terminal programming: Delete'	45
25. Switching off	46
26. The emergency off input	46
27. Wireless emergency off	46
28. Receiving mode or respectively ready to fire mode	46
28.1. Displayed information during receiving mode or respectively ready to fire mode, that appears in all operation modes	47
28.1.1. Information which control method has been selected	47
28.1.2. Tilt switch on/off and its status	47
28.1.3. Flame monitoring on/off	48

	Page
28.2. Display of special information and behavior of the device in the receiving mode or respectively ready to fire mode if 'Wireless (PFC or PFS)' or 'Cable (RS485 of PFC)' has been selected as control method	48
28.2.1. Status information regarding firing mode and hazard zone	48
28.2.2. Display of the device ID number	48
28.2.3. Display of messages	49
28.2.4. Programming of the system ID	49
28.2.5. The monitoring function Radio Interference	49
29. Usage in rainy conditions	50
30. Radio range	50
31. Radio Range Test	51
32. Remote access	51
33. Charging	51
34. Control of the device via serial data cables via the RS485 interface in conjunction with the PFC Advanced	52
35. Operation time	53
36. Installation und de-installation of the Advanced wireless module	53
36.1. Installation of the radio module	53
36.1.1. Installation of the hardware	53
36.1.2. Software installation of the Advanced wireless module	54
36.2. De-installation of the wireless module	55
36.2.1. De-installation of the wireless module in the software	55
36.2.2. De-installation of the hardware	55
37. Mounting on light or speaker stands	55
38. Mounting on truss elements	56
39. Cleaning	56
40. Microfilter	56
41. Maintenance	57
42. Warranty	57
43. Damages caused by misuse, maloperation, malfunction	57
44. Technical data	58

1. General safety regulations when using the G-Flame

Date: June 12th 2012

This section is about general safety regulations. You need to mind also the other safety instructions given elsewhere in this manual. Furthermore you need to observe the safety distances mentioned in the relevant chapters.

The safety rules enlisted in this manual are referring to the G-Flame only. For the other devices in our product range there is another version of safety regulations which can be found in the user manual of the particular devices.

The following instructions are for your understanding about important and basic safety principles.

Our general safety requirements are based on our own experience plus the contact and feedback from our customers. These rules allow the safe and successful usage of all components of our wireless firing systems. With proceeding development of our products, we will continuously revise and adapt the safety standards in conclusion with your notifications and support.

The following safety regulations are part of all our operation manuals within our product range. These regulations are also available in printed form and can be downloaded via our internet homepage at any time. Please forward these instructions to any relevant persons in your company dealing with this topic.

Any technical device can potentially cause a fault. This could be encouraged through: wrong usage, unit damage, unit aging as well as the wear and tear of the unit. This fundamental thesis was the basic principle when writing these instructions.

The usage of effect devices to generate flame balls and flame columns, especially in indoor and outdoor venues or places of public assembly, can be hazardous and bears many potential risks, such as severe damage to property or personal injury and due to that it of utmost importance to follow all safety instructions whenever the product is being used.

1. Never use the devices if you have not completely read and understood the user manual.
2. Never order somebody to use devices in a potentially risky application if this person is not absolutely reliable or does not have sufficient technical knowledge.
3. The operator who is in charge for the safety has to have complete overview over all devices during the whole application. In addition he has to be able to take action in the technical control of the system at any time if a potentially dangerous situation is arising. Please refer to the sections in this manual where the 'emergency off' functions are being explained.

4. For the usage of the device in places of public assembly an approval by the authorities that are responsible for the fire prevention is necessary.
5. If flame effects are being used no easily inflammable materials should be present in general. In places of public assembly this kind of material is normally forbidden by the legislator. By the usage of flame retardant spray these materials can be rendered hardly inflammable.
6. Smoking or open fire is strictly prohibited within the safety zone! Keep off any other sources of ignition.
7. Depending on the type, size and quantity of the effects that are being used and depending on the local conditions, allocate the necessary fire prevention and first aid measurements.
8. In all cases respect and follow any national and technical regulations as well as the operation manuals respective to the devices in use.
9. Ensure that the devices are standing securely and that the position or tilt can not vary during the application. Depending on the circumstances it can be necessary to mount the devices e.g. by using screws. Please mind the chapter in this user manual which is dealing with the mounting of the devices on truss elements.
10. Ensure that the device is not covered by anything and that the fuel can be easily exhausted through the nozzle. Furthermore ensure that no foreign objects like e.g. confetti or streamers enter the burning chamber.
11. Arm (switch on) the devices as shortly as possible before the effect and disarm (switch off) them immediately after the effect. Optionally this can be achieved either by using the emergency off input or the main switch or the hazard zones or the DMX safety channel. The hazard zones can be turned off and on either by a wireless command or by using serial data cables. As soon as the devices are armed or respectively ready to fire they must be constantly supervised by the responsible operator.
12. Ensure that no heat sources like strong spotlights are pointed towards the devices or the gas cartridges or the gas bottles.
13. Make sure that non authorized persons can not gain access to the effect and control devices.
14. The safety boundary distances required by the manufacturer and authorities are to be respected. Secure the area so that non authorized persons cannot gain access to the same.
15. The operation manuals and safety instructions of the manufacturer of the effect and control devices must be observed at all times. If in doubt these must be discussed with the relevant safety organisations.

16. The effect and control devices are only allowed to be used according to the defined applications. Only use fuels that have been approved by the manufacturer.

17. The components of our firing system are to be covered or encased against burn-off cinders or weather conditions where necessary. Electrical contacts should be protected against corrosion, soiling and damage plus they should be cleaned regularly.

18. We recommend to have our products inspected every one to two years. Along with the testing of the rechargeable battery, a visual test as well as a functional test will prove that the operational safety standards are still met.

19. Do not use damaged equipment. If a damage is found, immediately send the device back to the manufacturer for professional repair. Our warranty for the proper function for our equipment is only for components of our system, which have no damage.

20. Any changes in or to the devices as well as repair work on the units other than that through the manufacturer will invalidate any warranty claims and our product liability will be void. Should repair of the units be necessary, then we do require a detailed report of the problem.

21. Please make sure when lending or renting out the equipment, that no damage has occurred during the rental period of the units. Advise your staff, that it is very important to report any possible damage of the units immediately. Customers, which have borrowed or rented the equipment are hereby informed, that it is their duty to report any damage found or suspected on the unit when returning such.

22. When transporting the devices make sure that the packing is sufficient and check the devices after each transport if they have been possibly damaged.

23. Wire connections from the control units to the G-Flame are always to be insulated and must comply with the technical standards. At the same time avoid wire damage, for example through heat, cable twisting, cable pinching and burn-off cinders or through forced piercing. All cables must be checked before each use on it's faultless construction. When using used wires we do recommend a continuity and short circuit test between each insulated connection before using it again.

24. Avoid potential equalizing currents. Please note that these currents can occur between conductive parts of a building or between conductive parts of a building and earth potential. Due to that control lines should not have electrical contact to conductive structures or parts of a building. Potential equalizing currents on the shielding of cables or on control lines can cause malfunction.

25. Please be aware of the fact that through the gas flames ionized gases are created. The thereby produced ions increase the conductivity within the air. This ionization process can cause an electrical arcing especially within the vicinity of high voltage overland cables. This may lead to lethal consequences for the user and other persons. Please note that wind conditions can be totally different a few meters above the ground.

26. Please assure that the effect can only be initiated through the operator. Keep the control unit under lock and key! Within our safety concept, all firing systems are set with individual codes, which inhibit unintended and accidental firing through third parties. If requested we can also supply systems with the same coding. This may be necessary if in a company more than one transmitter is used or when companies exchange the units between each other. It is possible to teach in the G-Flame to any PFC Advanced to enable customers to easily exchange devices.

27. With our using the key code numbers 901 and 311, we are using a standard key code, which can also be found in other products. On a customer's request we can also supply other key codes.

28. Please ensure that the relevant safety distances are met by everybody. The safety margins are to be kept as from the beginning of the project until the operator releases the area after switching off the devices and shutting off the fuel supply.

29. In the interest of your own safety always use a sufficient length of control cable.

30. During testing and firing of the devices no persons or animals are allowed in the hazard area. Furthermore no materials that are heat-sensitive or that can catch fire are allowed in the same.

31. When the fuel is burning carbon dioxide is generated which is a suffocative gas if the concentration in the air is sufficiently high. Due to that ensure proper ventilation. If in doubt use CO₂ warning devices.

32. To burn the fuel oxygen from the air is necessary. Do not use the device if the oxygen of the air is no longer present, e.g. if carbon dioxide or nitrogen is being used to generate low fog on stages. At least from the lowest part of the burning chamber upwards a sufficient amount of oxygen must be present because otherwise the fuel can not be ignited.

33. In applications that are critical in terms of safety you should consider safety measurements already during the setup how to safely dismantle the installation.

34. For any safety relevant questions please either contact the manufacturer or closely discuss these with the authorities in charge.

35. Use and transport the device only if the lid is closed.

36. Rehearse the planned effect and the whole course of action several times together with all people that are involved, like artists, actors, participants, technicians and staff members of the security agency etc. and ensure that all possible hazards are ruled out. If this is not possible the effect must be cancelled. Inform all participants about the function of the warning LED "Attention, device armed" on the device.

37. Utmost care must be taken if material that can easily catch fire are present such as costumes, decoration material, fabrics or props etc.

38. If the smell of gas, leakages, flow noise or leaked fuel (gasiform or liquid) is noticed it is not allowed to put the device into operation and the hazard area has to be cleared, left and barricaded immediately. The fuel supply has to be shut off immediately in these cases.

39. Never bow over the device or put parts of your body above or respectively before the burning chamber if the device is switched on and always keep at least the safety distance that is required so that no dangerous situation can arise.

40. Avoid forces to the quick coupler in the device such as: drag forces, pushing and pulling forces and sidewise forces in all directions. If a gas hose is connected do not pull at the hose, no matter in which direction.

41. If a device did not function properly in an application it is not allowed to use it again until it has been repaired and checked by the manufacturer.

2. Application fields and intended use

The G-Flame is a versatile flame projector that can be used - depending on the fuel supply - outdoors, on stages, in buildings or tents.

Typical applications are:

- Flame shows outdoors, solely or combined with aerial fireworks displays or ground fireworks
- Generation of flame effects in bars, clubs or discos
- Applications on stages in buildings e.g. for TV productions or on open-air stages e.g. during a live concert
- Generation of flame effects in the area of special effects for TV and movie productions
- Hazard training for fire fighters, policemen, special and military forces

All other applications are considered as unintended and must be approved by the manufacturer.

The device has not been designed to produce a continuous flame. The maximum burning duration the user must mind is 25 seconds. After that the user has to pause the flame effect for at least two minutes so that the unit can cool off sufficiently. Besides long lasting continuous flame columns are much less dramatic compared to short flame balls and flame columns.

3. Requirements the operator has to fulfill and necessary qualification

The operator has to be of legal age. If used in Germany the operator has to be at least 18 years old.

The usage must be in conjunction with a professional and occupational work.

Further qualification like an indoor pyro license or an aerial display fireworks license is not necessary.

4. Required approvals

Before the device can be used a permit by the owner and if applicable of the tenant of the property or building is required.

For the usage outdoors - if it is not a stage or a place of public assembly - no permit of any authority is required and no charges can be imposed.

In places of public assembly and on stages the usage must be permitted by the authorities that are in charge for the fire prevention and the relevant local laws must be observed.

5. Information regarding the firmware version

Version 2.2:	The first devices that have been sold have been shipped with this version
With version 2.3:	The splash screen and menu texts have been changed

6. Illustration and description of indicators and control elements

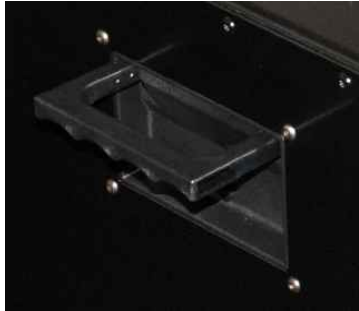
6.1. Main unit



1	Antenna	This standard antenna is included in the delivery of the Advanced wireless communication module.
2	Socket 'Antenna'	This feed-through is included in the delivery of the Advanced wireless communication module.
3	Burning chamber	The nozzle is integrated in the bottom of the burning chamber, beneath the ignition electrodes. Furthermore a drain for the rain water is installed in there.
4	Ionization electrode	This electrode is used for the flame monitoring.
5	Electrode cage	This cage encloses the ignition electrodes. It is open on the bottom so that the electrodes are accessible for cleaning.
6	Main switch	Switch the device on and off here.
7	Charging input (recessed)	Connect the charging unit here.
8	Voltage control input (recessed)	Control input for control voltages ranging from 12 to 24V DC.
9	Firing key input (recessed)	Control input for a potential-free electrical contact.
10	Output for DMX512 and RS485 (recessed)	Either used to daisy-chain the signal to the next device or to insert a connector with a network termination resistor.
11	Input for DMX512 and RS 485 (recessed)	Used to feed in the signal of the DMX console or the PFC Advanced or the device preceding in the network.
12	Emergency Off Input (recessed)	Input for the emergency switch.
13	LC Display	Displays the current information.
14	LED 'Operation'	This blue LED is continuously on if the device is in the menu and it is flashing if the device is in receiving mode or ready to fire.
15	LED 'Flame'	This yellow LED is continuously on if a flame is being generated and it is flashing if a step delay is being processed.
16	LED 'Charging'	This green LED is lit if the device is being charged.
17	LED 'Low Battery'	If the battery is discharged below 30% this red LED is flashing in receiving mode or if the device is ready to fire.
18	Magnetic sensitive area 'Up'	By pointing to this area with the magnetic pen the parameter of the current menu item will be increased or changed. If you point on this field for a longer time the parameter will increase automatically.
19	Magnetic sensitive area 'Down'	By pointing to this area with the magnetic pen the parameter of the current menu item will be decreased or changed. If you point on this field for a longer time the parameter will decrease automatically.
20	Magnetic sensitive area 'Mode'	By pointing to this area for some time, you will enter the menu. If you point to this field for a longer time, you will step through the different menu items automatically. At the end you will return to the receiving or stand-by (ready to fire) mode again.
21	Warning LED	Flashes in red color if the device is armed or while the safety timer is counting down. Can be disabled in the menu.

6.2. Carrying handle

On one side of the housing - opposite to the inputs - a handle to carry the device is installed:



To carry the device swing out the handle. Use one hand to grab the handle and use the other hand to grab the housing on the other side where the recess is.

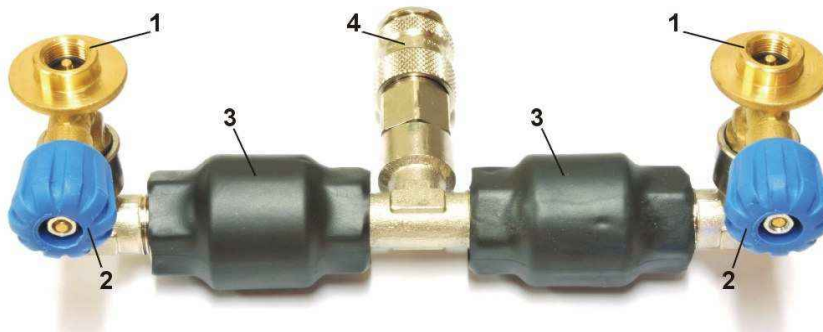
Push back the handle if you do not need it any longer.

6.3. Cover panel

On one side of the housing is the cover panel. By pressing the knob on the panel it is released and can be removed. By doing so you can connect the gas hose or respectively install the cartridge holder. Furthermore you gain access to the four nozzle holders which are in the enclosure. To close the cover panel insert it into the guides on the bottom and push it towards the housing so that the holding mechanism is latching.

6.4. Cartridge holder

This T-shaped cartridge holder is included in the delivery of the gas cartridge option:



- | | | |
|---|------------------------------|---|
| 1 | Reception for gas cartridges | Screw in the cartridges here. The thread is right-handed. |
| 2 | Shut-off valve | Opens or closes the fuel supply between cartridge and device. Can also be used to throttle the fuel flow to some extent to reduce the flame height. |
| 3 | Non-return valve | Ensures that no fuel will be able to escape if the shut-off valve on the other side is not closed. |
| 4 | Quick-coupler | To be connected with the opposing quick-coupler of the device. Can be released by pulling back the knurled ring. |

7. Attention: High Voltage

For the measurement of the flame ionization and for the electrical ignition of the fuel very high voltages that can be dangerous to life are generated in the device.

Never operate the device if the cover lid is not closed. Furthermore never touch anything inside the device and never touch the ignition electrodes or the electrode cage while the device is switched on.

The electrode for the measurement of the flame ionization is energized while the fuel valves are opened. A current limiting circuit in the device prevents that this can cause any danger.

8. Attention: Hot Surfaces

The following parts can heat up strongly during operation:

- the housing, especially the parts that form the burning chamber
- the electrode cage
- the ignition electrodes
- the electrode for the measurement of the ionization

Only touch these parts after they have cooled down sufficiently and the device is switched off.

9. Nozzles for different types of fuel

Different nozzles have been developed for the various types of fuels. The nozzles have been optimized for:

- perfect ignition behavior
- aesthetic flame shape
- rapid extinguishing of the flame to enable fast step sequences
- best performance of the flame monitoring system

Make sure that you use the correct nozzle for your application every time you operate the device. The usage of other nozzles than the original ones is prohibited.

The following nozzles are available:



This nozzle is intended to be used with gas cartridges.

To gain different flame heights this nozzle is available in these different sizes: S / M / L / XL / XXL

The size XXL is included in the delivery of the gas cartridge option.



This type of nozzle is must be used together with gas bottles if the gasiform phase is being used. It is included in the delivery of the gas bottle option.

Different sizes are not being offered because the flame height can be changed by adjusting the pressure setting at the pressure regulator.



This nozzle has been designed for the usage in conjunction with gas bottles if the liquid phase is being used. It is not included in the delivery of the gas bottle option and must be ordered separately if required. This kind of usage is at one's own risk.

Different sizes are not offered because for this kind of application normally a very high flame is desired and the flame height can be adjusted at the regulator. Please note that special regulators are necessary for the liquefied phase and please read the instructions given in the section 'Approved fuels and instructions if the gas bottle option is being used'.

10. Changing the nozzles and nozzle holder

The nozzles have always to be screwed in with the supplied sealing.

If you are changing the nozzle make sure to tighten them finger-tight.

Holder for up to four nozzles can be found in the housing of the G-Flame.

11. Sealing of the nozzles or respectively of the nozzle thread

The nozzles to be used in conjunction with the gas cartridges have a central drilling. After using the device you should seal the hole in the nozzle by using self-adhesive tape if it could happen that foreign particles may enter the system. This is especially the case if the device is stored or transported unpacked.

If you remove the nozzle and if you do not install another one you need to seal the orifice as well to prevent that foreign particles can enter. In this case we recommend to install a blind bolt instead.

12. Approved fuels

12.1. Approved fuels and instructions if the gas bottle option is being used

Make sure that the correct nozzle for this type of fuel is installed and that it is tightened sufficiently.

Gas bottles with 5 kg, 11 kg or 33 kg of liquefied Propane/Butane gas mixture can be used with this type of operation.

For safety reasons you should use the smallest bottle possible. Only if a high quantity of gas is required for a single event you should use the next larger bottle size.

The usage of other fuels in this operation mode, e.g. with coloring additives, is strictly prohibited because this can lead to leakages in the system or malfunction of the electro-magnetic valves.

Regulations regarding the usage of the gasiform phase:

The usage that is intended by the manufacturer is that only the gasiform phase is being taken from the bottle. Here it is mandatory to use a pressure regulator and the maximum output pressure must not be higher than 4.0 bar. The used gas hose must be approved for a pressure of 6.0 bar. If you order the gas bottle option we deliver appropriate and approved equipment for this type of usage. If the inner diameter of the gas hose is too small or if the pressure regulator is unsuitable the flame height will be reduced. The usage of gas bottles without pressure regulator is an extreme accident hazard and is strictly prohibited. The reason is that the pressure in the bottle can reach up to 35 bar and certain components like e.g. the gas hose and the electro-magnetic valves have not been designed for this.

Regulations regarding the usage of the liquid phase:

The usage that is intended by the manufacturer is that only the gasiform phase is being taken from the bottle. You can use also the liquid phase on your own risk. When using the liquid phase much higher flames can be generated (approx. 8-9 m). For doing so another nozzle is required and it is prohibited to use the supplied pressure regulator. Standard pressure regulators are not suitable to be used with the liquefied phase. When the temperature is rising the pressure in the hose will increase extremely which will destroy the pressure regulator and liquefied gas is set free. Pressure regulators are offered on the market which are suitable to regulate the liquefied phase. Furthermore a gas hose must be used that has been approved for at least the maximum bottle pressure which is 35 bar. Hydraulic hoses are suitable for this. It must be avoided by all means that a certain volume filled with liquefied gas is blocked off. For example it is not allowed to fill the hose with liquefied gas and then close the shut-off valve on the bottle. The pressure in the locked volume will increase with a rate of 7 bar per 1° C when the temperature is rising! If you do not use a regulator must ensure that the bottle pressure is not higher than 10 bar because this is the maximum pressure that the electromagnetic valves can handle and due to that the bottle temperature should not exceed 25°C. It is not advisable to use the liquid phase by turning the bottles upside down. Besides the fact that the bottle is no longer standing stable also dirt from the bottle may enter the regulator (if installed) or the system of the G-Flame. When using the liquid phase you should only use bottles with a dip tube installed inside. The safety distance must be extremely increased: if there is no wind at least 10 m to the side and 20 m upwards. The safety distance sideways has to be increased in windy conditions by the judgment of the operator. Please note in this context that unburned fuel that is transported by the wind can be hazardous.

Accurately inspect all equipment before each application, especially the gas hose, regarding possible damages. It is strictly prohibited to use damaged parts or equipment.

Ensure that the gas hose can not become damaged during usage, e.g. by burning stars from aerial shells that fall down to the ground. Fireproof protective covers for the gas hoses are available upon request.

Make sure that the flame monitoring system is enabled in the menu of the G-Flame.

The usage of gas bottles in conjunction with the G-Flame is only permitted outdoors and not on stages, in buildings or tents etc.

Before starting operation the system has to be checked with a gas leak detector.

Make sure that the quick coupler, the gas hose and the pressure regulator is connected gas tight with the gas bottle.

Depending on your application it can be necessary to use gas detectors to ensure best possible safety. Cost effective devices are offered on the market. Please note in this context that Propane and Butane is heavier than air and due to that it can accumulate in sinks, trenches, cellars or shafts. This characteristic must be taken into consideration when installing gas detectors.

In case that the G-Flame do not ignite the fuel because of a technical defect or if the device should have a leakage the units must be turned off immediately either by using the emergency-off input or by disabling the hazard zone that has been assigned to the device and the fuel supply has to be shut off as quickly as possible. The main switch is not allowed to be used as long as an ignitable fuel-air-mixture is present. The advantage of using the emergency-off input is that no spark, which could possibly ignite the mixture, is being generated when turning off the unit.

In most cases liquefied gas is a mixture of Propane and Butane. The mixing ratio can be very different, depending on the country. This has to do with the fact that the vapor pressure of Propane is much higher compared to Butane. In countries with a warm climate usually the Butane proportion is much higher while in countries with a colder climate the Propane proportion is higher. The mixing ratio can also vary depending in which season the gas is being purchased. The G-Flame can work with any Propane/Butane mixing ratio. You should use the liquefied gas as it is offered in the particular country instead of e.g. bringing pure Propane bottles to a region with relatively warm climatic conditions.

The instructions in the material safety data sheet of the gas bottles, the ADR regulations (i.e. regulations for the transportation of dangerous goods) and the regulations imposed by the employer's liability insurance association for the storage and usage of gas bottles and all other relevant laws, especially for places of public assembly, must be strictly followed. Especially the maximum allowable temperature of the bottles must not be exceeded. Protect the bottles from direct sun light and ensure that the bottles do not become overheated e.g. if they are loaded on vehicles. Usually the bottles are equipped with a pressure relief valve which opens at 35 bar with a tolerance of ± 5 bar. This is beneficial to prevent the burst of a bottle during a fire. If the pressure is decreasing this safety valve is closing automatically. Of course the released gas is a major accident hazard. Liquefied, pure Propane already generates a vapor pressure of 26 bar at a temperature of 70°C. 30 bar are exceeded at a temperature of 78°C and gas could possibly vent through the pressure relief valve. According to the regulations of the employer's liability insurance association already a bottle temperature of 40°C is unallowable.

The valves of the bottles should be opened as shortly as possible before the usage and they should be closed again as fast as possible after the effects.

After each usage the remaining fuel in the gas hose and in the system of the G-Flame must be emptied. To do so first close the valves of the gas bottles and then initiate a flame effect several times until no flame is being generated any more. Then the installation can be dismantled.

Attention! Expect that the G-Flame generates a flame every time you trigger the device even if there is no fuel supply. It could be that there is still fuel in the system and due to that a flame can be possibly generated. Furthermore it could be that the system has not been completely emptied last time when the devices have been used.

When gas is drawn from the gas bottle, which contains the liquefied phase, the liquid in the bottle is cooling down due to the evaporative heat loss. Especially if a high volume is drawn from the bottle and if the ambient temperature is low this can lead to a significant pressure loss in the bottle resulting in a lower flame height. If you want to use or construct a bottle heater to cope with this problem you must not use appliances that have not been approved for this. Furthermore the heating device must be equipped with at least two independent temperature monitoring systems for failover redundant operation.

12.2. Approved fuels and instructions if the gas cartridge option is being used

Make sure that the correct nozzle for this type of fuel is installed and that it is tightened sufficiently.

The gas cartridge option is intended to be used for applications on stages or in buildings. It is always possible to use the G-Flame with this variant also outdoors. In this context we would like to point out that the flame effect is less susceptible to windy conditions due to the fact that the liquefied phase is being used if gas cartridges are installed.

When gas cartridges are to be used the following fuel cartridges are approved:

a)

Manufacturer or respectively supplier:

ROTHENBERGER Werkzeuge GmbH
Industriestraße 7
65779 Kelkheim
Germany

Telephone: +49 / 6195 / 800-0
Fax: +49 / 6195 / 800-3500

e-Mail: info@rothenberger.com
Homepage: www.rothenberger.com

Product name:	Multigas 300
Content:	600 ml Aerosol (330 g)
Composition:	approx. 65% Butane, 35% Propane
Calorific value:	4,61 kWh / Cartridge

b)

Manufacturer or respectively supplier:

CFH Löt- und Gasgeräte GmbH
Bahnhofstraße 50
74254 Offenau
Germany

Telephone: +49 / 7136 / 95 94-0
Fax: +49 / 7136 / 95 94-44

Homepage: www.cfh-gmbh.de
e-Mail: info@cfh-gmbh.de

Product name:	Universaldruckgasdose AT 2000
Content:	600 ml Aerosol (330 g)
Composition:	approx. 70% Butane, 30% Propane
Calorific value:	4,61 kWh / Cartridge

Additional fuels can be approved upon request.

In this operation mode the pressurized liquid is taken from the cartridges and is atomized by the nozzle of the G-Flame. An aerosol is produced which is then ignited by an electrical arc. Due to this we are speaking of aerosol cartridges, fuel cartridges or gas cartridges.

Use only a single cartridge for the reasons of safety if you do not need to generate many flame effects.

The usage of other fuels in this operation mode, e.g. with coloring additives, is strictly prohibited because this can lead to leakages in the system or malfunction of the electro-magnetic valves.

Make sure that the flame monitoring system is enabled in the menu of the G-Flame.

Only use original accessories which you will receive from us when ordering the gas cartridge option. The cartridge adaptor consists of a T-piece with two non-return valves, two shut-off valves and two connectors for the gas cartridges. The non-return valves prevent the leakage of fuel on the other side of the T-piece if a cartridge is being installed while the shut-off valve on the other side is not closed.

Even though non-return valves are installed you have to ensure that both shut-off valves are closed when screwing in one or two cartridges.

Before removing the T-piece from the G-Flame or before screwing in fuel cartridges you have to ensure that no ignition sources are present in the surrounding area. Smoking and open fire is forbidden. All other sources of ignition must be eliminated.

Make sure only to use cartridges that are undamaged and that the connectors for the cartridges and the thread on the cartridges is free from dirt and dust.

Open the cover lid of the G-Flame in order to screw in the cartridges and remove the T-piece by opening the quick-coupler. To do so pull back the knurled ring. Check all parts of the equipment thoroughly if anything is damaged, especially the seal in the quick-coupler of the T-piece. It is strictly prohibited to use damaged equipment.

Pay attention to screw in the cartridges gas-tight, completely and rather tight. Otherwise it is possible that the valve in the cartridges is not completely opened which leads to the problem that the fuel amount that can be drawn from the cartridge is reduced. In this case either the flame height will be reduced or the flame can not be ignited. Both can cause a shut-off of the electromagnetic valves because the flame monitoring system can not detect a sufficiently burning flame.

The shut-off valves in the T-piece should be opened as shortly as possible before the usage and they should be closed again as fast as possible after the effects.

Before or respectively while putting the device into service it can be reasonable to check the whole system with a gas leakage detector. If used on stages, buildings or tents this is absolutely necessary. When screwing in the cartridges it can happen that a small amount of fuel is set free. Due to the fact that gas leakage detectors are very sensitive you should wait some minutes so that the fuel that was possibly released when the cartridge was installed can evaporate and volatilize completely. Then you can begin with the testing against leakages.

If it should be the case that G-Flames do not ignite the aerosol spray or that there is a fuel leakage because of a technical defect the units must be turned off immediately either by using the emergency-off input or by deactivating the hazard zone that has been assigned to the device and the fuel supply has to be terminated as fast as possible. The unit may only be turned off by using the main switch if you can assure that there is no inflammable or explosible fuel-air ratio present. The advantage of utilizing the emergency-off input is that during the shut-down no electric spark can be generated that could ignite a fuel-air mixture.

Depending on your application it can be necessary to use gas detectors to ensure best possible safety. In applications on stages, in buildings or tents this is mandatory. Cost effective devices are offered on the market. Please note in this context that Propane and Butane is heavier than air and due to that it can accumulate in sinks, trenches, cellars or shafts. This characteristic must be taken into consideration when installing gas detectors.

Gas cartridges contain predominantly Butane, which has a lower vapor pressure compared to Propane. Furthermore the vapor pressure curve of Butane has a much flatter characteristic. On the other hand the cartridge is by far not so robust as a gas bottle. Therefore the maximum temperature, which is 50 °C according to the guidelines provided by the manufacturers of the cartridges, must not be exceeded during storage, transportation and usage.

The instructions in the material safety data sheet of the gas cartridges, the ADR regulations (i.e. regulations for the transportation of dangerous goods) and the regulations imposed by the employer's liability insurance association for the storage and usage of gas cartridges and all other relevant laws, especially for places of public assembly, must be strictly followed. Especially the maximum allowable temperature of the gas cartridges must not be exceeded. Protect the cartridges from direct sun light and ensure that the cartridges do not become overheated e.g. if they are loaded on vehicles.

After each usage the remaining fuel in the T-piece and in the system of the G-Flame must be burned off. To do so first close the shut-off valves on the T-piece and then initiate a flame effect several times until no flame is being generated any more. Then the installation can be dismantled. In this context we want to point out that it can take very long until the liquid fuel in the system has completely evaporated. When the liquid fuel evaporates a lot of coldness is being generated (evaporation chill) and this leads to a deceleration of the evaporation. Due to that it can absolutely happen that after a certain time a flame is being generated again even though it seemed that the fuel evaporated completely when emptying the system.

After emptying the system and burning off the fuel the installation can be dismantled. Before your remove the T-piece you have to make sure that no ignition sources are present.

Attention! Expect that the G-Flame generates a flame every time you trigger the device even if there is no fuel supply. It could be that there is still fuel in the system and due to that a flame can be possibly generated. Furthermore it could be that the system has not been completely emptied last time when the devices have been used.

13. Fuel consumption

13.1. Fuel consumption if gas bottles are being used

With a gas bottle with a content of 11 kg approx. 1,000 flame effects with a duration of 0.5 seconds and a height of 5 m can be generated. With a 5 kg bottle approx. 450 of these effects are possible.

13.2. Fuel consumption if gas cartridges are being used

The fuel consumption depends mainly on the vapor pressure in the gas cartridges which depends on the temperature and also the nozzle size has an effect on the amount of fuel consumed.

The following spreadsheet should give you approximate guideline values. The information in seconds refers to the approximate total burning duration with two cartridges with different cartridge temperatures.

Nozzle size	S	M	L	XL	XXL
-20 to -15°C	62 Sek.	57 Sek.	52 Sek.	47 Sek.	42 Sek.
-15° to -10°C	60 Sek.	55 Sek.	50 Sek.	45 Sek.	40 Sek.
-10° to -5°C	58 Sek.	53 Sek.	48 Sek.	43 Sek.	38 Sek.
-5° to 0°C	56 Sek.	51 Sek.	46 Sek.	41 Sek.	36 Sek.
0° to +5°C	54 Sek.	49 Sek.	44 Sek.	39 Sek.	34 Sek.
+5° to +10°C	52 Sek.	47 Sek.	42 Sek.	37 Sek.	32 Sek.
+10° to +15°C	50 Sek.	45 Sek.	40 Sek.	35 Sek.	30 Sek.
+15° to +20°C	48 Sek.	43 Sek.	38 Sek.	33 Sek.	28 Sek.
+20° to +25°C	46 Sek.	41 Sek.	36 Sek.	31 Sek.	26 Sek.
+25° to +30°C	44 Sek.	39 Sek.	34 Sek.	29 Sek.	24 Sek.
+30° to +35°C	42 Sek.	37 Sek.	32 Sek.	27 Sek.	22 Sek.
+35° to +40°C	40 Sek.	35 Sek.	30 Sek.	25 Sek.	20 Sek.

30 seconds would be for example 100 short flame effects with 0.3 seconds each or 60 flame effects with 0.5 seconds each or 30 flame columns with a valve opening duration of 1.0 seconds.

14. Tilting the G-Flame

In general the tilted operation of the G-Flame is possible. We recommend a maximum tilt angle of 45° in conjunction with gas bottles and a maximum tilt angle of 75° when gas cartridges are being used.

If gas cartridges are installed the liquefied phase is being used and due to that the flames follow better the tilt angle because the influence of the thermal lift on the shape of the flame is significantly lower in this case.

When the tilt angle is more than 30° the tilt sensor has to be turned off in the menu of the device. When doing so please note that the device will not close the electromagnetic valves e.g. if it is turned over. In this case it is so much more important to ensure that the G-Flame is securely mounted and that your personnel is constantly supervising that all devices are in correct position.

If the G-Flame is used with gas cartridges it can also be tilted with an angle of e.g. 90°, 135° or 180° but in these cases the problem exists that the fuel can no longer be used completely or partly in the liquefied phase. Due to that for example a short hose and an external cartridge holder is necessary to enable this operation. If you have a demand for this please contact us so that we can provide a customized solution.

15. Additional regulations for permanent installations

A permanent installation requires that the system is effectively and redundantly monitored by at least two gas detection devices. The function of the gas detectors has to be checked weekly. These function checks must be recorded in writing.

The amount of fuel which is held available and is connected with the device must be as low as possible.

The shut-off valves should be opened as shortly as possible before the usage and they should be closed again as fast as possible after the effects.

If the device is used with gas bottles:

The fuel shut-off valves on the gas bottles must be closed if no personnel is present to supervise the devices.

If the device is used with gas cartridges:

No gas cartridges are allowed to remain in the device if no personnel is present to supervise the devices.

16. Safety distances

The safety distances stated in this manual refer to flame retardant materials. For other materials or objects that are susceptible to heat the safety distances must be significantly increased. The thermal output of this effect device is enormous. It is more than 1.2 Megawatt if gas cartridges are being used at a cartridge temperature of 20°C. Especially the safety distance upwards must be increased by 3 m if easily inflammable materials are present.

The required safety distance for safe operation is depending on several parameters. The flame height is influenced by different nozzle sizes if gas cartridges are being used and by the selected output pressure of the pressure regulator if gas bottles are being used. Furthermore wind and every other air movement and the thermal lift are relevant factors.

Also the duration how long the electromagnetic fuel valves are opened is having an influence on the required safety distance. If the valves are opened for extremely short times (approx. 0.1 to 0.5 seconds) smaller flame balls are being generated compared to longer durations.

In addition the temperature of the gas cartridges or gas bottles is affecting the flame height.

The pressure in the gas cartridges is rising with the temperature. Due to the lack of a pressure regulator the flame height depends directly on the temperature of the fuel in the cartridges.

If gas bottles are used the output pressure of the regulator is constant and therefore the flame height is actually not depending on the temperature of the bottle unless the liquefied gas is very cold or is chilled by the evaporative heat loss so that the vapor pressure in the bottle is falling below the selected output pressure of the regulator. Propane has a vapor pressure of approx. 4 bar at 0°C and approx. 2 bar at -15°C.

Wind or thermal influences may heighten the effects which can demand increased safety distances as well.

In general the following rule applies: The operator is responsible for the accident-free usage of the G-Flame and has to decide by his own judgment which safety distance is required.

In certain circumstances the safety distances may be specified by the authorities that are responsible for the safety during the fire prevention assessment on site. The following tables should inform you about the effect height to be expected and be an orientation guide when specifying the minimum safety distances.

In general all the recommendations for the safety distances given in here are basing on the condition that there is no wind at all! Windy conditions will lead to the result that the effects are drifting sideways accordingly, especially if gas bottles are being used. This must be considered when choosing the position for the installation, choosing a nozzle size and the operation pressure. Due to the fact that the usage of the devices is beyond our control expressly disclaim any liability for any damages resulting from insufficient safety distances. Therefore we are only giving recommendations regarding the safety distances instead of fixed values. Every user must decide by himself which minimum safety distance is required for his application.

Utmost care must be taken if actors are wearing costumes that are easily inflammable. In such cases the safety distance must be increased dramatically. If in doubt the effect has to be omitted.

16.1. Safety distances if gas bottles are being used, device standing vertically

Selected pressure [bar]	0,0 - 0,5	0,5 - 1,0	1,0 - 1,5	1,5 - 2,0	2,0 - 2,5	2,5 - 3,0	3,0 - 3,5	3,5 - 4,0
Approx. effect height* [m]	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Safety distance upwards** [m]	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,5
Safety distance sideways*** [m]	2,0	2,0	2,5	2,5	3,0	3,0	3,5	3,5

* = Expected effect height if valves are opened for 1.5 seconds if G-Flame is standing vertically

** = Recommended safety distance upwards to persons, animals or flame retardant objects

*** = Recommended safety distance sideways to persons, animals or flame retardant objects

16.2. Safety distances if gas cartridges are being used, device standing vertically

Nozzle size	S	M	L	XL	XXL
-20 to -10 °C	approx. 1.5 m 3.5 m 2.0 m	approx. 2.0 m 4.0 m 2.0 m	approx. 2.5 m 4.5 m 2.0 m	approx. 3.0 m 5.0 m 2.5 m	approx. 3.5 m 5.5 m 2.5 m
-10 to 0 °C	approx. 2.0 m 4.0 m 2.0 m	approx. 2.5 m 4.5 m 2.0 m	approx. 3.0 m 5.0 m 2.5 m	approx. 3.5 m 5.5 m 2.5 m	approx. 4.0 m 6.0 m 2.5 m
0 to 10 °C	approx. 2.5 m 4.5 m 2.0 m	approx. 3.0 m 5.0 m 2.5 m	approx. 3.5 m 5.5 m 2.5 m	approx. 4.0 m 6.0 m 2.5 m	approx. 4.5 m 6.5 m 3.0 m
10 to 20 °C	approx. 3.0 m 5.0 m 2.5 m	approx. 3.5 m 5.5 m 2.5 m	approx. 4.0 m 6.0 m 2.5 m	approx. 4.5 m 6.5 m 3.0 m	approx. 5.0 m 7.0 m 3.5 m
20 to 30 °C	approx. 3.5 m 5.5 m 2.5 m	approx. 4.0 m 6.0 m 2.5 m	approx. 4.5 m 6.5 m 3.0 m	approx. 5.0 m 7.0 m 3.5 m	approx. 5.5 m 7.5 m 4.0 m
30 to 40 °C	approx. 4.0 m 6.0 m 2.5 m	approx. 4.5 m 6.5 m 3.0 m	approx. 5.0 m 7.0 m 3.5 m	approx. 5.5 m 7.5 m 4.0 m	approx. 6.0 m 8.0 m 4.5 m

Marking in cyan color = Expected effect height if valves are opened for 1.5 seconds if G-Flame is standing vertically

Marking in yellow color = Recommended safety distance upwards to persons, animals or flame retardant objects

Marking in green color = Recommended safety distance sideways to persons, animals or flame retardant objects

It can be necessary to increase the safety distance to uninvolved persons significantly also to ensure that these people do not become frightened and do not show panic reactions. Our recommendation is here a safety distance of at least 5 m sideways.

16.3. Safety distances if the device is being tilted

It is also possible to mount the device in a tilted orientation. If gas bottles are being used we recommend a maximum tilt angle of 45° sideways. When operated with gas cartridges the maximum tilt is 75° sideways.

If the device is operated with a tilt angle the safety distances sideways in the direction of the tilt angle should be increased according either to the operator's judgment or to the guidelines of the authorities. Possibly the safety distances on the other side can be reduced, but we recommend to keep at least a minimum distance of 2.0 m.

We recommend to keep the minimum safety distance upwards to people, animals and flame retardant materials if the device is being tilted because due to the thermal lift the same amount of heat will ascent.

16.4. Safety distances if the device is mounted above the spectators

In general it is possible to install the devices above the spectators, e.g. on elevated truss elements. The device does not have any fall-out but we recommend a minimum safety distance to people, animals and flame retardant materials of 2 meters above the heads of the spectators. If the devices are used above the spectators you have to take into consideration that they can become frightened and could possibly show panic reactions. This bears the risk of injury and death.

16.5. Reduction of the safety distances to actors

Possibly the safety distance to performers (actors, musicians, Stuntmen, artists, etc.) can be reduced slightly if these persons have been well trained and became familiar with the flame effect. It can be necessary to employ other safety measures such as flame retardant or inflammable costumes, pyrotechnical barrier gel (i.e. stunt gel) for the unprotected skin, etc. The user who is in charge for the safety will also have to take into consideration that heat is being dissipated as infrared radiation (invisible heat radiation) and that heat is rising upwards due to the thermal lift.

17. The various inputs and their compatibility and usage, pin assignments of connectors

17.1. Firing key input

The firing key input requires a potential-free electrical contact. Contact debouncing has been implemented in hardware and software. The contact must be able to withstand a switching current of at least 100 mA at a voltage of 5V DC.

This input should always be used together with a shielded cable, especially with longer cable lengths.

The firing key input of several devices must not be connected among themselves to avoid equalizing currents caused by different potentials. Instead either galvanically isolated keys must be used or, if several devices should be controlled by a single key a customized solution with a galvanic isolator must be used.

A 3pin XLR socket is installed in the G-Flame for this input. The pin assignment is as follows:

Pin1 = Ground/Shield, to be connected with the shielding of the cable

Pin2 = Output with a voltage of 5V DC with internal current limiter; this pin needs to be connected with the electrical contact of the firing key

Pin3 = Input, 0 or 5V DC, this pin needs to be connected with the electrical contact of the firing key

A connection diagram is printed on the housing of the G-Flame.

You may also use the firing keys which are offered by us as an accessory part for the PFC Advanced. The pin assignment is identical.

If desired we will manufacture firing key according to your requirements, e.g. firing keys with long cables or foot switches.

17.2. Voltage input 12-24V

This input is intended to be used in conjunction with a Galaxis receiver or other firing modules.

The following Galaxis receivers can be used:
PFE Profi 3 Outputs and PFE Profi 10 Outputs
PFE Advanced 10 Outputs

Connect the positive output of the receiver with the red female input connector and the negative output (ground) with the black female input connector.

The voltage input of several devices must not be connected among themselves to avoid equalizing currents caused by different potentials. Instead either galvanically isolated outputs must be used or, if several devices should be controlled by a single voltage signal a customized solution with a galvanically isolated outputs must be used.

If using receivers of the Profi series you can select two different control durations (0.5 and 2.6 seconds). It is possible to initiate a firing cue several times one after another to generate several consecutive flame effects. In addition you can re-fire the firing cue while the output of the receiver is active to prolong the flame effect. With receivers of the Profi series it is not possible to program more than one firing cue to one specific output.

If using receivers of the Advanced series with 10 outputs and Terminal function you may program as many firing cues as required to each output and furthermore you can individually program the duration how long the outputs should be active. This requires that the receiver is operated in 10 output mode. Further explanation regarding the usage of the Terminal function can be found in the operation manual of the PFE Advanced 10 Outputs.

If connecting other firing systems you have to pay attention that these devices have a DC output voltage ranging between 12 and 24 Volts. Higher voltages can probably damage the input of the G-Flame. In addition the equipment to be connected should not use capacitor buffered outputs and be able to deliver a constant voltage. If you will be able to influence the duration of the flame effects depends on the scope of operation of the control devices to be connected.

If necessary we are able to deliver accessory parts like banana plugs and control cables if you inform us about your requirements. Also you can consult us regarding the technical suitability of other control components.

17.3. Operation with DMX512

17.3.1. The DMX512 input

The DMX512 input complies with the DMX standard from 1990 respectively the standard which is defined in DIN56930-2.

The device is equipped with a 5pin female XLR jack as an input and a 5pin male XLR jack as an output to connect a DMX cable and to feed the signal to the next DMX device.

A connector with a termination resistor of 110 Ohm must be installed at the last device in the DMX line.

Up to 32 DMX devices can be operated in a single DMX line. If this is not sufficient you need to use a DMX splitter.

Please note that for DMX signals only shielded twisted-pair cables with lowest possible capacitance and an impedance of 110 Ohm are allowed to be used. Only used cables that are specified according to the DMX standard. E.g. normal microphone cables are in no case suitable for this purpose.

The pin assignment is as follows:

Pin1 = Shield, to be connected with the shielding of the cable, also ground for wireless DMX pens
 Pin2 = Signal -
 Pin3 = Signal +
 Pin4 = unassigned but connected with the same pin on the other jack (to enable the feedthrough of return signals) or +5VDC power supply for wireless DMX pens
 Pin5 = unassigned but connected with the same pin on the other jack (to enable the feedthrough of return signals)

A connection diagram is printed on the housing of the G-Flame.

If DMX has been selected as an input in the menu of the device you may optionally activate the power supply for wireless DMX pens. This enables the autarkic operation also in the DMX mode which means that the device is independent from any cables, power supplies and fuel pipes or hoses.

Please refer to the section 'The menu' which describes the operation in DMX mode in detail.

Attention: In general the DMX protocol is considered to be unsafe because no checksum is being transmitted. Usually it is not allowed to control pyrotechnic effects or similar with DMX. The user solely bears the risk of any potential damages caused by a malfunction. To improve safety we have implemented the arming of the device by using a safety channel in the G-Flame.

Note: For the reason of safety the G-Flames should always be operated in an exclusive DMX universe, that is only used for the flame effects and no other devices. On all unused DMX channels the dimming value 0% (decimal 0) should be transmitted.

17.3.2. Control via DMX512

In order to generate a flame a dimmer value ranging from 60% to 80% must be transmitted on the safety channel. This is equivalent to the decimal values from 153 to 204.

First the safety condition must be met before the flame channel can initiate the generation of a flame!

The safety condition is only correctly fulfilled if the dimmer value of the flame channel is below 6% (below decimal 15) during the rising edge of the dimmer value of the safety channel.

A flame will be generated if the safety condition is met and the flame channel is being received with a dimmer value of at least 90% (at least decimal 229).

Another flame effect can only be triggered if the dimmer value of the flame channel dropped below 6% (below decimal 16) in the meantime.

If a flame is being generated currently and the safety channel is being received with a dimmer value higher than 80% or lower than 60% the electromagnetic fuel valves are closed to stop the flame effect.

It can be meaningful to program the G-Flames with different flame channels and a common safety channel. If you move the fader of the safety channel beyond the valid range all G-Flames will be deactivated together. Of course it is also possible to program groups of safety channels if necessary.

Examples of the display content while receiving DMX signals:

Input: DMX512
F:003-, S:012x

The G-Flame has been programmed to flame channel 3 and safety channel 12 ('F' = Flame channel, 'S' = Safety channel). In addition you see the status of the safety channels and respectively of the DMX reception. 'x' means that no signal is being received or that the transmitted value of the safety channel is not between 60% and 80% (= device is not armed). The safety condition is not met in this example and no flame is being generated.

Input: DMX512
F:003-, S:012✓

'ü' right next to the safety channel means that a DMX signal is being received and a value between 60% and 80% is being received for the safety channel (= device is armed). Consequently flame effects can be initiated.

Input: DMX512
F:003°, S:012✓

The safety condition is fulfilled and the flame channel is being received with a dimming value of at least 90%. The G-Flame generates a flame. In this case a flame symbol is being displayed right next to the flame channel.

During the reception of DMX signals in addition to the display content shown above also the following information is being displayed alternately:

- Tilt switch on/off and the tilt status
- Flame monitoring on/off

As soon as the DMX status is changing the device immediately displays the DMX information again and the LCD backlight is switched on simultaneously if it has been enabled in the menu of the device.

17.4. Advanced wireless module, communication via radio or serial data cables

If the device has been equipped with the Advanced wireless module it can be controlled by the Galaxis controllers PFS Profi and PFC Advanced. Remote data requests and remote programming is only possible if the G-Flame is used in conjunction with the PFC Advanced.

When the wireless module is installed remote data requests and remote programming is also possible with the wireless USB modem together with the Composer software from any PC or notebook.

The operation of the G-Flame together with the Advanced wireless module is described in more detail in the section 'menu' in this manual

If the wireless module is installed the G-Flame can also communicate with the PFC Advanced via serial data cables. The connection is established by using the DMX jacks and the DMX interface which in principle works as a so called RS485 interface. Please refer to the manual of the controller PFC Advanced and the receiver PFE Advanced regarding network topography and operation. If the cable interface has been selected in the menu of the G-Flame the pin assignment of the 5pin male and female XLR connectors is as follows:

The pin assignment is as follows:

Pin1 = Shielding for serial data cable, to be connected with the shielding of the cable

Pin2 = Serial data cable, Signal -

Pin3 = Serial data cable, Signal +

Pin4 = unassigned but connected between the male and female jack

Pin5 = unassigned but connected between the male and female jack

A connection diagram is printed on the housing of the G-Flame.

Upon request you will be able to receive customized data cables if you provide us your requirements.

18. Switching on

The G-Flame can only be operated if the emergency switch is closed. If you want to use the device without emergency switch you can plug in the supplied XLR connector which is bridging the contacts of the emergency switch before you put the device into operation. In principle the main switch and the emergency switch are wired in series.

To switch on the G-Flame press the main switch which you will find on the side of the device where the display is.

Firstly on the LCD the start screen and the firmware version is being displayed:



Right after that the safety timer is started, unless a warning message is being displayed that the battery has been deeply discharged.

19. Battery monitoring and warning message 'deep discharge' after powering up the device

The rechargeable battery is monitored during operation. If the battery is being deeply discharged while the device is in receiving mode or ready to fire mode this event is stored in the memory of the device and each time when you switch on the G-Flame you will see a warning message.

Note: Deep discharges can only be detected if the device is in receiving mode or respectively in ready to fire mode.

In case of a deeply discharged battery you see e.g. this being displayed and during that an acoustic signal will be given:

Batt. 1x deeply
discharged

The number of deep discharges is being displayed here. The safety will be automatically started after five seconds.

In such cases we recommend to do a battery capacity measurement occasionally to determine if the battery has probably been damaged. Please refer to the menu item 'Start Battery Measurement?'. Please note that deep discharges in general lead to a reduced life time of the batteries.

If the battery shows bad capacity results you can order a new battery at all times from us and replace it yourself.

If you have replaced the battery yourselves you also can reset the warning message described above. Please read below how to achieve this.

20. Resetting the warning message 'Battery deeply discharged'

You can reset this warning message after you have installed a new battery. For doing so activate the magnetic sensor field 'Up' while the warning message is being displayed.

Reset deep
discharges...

Right after that you will see this being displayed on the LCD screen.

Then the following text will be displayed as a ticker:

Call the Galaxis office and tell the token. You will
receive the activation code. Continue with Mode.

If you now activate 'Mode' a random eight digit sequence of numbers will be generated and displayed, the so called token. Tell us this token on the phone and will give you the corresponding activation code.

Note: You may speed up the ticker by activating the 'Mode' sensor field and keeping it activated.

The sequence is as follows:

Token:
53582820

Example of a token being displayed. This screen is being displayed sufficiently long so that you can tell us the token on the phone.

Code?
♦

Then you see this request to enter the activation code which you will receive from Galaxis on the phone. With 'Up' and 'Down' you can change the digits. If you see the correct number being displayed activate 'Mode' to proceed. A '0' can be entered the easiest by activating 'Mode' without activating 'Up' or 'Down' before.

Code? OK
44232502♦

The activation code, which has also eight digits, has been accepted und the deep discharge counter has been reset to zero. No more warning message will be displayed any more until the next occurrence.

Code? X
5423250200♦

A wrong activation code has been entered and the code was not accepted. Switch off the G-Flame and repeat the procedure.

21. Safety timer

The safety timer will be started every time when the device is powered up and after exiting the menu.

Safety Timer
Armend in: 15s

The timer counts down 15 seconds.

The purpose of the safety timer is that the user can step back from the device before a flame effect can be initiated.

The safety timer will be started no matter which control method has been selected.

Note: While the safety timer is counting down you can terminate the sequence and directly invoke the menu by activating 'Mode'.

22. The LED indicators

This section describes the LED indicators which can be found right above the display:

- LED 'Operation' (blau)
- LED 'Flame' (gelb)
- LED 'Charging' (grün)
- LED 'Low Battery' (rot)

22.1. The LED 'Operation'

This blue LED displays the operating mode. While the safety timer is counting down or the device is in the menu this LED is continuously on. In this case no flame effect can be initiated.

If the device is in receiving mode or ready to fire mode this LED is flashing. Only if this is the case a flame effect can be generated.

22.2. The LED 'Flame'

This yellow LED goes on as soon as the electromagnetic fuel valves are opened.

If the Advanced wireless module is installed you can program step delays and so called atomic effects in the menu of the device or remotely via the wireless link.

If an atomic effect has been initiated the LED goes on as soon as the electromagnetic valves are opening and not when the delayed ignition happens.

When a step delay has been programmed and the firing command for this is being received by the device this LED starts to flash until the electromagnetic valves are opened. During a flame effect this LED is continuously on.

22.3. The LED 'Charging'

This green LED is on as soon as the charging voltage is present and the battery is being charged. With this indicator you can check if the charger is functioning properly. If the battery was completely discharged it takes up to 30h for a full charge.

22.4. The LED 'Low Battery'

This LED starts to flash in red color in the receiving mode or respectively ready to fire mode if the internal battery has been discharged below 30% and together with the flashes you will hear an acoustic warning signal if the loudspeaker has been enabled. In such a case you should connect the charger soon in order to charge the battery completely again. A full charge takes up to 30 h.

22.5. Functional check of the LEDs

Immediately after powering up the device a function test of the LEDs is performed. First the LED 'Operation' goes on for one seconds, followed by the LED 'Flame' and the LED 'Low Battery' while the start messages are being displayed.

The LED 'Charging' can only be supplied by the charging unit and due to that this LED stays inactive during the LED test sequence.

23. The warning LED 'Attention armed'

On one side of the housing where also the display and the connectors can be found there is also a warning indicator in the shape of an exclamation mark.

This warning LED should alert people in the surroundings of installed devices that flame effects will be possibly initiated.

In general this warning can be enabled or disabled in the menu of the device depending on whether this function is desired or not.

Under which circumstances the warning will be displayed depends on the settings you have chosen and various operation modes, providing that the warning LED has been activated in the menu:

Selected input	Warning while the safety timer is counting down	Warning while the device is in receiving mode or respectively ready to fire mode
Firing key	Yes	Yes, continuously
12-24V	Yes	Ja, ständig
DMX512	Yes	As soon as the safety channel is received with values between 60% and 80%.
Serial data cable (RS485 of the PFC)	No	As soon as the controller's command 'Firing mode armed' has been received until the command 'Firing mode disarmed' is being received.
Wireless (PFC or PFS)	No	As soon as the controller's command 'Firing mode armed' has been received until the command 'Firing mode disarmed' is being received.

Note: When using a Galaxis controller for the correct function of the warning LED it is required that the firing mode is disarmed when the G-Flame is put into operation. Furthermore the G-Flames must be within radio range of the transmitter. On the edge of the coverage area or if radio interferences are

disturbing the transmission it can absolutely happen that some commands are received and others are not. This applies also for the display of the warning. Due to that you should take care for good range and operating conditions so that the warning signal will be displayed reliably.

24. The menu

Certain menu function of the G-Flame are depending on the selected control method. In this chapter we will first explain the standard menu with all standard menu items. The control variants 'Firing key' and '12-24V' will be described. Later the menu items of the other control methods will be explained.

24.1. Standard menu items

24.1.1. The menu item 'Language'

Sprache/Language
English

Here you can select the language of the menu and all display texts of the receiving mode or respectively the ready to fire mode.

24.1.2. The menu item 'Accumulator capacity'

You see e.g. this result in the display:

Accumulator
Capacity: 95%

In this example the remaining charging level is 95%. If the value decreases below 30% the charging reserve is being touched. If the battery is being discharged to 0% damages due to deep discharging are possible.

Note: The display of the accumulator capacity is related to an ambient temperature of 20°C. A fully charged battery could also lead to a reading of e.g. 80% if the temperature is very low.

Note: The result of this menu item can also be displayed at the controller PFC Advanced by using the function 'Remote data request', provided that the Advanced wireless module has been installed.

No result regarding the accumulator capacity can be acquired as long as the battery is being charged. In this case you will see the following information in the display:

The accumulator
is being charged

The results may be higher directly after charging. We recommend to wait an operation time of approx. 10 minutes to gain realistic results.

24.1.3. The menu item 'Accumulator power'

By activating 'Mode' you will proceed in the menu and see e.g. this text in the display:

Accumulator
Power: 99%

To get information regarding the battery power it is discharged with a very high current for a short period of time. The device is analyzing the voltage drop and recovery during this process and is then able to compare the results in relation to an optimum value. The measured parameter is the capability of delivering high current that can decrease during the chemical aging process of the battery. A fully charged battery should have a result of at least 60%.

Note: The result of this menu item can also be displayed at the controller PFC Advanced by using the function 'Remote data request', provided that the Advanced wireless module has been installed.

24.1.4. The menu item 'Input'

In this menu item you can select one of the following control methods by activating 'Up' and 'Down':

Input: Firing Key (Contact)	Direct control input by using a firing key or any other potential-free electrical contact.
Input: 12-24V	Direct control input for voltages.
Input: DMX512	DMX512; later you will be able to switch on the power supply for wireless DMX pens if you want to use this technology.
Input: Cable (RS485 of PFC)	This option is only being displayed if the Advanced wireless module has been installed. Use this selection if you want to use the G-Flame in conjunction with a PFC Advanced and if serial data cables should be used for the communication. 'RS485' is the cable interface of the controller PFC Advanced. RS485 is the name of the technical standard of the interface being used here for the serial data communication between devices on data cables.
Input: Wireless (PFC or PFS)	This option is only being displayed if the Advanced wireless module has been installed. Use this selection if you want to use the G-Flame in conjunction with a PFC Advanced or a PFS Profi or the wireless USB modem PFM Advanced and if the wireless link should be used.

Note: The feedback information during remote data requests and programming will always be sent on both data exchange carriers: by radio signal and on the cable. You may select which way you want to use for the feedback in the menu of the controller PFC.

For the explanations given hereafter we assume that either 'Firing Key' or '12-24V' has been selected as control method.

24.1.5. The menu item '45° Tilt Switch'

In this menu item you can determine if the flame effect should be terminated or if the fuel valves should remain closed if the G-Flame is tilted by more than 45°.

45° Tilt Switch: On	The shutoff of the flame effect and the inhibition of the fuel valves if the tilt angle is too is enabled.
45° Tilt Switch: Off	The status of the tilt switch will be ignored. Use this selection only if you want to operate the G-Flame with a tilt angle of more than 30°.

Note: The tilt switch is a mechanical component. Strong vibrations or accelerations on the vertical axis may cause the tilt switch to respond even though that the device is standing upright. In these exceptional cases it can be meaningful to disable the tilt switch.

24.1.6. The menu item 'Flame monitoring'

Right next to the electrodes for the ignition of the flame another electrode has been installed which is used to measure the ionization of the flame. A flame is so to speak electrically conductive and this physical phenomenon is utilized by the electronic circuits of the G-Flame to detect if the flame is burning or not.

Flame
monitoring: On

Here the shutoff of the flame effect and of the fuel valves if the flame is not burning is enabled. If no flame is detected for more than one second the valves are closed automatically. The device is terminating the fuel supply for this firing command.

Flame
monitoring: Off

With this setting the results of the ionization measurement will be ignored.

Note: With every new firing command another attempt will be made to ignite the flame and in this process the fuel valves will be opened for a maximum time of one second. If no flame can be ignited several times one after another you should disable the G-Flame for the reasons of safety either by using the emergency-off input or the hazard zones (Advanced wireless module required for this) to prevent that an unnecessary amount of unburned fuel is set free.

Attention: For the reasons of safety you should generally enable the ionization measurement.

24.1.7. The menu item 'Acoustic Signals'

This menu item switches the acoustic signals of the device on or off. Beep tones etc. may be disturbing on theatre stages and in this case it is meaningful to disable the sounds. Please note that there will be no acoustic signals at all if the sounds are turned off, even no warning signal if the battery needs recharging.

Acoustic
Signals: On

In this example the acoustic signals are enabled.

24.1.8. The menu item 'LCD Backlight'

This text for example is being displayed:

LCD Backlight:
auto & dimmed

The display backlight is turned on automatically as soon as the menu is called up or messages are being displayed. The display is illuminated slightly (dimmed) in all other cases. That enables you to read the display content in darkness without any further action required. The power consumption for this slight permanent illumination is negligible.

LCD Backlight:
auto & off

If you choose this setting the display backlight is completely turned off as soon as the device is not in the menu or if there is no message. This is preferable in some applications where the slight illumination of the display could be disturbing.

LCD Backlight:
always off

With this setting the display backlight is off all the time.

24.1.9. The menu item 'Warning LED'

In this menu item the following options can be selected:

Warning LED (!):
On

The warning LED is switched on. When a warning signal will be given is explained in detail in the chapter "The warning LED 'Attention armed'".

Warning LED (!):
Off

No warning signal will occur.

24.1.10. The menu item 'Battery measurement'

This additional feature is used for measuring the capacity.

The menu items accumulator capacity and accumulator power measure very quickly the actual charging level of the battery and the ability of the battery to deliver current. Basically the battery voltage is being monitored for these measurements.

The amount of energy an accumulator can store is decreasing during the aging process. Many factors affect this deterioration such as the chemical aging process itself, the storage temperature, the number and deepness of discharge cycles.

Possibly the amount of energy the battery can store is much less after some years of ageing than it was initially. However the battery will show high results as a percentage value after charging due to the fact that the off-load voltage is still high. In principle the percentage value refers always to the amount of energy which can be stored in the particular battery. The loss in capacity becomes noticeable only in a shorter operation time. The test results in the menu are falling faster accordingly.

To measure the accumulator capacity precisely it was necessary to send the device to the manufacturer for an accurate battery test procedure. With this useful function you can do this battery measurement with precise capacity metering yourself at the device. In the end the result is being displayed in mAh and as a percentage value by which you can easily decide if the battery needs to be replaced.

Including a full charge before and after the discharge cycle this procedure requires approx. three days.

Proceed this way to perform an accumulator capacity measurement:

Position the device evenly and connect the supplied charging unit. Establish a reliable power supply for the charging unit. Power failures should be avoided. In this case the test sequence will be cancelled to prevent deep discharges and the risk of damaged batteries which could occur in this situation. The ambient room temperature should be between 15 and 25 °C.

Invoke this menu item. You will see the following on the screen:

Start Batt. | Yes
Measurem.? | No

You can start the test sequence by activating 'Up'. You will skip this menu item with 'Mode' or 'Down'.

Please connect
charging unit!

After starting the test sequence the device checks if the charging unit is supplying charging current. You will see this message if the charger is not yet connected or if the charger has no mains supply. Establish proper charging now and remain the charger connected permanently.

1. Charging
1800 Min. remain

After starting the sequence this is being displayed. Before the discharge cycle (measurement) it is essential that the battery is fully charged otherwise the result would be incorrect. The device will charge the battery for 1,800 minutes (= 30 h) to ensure that even a completely discharged battery will be fully charged. The remaining time is being displayed continuously. You can skip the initial charging process by activating 'Mode' in order to save time. You should not do this if you are not completely sure that the device's battery has been charged continuously before for at least 30 h.

2. Discharging
13.1V 0 mAh

Subsequently the battery is being discharged and the amount of energy which is drawn is being measured.

After some time e.g.:

2. Discharging
12.4V 617 mAh

The current battery voltage and the capacity in mAh which has been drawn so far is being displayed for your information. This process lasts until the final discharge voltage is reached. If necessary you can cancel the test by activating 'Mode' for a longer time. After cancelling make sure that the device is charged for a sufficient period of time before using it again.

After the discharging process a final charging process is following. E.g. these messages are being displayed alternately:

3. Charging
1727 Min. remain

Here you are informed about the remaining duration of the charging process. Again 30 h are required in total.

3. Charging
12.0V 6.513 mAh

In the lower line next to the current battery voltage the capacity in mAh which has been discharged during the measurement is being displayed.

You may also terminate the final charging process by activating 'Mode'. In this case you are responsible that the battery is being charged sufficiently afterwards. You will directly enter the receiving mode or respectively ready to fire mode.

If the sequence is not cancelled you will see e.g. this being displayed:

4. Finished
93% 6.513 mAh

The test result as a percentage value and the capacity in mAh which has been measured during discharging is being displayed in the bottom line. In addition an acoustic signal is audible which should inform you that the test is finished.

The percentage value should help you to interpret the test result correctly. 100% represent 7,000 mAh, this is the nominal capacity of the battery being used. Results over 100% are possible, too.

If the battery reaches more than 75% (more than 5,250 mAh) it is fairly good. If the result is ranging between 60 and 75% (between 4,200 und 5,250 mAh) the battery should be replaced soon. If the result is less than 60% the battery should be replaced urgently.

Note: You as the operator can easily replace the battery yourselves.

Normally operation is still possible if the battery shows a bad result. A low capacity leads to a shorter operation time. In some cases also the maximum current that can be drawn from the battery can be reduced if the inner resistance of the battery has risen. Before using the device again you should also observe the parameter 'Accumulator Power' in the menu.

It is making sense to test the accumulator regularly. We recommend to do this at least twice a year but not more than four times a year. Due to the fact that the measurement is a full discharge cycle batteries that have become inactive will be refreshed. Several measurements one after another can definitely lead to an enhancement in battery performance and increased capacity.

If the test cycle is conducted too often the negative effect of an accelerated ageing is rather likely to occur.

There are two possibilities why a measurement has been cancelled:

Terminated: no
charging voltage

The charging voltage was interrupted for an unacceptably long time. To avoid damages the device cancelled the test. Maybe the charger has been disconnected or a power failure of the mains supply occurred. Establish the power supply and start the test sequence again. If your mains supply is unreliable it is recommended to use an UPS (= Uninterruptible Power Supply).

Terminated by
user

Somebody cancelled the test before a result was gained.

If a power failure of the charging voltage occurs during charging or discharging you will hear an acoustic signal in the first instance. When the interruption lasts for too long the device terminates the measurement to avoid damages. If no UPS (= Uninterruptible Power Supply) is being used you should check once in a while if everything is OK.

24.2. Menu items if DMX512 has been selected as an input

The following menu items are only being displayed if DMX has been selected as the input.

24.2.1. The menu item 'Flame Channel'

Flame Channel:
001♦

With 'Up' and 'Down' you can select a DMX channel ranging from 1 to 512 which should be used to control the flame effect. Confirm your selecting with 'Mode'.

The functionality is described in detail in the chapters 'The DMX512 input' and 'Control via DMX512'.

24.2.2. The menu item 'Safety Channel'

In addition to the flame channel a so called safety channel must be programmed.

Safety Channel:
013♦ 60-80% = ✓

With 'Up' and 'Down' you can select a DMX channel ranging from 1 to 512 which should be used as the safety channel. Confirm your selection with 'Mode'. If you have for example 12 G-Flames in use it is meaningful to use the DMX channel 1 to 12 as control channels and the next DMX channel, in this case 13, as a safety channel on all devices.

A value between 60% and 80% (decimal values between 153 and 204) has to be received on the safety channel in order to enable flame effects.

The functionality is described in detail in the chapters 'The DMX512 input' and 'Control via DMX512'.

It is not permitted to use the same channel number for the flame and the safety channel. In this case the following will be displayed on the LCD:

Identical DMX
Channels!

This screen is being displayed for some seconds. After that the device jumps back to the menu item 'Flame Channel' so that different channels can be programmed.

You can only exit the menu if different channels have been selected.

24.2.3. The menu item 'Power Supply for Wi-DMX'

Frequently the autarkic operation is an important aspect in the practical usage of the G-Flame. Besides the Advanced wireless module which enables the wireless communication between the device and a Galaxis controller you may also use wireless DMX solutions, either as an additional option or exclusively.

Here, it is a major disadvantage if DMX receivers as a desktop device offer wireless communication but require first of all a wall power supply and mains power and secondly a cable connection to the G-Flame in order to feed in the DMX signal.

Due to that various manufacturers offer wireless DMX Pens, which can simply directly be plugged into the jacks for the DMX signal. The G-Flame has been equipped with the necessary hardware to supply power to these DMX Pens so that no additional source of power is required and autarkic operation becomes possible also this way.

With this menu item you can switch the power supply for these DMX Pens either on or off:

Power Supply for
Wi-DMX: Off

There is no voltage output with this setting.

Power Supply for
Wi-DMX: On

With this setting +5VDC on Pin4 and ground (0V) on Pin5 will be applied.

All DMX Pens can be used that need a supply voltage of 5V and not more than 700 mA.

Note: The DMX Pens offered on the market have a rather high power consumption compared to the electronic circuits of the G-Flame. Therefore if this technology is being used the operation time is reduced from usually 60 h to approx. 10 h.

Note: For best reception during wireless DMX operation you should not directly plug in the DMX Pens and respectively this is maybe even not possible in certain circumstances. Instead use a short DMX cable to operate the DMX pens in some distance. You can for example use some gaffa tape to fix the DMX Pens on the side of the housing so that the antenna is pointing upwards and reception is not impaired.

24.3. Menu items if the Advanced wireless module has been installed and 'Cable (RS485 of PFC)' or 'Wireless (PFC or PFS)' has been selected as control method

The following menu items appear only if the Advanced wireless module has been installed and 'Cable (RS485 of PFC)' or 'Wireless (PFC or PFS)' has been selected as control method.

24.3.1. The menu item 'RF Channel' (i.e. frequency selection)

This menu item enables the user to determine which radio channel (RF = Radio Frequency) is being used by the device. You can choose from 70 different frequencies (channel 0 to 69). The particular frequency is being displayed in the bottom line.

RF Channel: 69
= 434.775 MHz

If you are changing the RF channel you will have to program all other devices to the new RF channel to ensure proper radio communication.

Attention: It is not allowed to operate two or more systems which are only differing in the programmed RF channel in relative proximity (within radio range). In this case there is no safety in regard to unintended firings. To safely operate two or more systems in relative proximity in addition either

different system IDs need to be assigned by the manufacturer or different system IDs need to be assigned by the user.

24.3.2. The menu item 'Interfering Signal'

This is the next menu item. You may see this being displayed:

Interfering Signal: 5%

The device is measuring and displaying the signal strength on the used radio frequency permanently as long as this menu item is present.

Normally this function is used to find out the cause of a radio interference. Values below 15% are uncritical. If the radio channel is busy you can select another frequency. Please see the section 'RF Channel' in this manual for further information.

Note: The result of this menu item can also be displayed at the controller PFC Advanced by using the function 'Remote data request'.

Note: You can use this menu item for a range test, too. Activate the firing mode at your controller PFS Profi or PFC Advanced. The device is now measuring the signal strength of your controller. By changing the location of the G-Flame you can try to find out which installation is best. You should definitely switch off the firing mode before you quit the menu and always make sure that there is no unintended activation of the firing button at the controller during the range test.

24.3.3. The menu item 'Last Range Test Result'

You will enter this menu item with another activation of 'Mode'. This function is mainly intended for users who are operating the transmitter PFS Profi. The new controller PFC Advanced is now offering the comfort of requesting the result of the range test remotely.

This function comes in handy if you do the set-up of the system without a helping person. After starting a range test at the transmitter the G-Flames are displaying the results for approx. 10 seconds. Within this short period of time you can not check the results of many different devices all over the place. This function enables you to ease this task.

Proceed this way:

- Switch on the G-Flames and start a range test at the controller.
- Go to each device, step through the menu and read the result which is being displayed under 'Last range test result'. This value has been displayed during the test.
- You can do another test if you like after reading all results.

Last Range Test Result: ?%

This means that there is no result stored in the memory of the device. There are several possibilities: Maybe no range test was made so far or the device was not within the radio coverage area. Another reason could be that the result has just been cleared by invoking this menu item before.

Last Range Test Result: 65%

In this example the signal level was 65%. Values below 30% are critical.

Note: The result is being cleared after stepping through the menu to ensure that the same result is not being displayed again after the next range test although the G-Flame is possibly out of reach. If you are using this function it is essential to read all the old results before starting a new test to make sure that they are all being cleared!

24.3.4. The menu item 'Device ID number'

Dev. ID No. for
bidir. Comm.: -

This is the next menu item in the menu. A device ID number ranging from 1 to 999 can be programmed here. The device ID number is used as an identification address during bi-directional remote access. If no device ID number has been programmed the G-Flame can not be accessed from the controller PFC during remote data requests and programming. Normally the devices are programmed with ID numbers in consecutive order. It is not allowed to program the same ID number to more than one device.

24.3.5. The menu item 'Determine Hazard Zone'

Determine
Hazard Zone: A✓

Here you can change the hazard zone of the G-Flame. The default setting zone is hazard zone A. The check symbol indicated that the hazard zone is active, i.e. the G-Flame processes firing commands and generates flames according to the cue programming.

Determine
Hazard Zone: E✓

You may use up to 16 different hazard zone. These hazard zones are represented by the letters A to P. In this example the G-Flame has been assigned to the hazard zone E.

Attention: If you change the hazard zone in the menu the status is 'active' by default. Thus firing commands will be processed and flame effects will be generated. If a specific hazard zone has been deactivated and you select another zone in the menu for the time being and then select the previous hazard zone this zone will be activated by doing so.

The 16 hazard zones can be deactivated and also activated again according to your requirements in the manual and automatic firing mode of the controller PFC Advanced. For this please read the user manual of the controller PFC Advanced.

The hazard zone which is currently assigned to the device and its status is being displayed in the receiving mode. You see e.g. this being displayed on the G-Flame's LCD:

Firing Mode: Off
Hazard Zone: G✓

In this example the hazard zone 'G' has been assigned to device. The hazard zone is active.

Firing Mode: Off
Hazard Zone: Gx

The symbol 'X' right next to the hazard zone indicates that this hazard zone has been deactivated. Flame effects are suppressed until this hazard zone is activated again.

Note: The status of the device's hazard zone is always active after switching the G-Flame on. Due to that firing commands will be allowed. We assume that all hazard zones should be active after powering all devices up so that only those hazard zones need to be deactivated which bear a risk in terms of safety.

Note: When you enable or disable hazard zones at the controller the G-Flame displays the current status of the hazard zone right after receiving the command if this hazard zone has been assigned to this device. The display backlight is activated also to show that the device has received the command. This is useful if you want to test if the G-Flames respond to the hazard zone commands.

24.3.6. The menu item 'Terminal Programming'

According to the similarities between the G-Flame and the Galaxis Advanced receivers we also speak of a Terminal programming when operating the G-Flame. Terminal programming means that several firing cues are programmed to a specific output and different durations can be defined in doing so. In principle the G-Flame is an Advanced receiver with a single output. Consequently user-defined flame effects like various flame balls or flame columns can be generated again and again during a show.

Note: In this section the programming of the Terminal function in the menu of the G-Flame is explained. Please note in this context that all these parameters can also be programmed remotely - which is very convenient - by using either the controller PFC Advanced or any PC or notebook computer via the wireless USB modem PFM Advanced (the latter is currently in preparation).

24.3.6.1. Overview regarding the parameters of the Terminal programming

The following parameters can be programmed at the G-Flame for each firing cue (1...999):

Parameter name	Range of values	Resolution
Duration	0.1 ... 25.0 seconds	0.1 seconds
Step Delay	0.00 ... 99.99 seconds	0.01 seconds = 10 ms
Atomic Effect	0.0 ... 0.7 seconds	0.1 seconds

The parameter 'Duration' determines how long the fuel valves will be opened. Shorter values for the duration create flame balls, longer values create flame columns.

With the parameter 'Step Delay' time delays are programmed. By doing so the most extreme step sequences can be achieved. The high resolution of only 10 ms enables the user to create extremely fast step chases and dynamic changes in the stepping speed. The functionality is identical with the receiver PFE Advanced 10/100 outputs and in the user manual of this device the application of the step function is described in detail.

The parameter 'Atomic Effect' is a special effect. It is a delay of the electrical ignition which takes place after the fuel valves have been opened. The longer this delay is the more unburned fuel is accumulating above the burning chamber. In the moment of the ignition the amount of fuel in the air is much higher and a nice flame ball similar to an atomic explosion with swirling turbulences is being created. In this context you should be informed that the maximum delay for the atomic effect is 0.7 seconds. Furthermore the programmed duration must be at least 0.1 seconds longer than the atomic effect delay. The firmware of the G-Flame and of the PFC Advanced prohibits that improper values are programmed for these parameters.

Note: It can be also appealing to use the atomic effect in conjunction with flame columns which last several seconds to enhance the impression of the whole effect.

24.3.6.2. The selection menu of the Terminal programming

By activating 'Up' and 'Down' you may choose between the following options:

Terminalprogr.:
Keep up & Exit

Terminalprogr.:
Edit

Terminalprogr.:
Delete

24.3.6.3. The menu item 'Terminal programming: Keep up & Exit'

Terminalprogr.:
Keep up & Exit

If you activate 'Mode' here you quit the menu of the terminal function without having changed any parameter. Use this selection also if you want to exit the menu of the terminal function after having made another selection before, for example after having entered a programming.

24.3.6.4. The menu item 'Terminal programming: Edit'

Terminalprogr.:
Edit

If you activate 'Mode' here you will enter the menu for editing the terminal function.

C: 1♦ T: ---S
D: 0.00s A:---

'C' stands for 'Cue', which is the firing channel.
'T' is the parameter duration ('T' for lat. tempus).
'D' stands for 'Delay', which is the step delay.
'A' stands for 'Atomic effect'.

After invoking this edit menu firing cue 1 is pre-selected. The double-headed arrow indicates which parameter can be currently changed with 'Up' and 'Down'. After deletion of the memory no durations are programmed at all. In this case '---' is being displayed for the duration and the atomic effect. '0.00' is being displayed as a step delay.

If '---' is being displayed for the duration, this means that for this firing cue no flame will be generated by this device.

Programming example:

- Firing cue 4 should generate a short flame ball with a duration of 0.3 seconds
- With cue 7 a flame column with a duration of 4.2 seconds should appear.
- Cue 12 should generate an atomic effect with a duration of 0.9 seconds and an atomic effect delay of 0.7 seconds.
- Cue 17 should trigger a short flame ball with a duration of 0.5 seconds and an atomic effect delay of 0.4 seconds. This flame effect is part of a step sequence and due to that a step delay of 1.47 seconds should be counted down before the effect will be generated.

C: 4♦ T: ---S
D: 0.00s A:---

As long as the double-headed arrow is being displayed next to the cue number you can select the cue, in this example cue 4, which should be assigned with a flame effect by activating 'Up' and 'Down'.

C: 4♦ T: ---S
D: 0.00s A:---

With each short activation of 'Mode' the double-headed arrow jumps to the next parameter. So you have to activate 'Mode' once for a short time to determine the firing duration.

C: 4 T: ---S♦
D: 0.00s A:---

Now you can enter the duration for this firing cue by activating 'Up' and 'Down'.

C: 4 T: 0.3S♦
D: 0.00s A:---

According to the programming example 0.3 seconds have been entered.

C: 5♦ T: ---S
D: 0.00s A:---

Activate 'Mode' three times for a short period to skip the parameters atomic effect and step delay. Then you will have the opportunity to edit the programming of the next cue. If the double-headed arrow jumps to the cue number again the cue number will be incremented automatically.

C: 7♦ T: ---S
D: 0.00s A:---

Select cue number 7 by activating 'Up' two times for a short period.

C: 7 T: 4.2S♦
D: 0.00s A:---

Jump to the parameter duration by activating 'Mode' once for a short period and enter the value 4.2 seconds with 'Up' and 'Down'.

```
C: 12♦ T: ---S
D: 0.00s A:---
```

Skip the parameters atomic effect and step delay and select 12 as firing cue in order to proceed with the entries for this cue.

```
C: 12 T: 0.9S♦
D: 0.00s A:---
```

Firstly enter the duration how long the valves will be opened, in this case 0.9 seconds.

```
C: 12 T: 0.9S
D: 0.00s A:0.6♦
```

Right after that you can enter the ignition delay (atomic effect) which is in this case 0.6 seconds. This parameter can be edited in the range of 0.0 to 0.7 seconds. The effect duration must be at least 0.1 seconds longer than the ignition delay.

```
C: 13♦ T: ---S
D: 0.00s A:---
```

Activate 'Mode' two times for a short period to reach the parameter firing cue. The device increments the cue number automatically so that cue 13 is being displayed.

```
C: 17♦ T: ---S
D: 0.00s A:---
```

Select cue number 17 with 'Up' and 'Down'. The you program, as already described above, an effect duration of 0.5 seconds and an atomic effect of 0.4 seconds. Rotate through the edit menu with 'Mode' until you reach the parameter step delay.

```
C: 17 T: 0.5S
D: 0.00s♦ A:0.4
```

Now enter the desired step delay by using 'Up' and 'Down'.

```
C: 17 T: 0.5S
D: 1.47s♦ A:0.4
```

As soon as you are finished with your entries activate 'Mode' for a longer time to exit the edit menu.

```
Terminalprogr.:
Nicht ändern
```

Right after doing so the device returns to the submenu of the Terminal programming. With another activation of 'Mode' for a short period you will exit this submenu and reach the main menu.

Note: By activating the magnetic sensor fields 'Up' and 'Down' for a longer time you can change the current parameter rapidly.

Note: If you are using the atomic effect, which is also a firing delay, in a music synchronized show you have to take these delays into consideration during the design of the show. In principle this parameter must be handled like the rising time of a display shell. The particular cues must be fired earlier according to the atomic delay so that the flame effect will be synchronized with the music.

Note: The parameters flame duration, atomic effect and step delay can also be programmed remotely, which is very convenient, either with the controller PFC Advanced or the Galaxis PYROTEC Composer software in conjunction with the wireless USB modem 'PFM Advanced' (the latter is currently in preparation). Furthermore you can and perform remote data request.

24.3.6.5. The menu item 'Terminal programming: Delete'

```
Terminalprogr.:
Delete
```

All possibly programmed durations (T), all atomic effects (A) and all step delays (D) in the memory of the G-Flame will be deleted with this function.

```
Are you | Yes
sure?   | No
```

After activating 'Mode' this safety request is being displayed and you can start the deletion process with 'Up'.

```
The memory has
been deleted!
```

This message is being displayed after deleting the memory, which only takes a short moment. Subsequently the device return to the submenu of the terminal programming.

25. Switching off

If possible you should switch off the device only if it is currently not in the menu. You may switch it off anytime if it is in receiving mode or respectively ready to fire mode or if the safety timer is counting down. Otherwise changes of parameters in the concerned menu item will not be saved.

You should also not switch it off while a remote programming or a remote check is performed by the Advanced wireless module.

Press the main switch to switch off the device.

Alternatively you can also power down the unit by using the emergency off input, i.e. by opening the electrical contact that is connected to this input. In principle the main switch and the emergency off switch are wired in series. Please note when powering down the device with the emergency off input that still there is a small power consumption. Due to that you should also switch off the device with the main switch if the device is not used for a longer time.

The usage of the emergency off input is very recommendable to power down the device with sufficient safety distance and then activate the main switch. Especially when using DMX512 we recommend this procedure because this control signal contains no safety measures.

26. The emergency off input

A shielded cable with two stranded wires that are wired to an electrical switch can be connected here. The emergency off switch should be installed in an enclosure. Industrial grade emergency off switches, suitable housings, cables and accessories are available on the market for do-it-yourself constructions. Upon request we can also supply this material or offer a ready-for-use solution.

Several G-Flames should always be controlled by separated emergency off switches to avoid potential equalizing currents. If you want to control several G-Flames with a single emergency off switch we can offer you a customized solution with an optical isolator between the individual signals.

The pin assignment of the emergency off input is as follows:

Pin1 = Shielding for the control signal, to be connected with the shielding of the cable
 Pin2 = to be connected with the contact of the electrical switch (output at the G-Flame)
 Pin3 = to be connected with the contact of the electrical switch (input at the G-Flame)

A connection diagram is printed on the housing of the G-Flame.

27. Wireless emergency off

If you operate the Advanced wireless module you can send a wireless emergency off command. This command is always being sent when the firing mode is disabled. If this command is being received opened electromagnetic fuel valves are closed, the electrical ignition is switched off and step sequences - if in progress - are terminated, provided that the device is within radio range.

28. Receiving mode or respectively ready to fire mode

Right after switching on and after the safety timer has elapsed the device enters the receiving or respectively the ready to fire mode. Flame effects and bi-directional remote access functions are only possible in this operation mode. If wireless communications is being used we are speaking of receiving mode. Otherwise it is called ready to fire mode.

Which information is being displayed in this mode is depending on the selected control method.

In the following chapter we will describe which messages are being displayed one after another. In general first the selected control method is being displayed, followed by additional screens regarding the operation status and settings.

28.1. Displayed information during receiving mode or respectively ready to fire mode, that appears in all operation modes

28.1.1. Information which control method has been selected

Depending on the selected control variant one of the following screens is being displayed:

Input: Wireless
(PFC or PFS)

Input: Cable
(RS485 or PFC)

Input: Firing
Key (Contact)

Input: 12-24V

Input: DMX512
F:003-, S:012x

The programmed flame channel and safety channel is being displayed if DMX512 has been chosen as an input ('F' = Flame channel, 'S' = Safety channel).

In addition the status of the safety channel or respectively of the DMX reception is being displayed. 'x' means that either no signal is being received or that the value of the safety channel is not between 60% and 80% (= generation of flame effects is not enabled).

'ü' after the safety channel indicated that a DMX signal is being received and that a value between 60% and 80% is being received for the safety channel (= device armed).

Input: DMX512
F:0030, S:012✓

This example shows the display content if the device is armed by the safety channel (noticeable by the 'ü' after the safety channel) and if the flame channel has activated a flame effect (flame symbol next to the flame channel).

28.1.2. Tilt switch on/off and its status

Tilt Switch: On
Status: OK

In general it is being displayed if the tilt switch has been enabled or not and the status of the tilt switch. The tilt switch is enabled in this example, i.e. the flame effect will be terminated if already in progress or flame effects will be disabled if the device is tilted by more than 45°. Status OK means that the G-Flame is not tilted by more than 45° and the generation of flame effects is enabled.

Tilt Switch: On
Status: >45°

Here the device is tilted by more than 45° and flame effects will be terminated if this condition is detected during a flame effect and the fuel valves will remain closed if the tilt angle is exceeded in the moment of triggering an effect.

Tilt Switch: Off
Status: >45°

The tilt switch has been turned off in the menu. The G-Flame will ignore a tilt angle of more than 45° and flames will be generated, no matter how much the device is being tilted.

28.1.3. Flame monitoring on/off

Flame
monitoring: On

Here the flame monitoring system has been deactivated in the menu. The device is measuring the ionization of the flame immediately after the beginning of the ignition phase to determine if the flame is really burning and if it has been completely ignited. If no flame is being detected for more than one second the fuel valves will be closed.

Flame
monitoring: Off

In this example the flame monitoring has been disabled in the menu of the device.

28.2. Display of special information and behavior of the device in the receiving mode or respectively ready to fire mode if 'Wireless (PFC or PFS)' or 'Cable (RS485 or PFC)' has been selected as control method

After the selected control method the status of the tilt switch and the flame monitoring system will be displayed. Right after that the following screens will be visible:

28.2.1. Status information regarding firing mode and hazard zone

Firing Mode: Off
Hazard Zone: K✓

Firstly the status of the firing mode is being displayed (on or off). Please note in this context that the device is assuming that the firing mode is disarmed at the controller when being switched on. If the G-Flame is powered after the firing mode has been armed 'off' will be displayed nevertheless. Furthermore this wrong usage leads to the detection of a radio interference because the G-Flame interprets the signal of the controller as an interference. In addition the hazard zone the device has been assigned to plus if this zone is active or not is being displayed ('ü' = active, 'x' = inactive). The hazard zone is active by default after powering up the device and must be deactivated by a command from the controller if necessary.

If the status of one of these parameters is changing the device immediately jumps to this screen and in addition the display backlight is switched on, if it has been enabled in the menu.

Note: Every time the firing mode is turned on or off the controller transmits this information to the receiver. If the status of the firing mode is being changed the G-Flame can only display the current status of the firing mode correctly if they are in the receiving mode and within radio coverage.

Note: If the firing mode is being switched off all possibly opened electromagnetic fuel valves are closed (emergency off function). In addition all stepping sequences that are currently in progress are terminated, provided that the G-Flames are within radio range and that this information is being received.

28.2.2. Display of the device ID number

Dev. ID No. for
bidir. Comm.: 15

Then the device ID number for bi-directional communication which has been assigned to this device is being displayed.

28.2.3. Display of messages

The following messages are possible if the Advanced wireless communication module is being used. If enabled in the menu the display backlight is switched on, too, so that it becomes apparent which device is displaying a message.

Transmitting data...	A remote access is currently in progress. The device is transmitting data to the controller or the wireless USB modem.
Writing data...	A remote access is currently in progress and data is written to the memory of the G-Flame.
Remaining Range: 50%	A radio range test is currently in progress and the result is being displayed (no bi-directional remote access but a range test as it can be conducted with the PFS Profi and as it has been also implemented in the PFC Advanced to provide downward compatibility to devices of the Profi series).
Fire Channel: 999	This is being displayed when firing commands are being received. If a flame effect has been programmed for the firing cue the yellow 'Flame' LED goes on in addition or it starts to flash if a step sequence is in progress.
RF Channel: 69 = 434.775 MHz	The G-Flame received the command to change the radio frequency. The new radio channel and the frequency is being displayed.

28.2.4. Programming of the system ID

The G-Flame can be taught to different systems ID, just as it is possible with the Advanced receivers. This procedure is called 'Teach-In' and is used if systems are split into several ones or if devices are lent or rented out to other customers. After the return of the devices they can be e.g. taught to the original system ID again.

To teach-in a system ID 'Up' must be activated while the device is in receiving mode and then the command for the teach-in must be sent. Immediately after that the following confirmation message is being displayed:

Teach-In successful	The device will automatically return to the receiving mode after this message.
------------------------	--

28.2.5. The monitoring function Radio Interference

The G-Flames are monitoring their frequency permanently. An interference is present if an external carrier with a signal strength of more than 30% in respect to 100% maximum signal strength of the system is present for more than 45 seconds.

Radio Interference!	This message is appearing if a radio interference has been detected. If the display backlight has been activated the display will be illuminated periodically, too. In this case it is advisable to check if the G-Flame has been installed close to a strong source of interference. Therefore enter the menu item 'Interfering Signal' and check if there is a higher value all the time.
------------------------	---

By stepping through the menu with the magnetic pen the warning 'Radio Interference' will be cleared. The device is always ready for use even if you do not clear this warning message.

Attention: If you switch on a G-Flame while the transmitter is in the firing mode the G-Flame will display the warning message 'Radio Interference' soon. The PFS Profi and the PFC Advanced are

transmitting continuously (i.e. they are active carriers) if they are in the firing mode. If you change from normal mode to firing mode the controllers are telling the receivers that a continuous and intended transmission will follow. If a G-Flame has been switched on after this or was in the menu while this signal has been sent it will interpret the signal of the own transmitter as an interfering signal.

Note: You can select another frequency in the menu of the device if the used radio channel is busy or if there is an interference. Of course you have to select the same frequency also at the controller and all other receivers if additional devices are in use (only possible with Advanced series).

Note: The frequency (i.e. radio channel) can also be changed remotely with the controller PFC Advanced or the wireless USB modem PFM Advanced.

Note: Using the controller PFC Advanced the warning 'Radio Interference' and the level of interference can even be checked remotely.

29. Usage in rainy conditions

The device can also be used even in heavy rainfall. The housing protects the electronic circuits against the immersion of rain water, also if the rain hits the device sideways.

If rain water accumulates in the burning chamber it will be able to drain off through a drilling and a hose. Ensure that this drilling and the hose is not blocked by dirt or foreign particles.

It is prohibited to submerge the device into water or to operate it in anyway that water enters the device from the bottom side.

As soon as the high voltage ignition is switched on a very hot electrical arc is being generated and the fuel can be ignited without any problems even in heavy rainfall.

Ensure that all wetness or moisture can dry off completely after each usage in the rain before you stow the devices in cartons, flight cases or similar.

30. Radio range

If the standard antenna is used under good conditions the range is 800 m and can be increased up to 2.000 m by using the antenna Superscan 70 or Superscan 71.

Higher radio range is available on request.

It is a general rule that the higher the antenna is positioned the better the reception will be. Please do not hesitate to ask our personnel for more information about the various possibilities of range improvement.

Note: An antenna extension cable should be used for the Superscan 70 or Superscan 71 in order to mount the antenna separated to ensure that the generated flame can not damage the antenna.

Note: Do not use the high gain antennas Superscan 70 and Superscan 71 together with the remote access functions because in this mode the device is also transmitting data and the radio approval would be voided.

31. Radio Range Test

The remote access functions of the controller PFC Advanced make very convenient radio range tests possible because the signal strength of both devices (signal back and forth) are displayed at the controller.

If you want to read the test result at the G-Flame or if you work with the transmitter PFS Profi the radio range test can also be done the conventional way.

After starting the test procedure the G-Flames will for example display the following text:

Remaining Range:
50%

This result means that the distance to the transmitter can be approximately doubled until the signal will be too low. In general you should try to achieve at least a signal level of 30%.

32. Remote access

If the device has been accessed remotely via the wireless link or the serial data cables one of the following text messages will be displayed depending whether data is being read from the device or data is being written to the memory of the G-Flame:

Transmitting
data...

The device is transmitting while the controller or the wireless USB modem is receiving data.

Writing
data...

The controller or the wireless USB modem is transmitting data which is written to the memory of the G-Flame.

If the radio channel is being changed by a remote command the new radio channel and the frequency in MHz is being displayed:

RF Channel: 69
= 434.775 MHz

33. Charging

To charge the device connect it to the supplied charging unit and establish mains supply. The charging unit comes with a universal voltage input and can therefore be operated worldwide. All you might need are adapters for the different national standards of wall outlets.

If the accumulator needs a full charge 30h are required. The intelligent charging circuit switches to trickle charge afterwards. The device should be charged continuously while being stored. This way it is 100% at your disposal all the time. Damages from overcharging can not occur.

The LED 'Charging' is active in green color while the battery is being charged.

Attention: Charging is only permitted if the device is standing evenly or it is laying on one of its sides. Charging is not permitted if it is tilted by more than 90°.

Note: Charging the device continuously provides unlimited operation time.

Note: After an incomplete charging process the displayed accumulator capacity is slightly higher than the actual one because the battery voltage has not normalized yet. To get realistic results after charging you should wait for approx. 10 minutes.

34. Control of the device via serial data cables via the RS485 interface in conjunction with the PFC Advanced

Via the connector for the DMX signal the communication on serial data cables with the PFC Advanced is possible. DMX is only a so called protocol which is utilizing an RS485 interface.

In the menu you can choose between radio or cable control. In cable control mode the controller PFC Advanced is the feed-in to a network which has a line architecture. The controller always sends data both ways: via radio and on the cable. For this reason both control methods can be used simultaneously.

The G-Flame can receive the serial data signal on the male 5pin XLR connector and provides an output of this signal on the female 5pin XLR connector in order to feed it through to the next device.

The cable control method is using a 'RS485' network. According to this standard a termination resistor is required at the last bus device which is plugged into the unused connector. Another termination resistor has to be installed at the controller which is normally the first device in the line.

The maximum cable length of one line is 1,000 m. A 'booster' can be used to extend the length. The use of 'splitters' allows star shaped networks, too.

Serial data cables with customized lengths, termination resistors, boosters and splitters are available as accessory parts.

The maximum number of devices per line is 32. The total maximum number of devices is theoretically unlimited if boosters and splitters are being used.

If cable control has been selected in the menu the following is being displayed in receiving mode:

Input: Cable
(RS485 of PFC)

Note: Even if the device is in cable control mode a result is displayed if a range test is in progress. The test result informs you about the range condition if you would decide to use the radio control option. A bad result of the radio range test e.g. if no antenna is connected does absolutely not imply that the signal on the cable is insufficient, too.

Note: Feedback data from remote access functions is sent by the G-Flame on both communication carriers: via radio and on the cable. At the controller PFC Advanced you can choose which feedback signal should be detected.

The pin assignment of the RS485 interface is as follows:

Pin1 = Shielding for serial data cable, to be connected with the shielding of the cable
 Pin2 = Serial data cable, Signal -
 Pin3 = Serial data cable, Signal +
 Pin4 = unassigned but connected between the male and female jack
 Pin5 = unassigned but connected between the male and female jack

A connection diagram is printed on the housing of the G-Flame.

Upon request you will be able to receive customized data cables if you provide us your requirements.

35. Operation time

As soon as the device is in operation power is consumed from the internal battery. If this accumulator is totally charged and has the full capacity of 7,000 mAh 30% of energy will be left after an operation time as stated below. Continuous operation is possible if the device is being charged permanently.

The values have been calculated assuming that the Advanced wireless module is installed, which consumes energy in addition, and that the fuel valves are opened for a total time of three minutes during the application.

Operation mode	Maximum operation time
Control with firing key input	110 h
Control with voltage input	110 h
Wireless control	110 h
Control via serial data cables (RS485)	70 h
Control via DMX on cables	70 h
Control via DMX and supply of wireless DMX Pens with a current consumption of typically 0.65A @ 5VDC	10 h

Note: Please be aware of the fact that the rechargeable battery is losing capacity over the life time. The achievable operation time depends on the actual capacity of the particular battery. You can determine the capacity of the batteries by starting the battery measurement function in the menu.

36. Installation und de-installation of the Advanced wireless module

The Advanced wireless module can be retrofitted by the user himself if the G-Flame has not been equipped with this optional feature when initially ordering the device.

36.1. Installation of the radio module

36.1.1. Installation of the hardware

Open the side panel (cover lid) of the device.

Then remove the blind cover of the antenna socket on the upper side of the device by opening the two screws. Afterwards you can insert the BNC feed through socket and mount it with the same screws.

The wireless module will be mounted with two screws that have already been installed in the device. These screws have been secured with two self-locking nuts and you will find them on the side of the housing in the device near the connector which is intended to plug in the wireless module.

Open the two self-locking nuts and remove the screws.

Insert the wireless module in the 25pin connector (25pin S-Sub socket) which can be found on the front side of the printed circuit board which is installed in the device.

The wireless module comes with two inserted nuts which will lay exactly behind the holes in the housing once the module is completely inserted.

Mount the wireless module by using the screws which you removed before.

Then you have to connect the BNC feed trough socket with the BNC connector of the wireless module by using the short piece of antenna cable with a BNC connector on each end which has been supplied with the module.

Insert and close the cover lid and press it against the housing so that the latching mechanism is holding it in position.

Every time you want to control the device wirelessly the supplied antenna must be installed.

36.1.2. Software installation of the Advanced wireless module

After the wireless module (hardware) has been installed the software installation routine can be carried out. By doing so the microcontroller of the G-Flame is notified that the wireless module is now connected to the main board and the behavior of the firmware is changing accordingly.

Switch on the G-Flame while you activate the sensor fields 'Up' and 'Down' by using two magnetic pens until you see this being displayed:

Wireless Option:
Off You may select between 'On' and 'Off' with 'Up' and 'Down'.

Wireless Option:
On Select 'On' in order to install the module, then activate 'Mode'.

Right after that the following ticker will be displayed:

Call the Galaxis office and tell the token. You will receive the activation code. Continue with Mode.

If you now activate 'Mode' a random eight digit sequence of numbers will be generated and displayed, the so called token. Tell us this token on the phone and will give you the corresponding activation code.

Note: You may speed up the ticker by activating the 'Mode' sensor field and keeping it activated.

The sequence is as follows:

Token:
53582820 Example of a token being displayed. This screen is being displayed sufficiently long so that you can tell us the token on the phone.

Code?
◆ Then you see this request to enter the activation code which you will receive from Galaxis on the phone. With 'Up' and 'Down' you can change the digits. If you see the correct number being displayed activate 'Mode' to proceed. A '0' can be entered the easiest by activating 'Mode' without activating 'Up' or 'Down' before.

Code? OK
44232502◆ The activation code, which has also eight digits, has been accepted und the deep discharge counter has been reset to zero. No more warning message will be displayed any more until the next occurrence.

Code? X
5423250200◆ A wrong activation code has been entered and the code was not accepted. Switch off the G-Flame and repeat the procedure.

36.2. De-installation of the wireless module

Attention! Before you remove the wireless module it must be deactivated in the software of the device. Otherwise the device can no longer be operated because the attempt to initialize the wireless module is failing.

36.2.1. De-installation of the wireless module in the software

Switch on the G-Flame while you activate the sensor fields 'Up' and 'Down' by using two magnetic pens until you see this being displayed:

Wireless Option: On	You may select between 'On' and 'Off' with 'Up' and 'Down'.
------------------------	---

Wireless Option: Off	Select 'Off' in order to de-install the module, then activate 'Mode'.
-------------------------	---

After this 'Attention!' is being displayed in the upper line of the screen and below you will be able to read the following ticker text:

Reinstallation is only possible with support on the phone during the Galaxis office hours!

Subsequently the following safety request will be displayed:

Are you sure?	Yes No	Activate 'Up' if you really want to de-install the wireless module now. Otherwise you can select 'Down' to exit the sequence.
------------------	-----------	--

Immediately after selecting either 'Yes' or 'No' the device enters the ready to fire mode.

36.2.2. De-installation of the hardware

Attention! Before you remove the wireless module it must be deactivated in the software of the device. Otherwise the device can no longer be operated because the attempt to initialize the wireless module is failing.

You can remove the wireless module by following the steps described in the section 'Installation of the hardware' in reverse order.

37. Mounting on light or speaker stands

A receptor for the direct mounting of the G-Flame on light or speaker stands has been integrated in the bottom side of the housing.

38. Mounting on truss elements

Cage nuts have been integrated in the bottom of the housing to enable the direct mounting of the device on 3-point and 4-point truss elements. Depending on the shape of the truss elements you want to use you may have to remove one cage nut and insert it in another holder.

Cone shaped couplers with bolts and safety splint-pins (half cone with M10 screw), which can be inserted into the tubes of the truss elements, are available from specialized trade shops for stage equipment.

If necessary, e.g. in places of public assembly, a safety rope can be installed in addition by using the eye on one edge of the housing.

39. Cleaning

The device is very robust. Please take care that e.g. no burning or hot cinders from firework effects fall onto the device, because this may cause damage to the surfaces.

Ensure that the device is switched off before you clean it.

Use a piece of cloth, that was moistened with water and at the most some dishwashing agent, for cleaning the device. Solvents, strong detergents and abrasives could damage the surfaces.

Keep all electrical contacts always clean.

Unburned carbon may accumulate at the ignition electrodes, the ionization measurement electrode and on the electrode cage. This is absolutely normal and does not impair the function of the device.

If a lot of unburned carbon has accumulated we recommend to clean the ignition electrodes and the electrode cage by using a soft brush. Pay attention not to bend the electrodes. In case that the soot can not be removed this way moisten the brush with brake cleaner. The ionization measurement electrode can be cleaned by using a piece of cloth.

The gap between the tips of the ignition electrodes should be 4 - 5 mm.

40. Microfilter

The device has been equipped with a microfilter, which prevents to a large extent that grain of dust or foreign particles can reach the electromagnetic fuel valves. This avoids malfunction and leakages.

If the device has been used frequently over a longer period of time it can happen that the filter needs to be cleaned. This becomes apparent by a reduced flame height.

In this case send the device to the manufacturer so that the filter can be cleaned or replaced.

Possibly we can instruct you on the phone how to clean the filter yourselves. Never attempt to clean the filter without our instructions. Pressurized air is not allowed to be used!

41. Maintenance

A leakage test must be performed annually. This can be done either by the manufacturer or a certified company for gas and heating installations.

The testing pressure is 9 bar. This pressure must be held for 15 minutes.

The manufacturer can do a complete functional test in addition. Furthermore the microfilter can be cleaned or replaced.

The rechargeable batteries can be tested by the user himself (please refer to the chapter "The menu item 'Battery measurement'" in this manual).

42. Warranty

The warranty period is 24 months.

If there is any defect during in this period please pack the device properly and send it to the manufacturer with carriage paid to have it repaired free of charge. Please do not forget to attach a description of the symptoms, which have occurred. Warranty is excluded if the device was damaged due to wrong usage or excessive stress.

43. Damages caused by misuse, maloperation, malfunction

The devices have been designed to generate flame effects. Discuss all other applications with the manufacturer before usage. In the case that one of the events stated above has happened we are only liable if the defect was within our range of influence. The devices have been developed, manufactured and tested to the best of our knowledge and belief.

Especially the user's work must comply with the safety regulations and the instructions given in this manual at all times.

A long test period and our practical experience proved that the devices operate very safe and reliable even if used in difficult conditions.

44. Technical data

General data:

Radio transmission method if Advanced wireless module is being used	FM narrow band, wavelength 70 cm, 70 different frequencies, receiver type: double-superheterodyne radiated power 10 mW (during remote access)
Protocol parameter if Advanced wireless module is being used	PCM, approx. 2,000 bps
Bandwidth of the Advanced wireless module	+/- 3 kHz (narrow band)
Receiver sensitivity of the Advanced wireless module	-119 dBm @ 12 dB SINAD
Temperature range, excluding the fuels	-20 to +70°C; short term: +85°C Best storage temperature for maximum battery lifetime: +10 to +20°C
Humidity	0-90% rH, not condensing in the device
Ignition	Electrical high power arc
Number of electromagnetic valves	2, connected in series
Functional principle of the flame monitoring system	Ionization measurement

Dimension and weight (LxWxH):

300 x 300 x 350 mm; 10.50 kg

Power supply and charging concept:

2 x 12 V, 7 Ah, sealed lead acid type rechargeable battery, PYROTEC charging device

Radio range:

with standard antenna: up to 800 m,
with high gain antenna: up to 2,000 m,
higher range available upon request

Supplied accessories, included in delivery of the device:

1 Charging unit
1 Magnetic pen
1 User manual

If several devices are ordered we only ship a single copy of the user manual for environmental reasons.

The following parts are included in the gas cartridge option:

- cartridge holder (T-piece with quick-coupler, two non-return valves and two shut-off valves)
- special nozzle for cartridge operation, size XXL

The following parts are included in the gas bottle option:

- gas hose with a length of 5 m and a quick-coupler
- pressure regulator 1-4 bar
- special nozzle for gas bottle operation, gasiform phase

When buying a G-Flame either the gas cartridge or the gas bottle option is included in the purchase price.

The following parts are included if an Advanced wireless module is ordered:

- 1 standard antenna
- 1 BNC feedthrough socket to be installed in the housing of the G-Flame
- 1 antenna cable with two BNC connectors to establish the connection between the BNC antenna feedthrough and the Advanced wireless module

Charging unit:

Mains Voltage	100-240 VAC, 50-60 Hz
Power consumption	typ. 4.5 Watts
Charging time	Full charge within 30h, no danger of overcharging
Dimensions	29-74-80 mm
Weight	0.07 kg



Section 6 - Insurance Cert



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
12/15/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Britton Gallagher One Cleveland Center, Floor 30 1375 East 9th Street Cleveland OH 44114	CONTACT NAME:	
	PHONE (A/C, No, Ext): 216-658-7100	FAX (A/C, No): 216-658-7101
INSURED High Tech Special Effects Inc. PO Box 478 Oakland TN 38060	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	
	INSURER A: Axis Surplus Ins Company	
	INSURER B: Everest Indemnity Insurance Co.	
	INSURER C: Everest Denali Insurance Company	
	INSURER D: Amguard Insurance Company	
INSURER E:		
INSURER F:		

COVERAGES

CERTIFICATE NUMBER: 1763306042

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC	Y	Y	SI8ML00172-211	8/1/2021	8/1/2022	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 500,000 MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
C	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ ALL OWNED AUTOS ☒ HIRED AUTOS ☐ SCHEDULED AUTOS ☒ NON-OWNED AUTOS	Y	Y	SI8CA00088-211	8/1/2021	8/1/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	UMBRELLA LIAB ☒ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$	Y	Y	P-001-000167877-03	8/1/2021	8/1/2022	EACH OCCURRENCE \$ 4,000,000 AGGREGATE \$ 4,000,000 \$
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	R2WC260568 (TN)	11/26/2021	11/26/2022	☒ WC STATUTORY LIMITS ☐ OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Additional Insured extension of coverage is provided by above referenced General Liability policy where required by written agreement. Pyrotechnic and Flame effects for the band "Skillet on the 2022 Winterjam Tour. Additional Insured: Skillet Touring, LLC., John Cooper, Korey Cooper Q Management Group, Zack Kelm, Michael Flannery, Newsong Ministries, Premier Productions, LLC and their respective officials, officers, agents, directors, assigned touring staff and employees.

CERTIFICATE HOLDER

CANCELLATION

Skillet Touring, LLC Po Box 128287 Nashville TN 37212	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 

© 1988-2010 ACORD CORPORATION. All rights reserved.

ACORD 25 (2010/05)

The ACORD name and logo are registered marks of ACORD



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
1/5/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Britton Gallagher One Cleveland Center, Floor 30 1375 East 9th Street Cleveland OH 44114	CONTACT NAME:	
	PHONE (A/C, No, Ext): 216-658-7100	FAX (A/C, No): 216-658-7101
INSURED High Tech Special Effects Inc. PO Box 478 Oakland TN 38060	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	
	INSURER A: Axis Surplus Ins Company	
	INSURER B: Everest Indemnity Insurance Co.	
	INSURER C: Everest Denali Insurance Company	
	INSURER D: Amguard Insurance Company	
INSURER E:		
INSURER F:		

COVERAGES

CERTIFICATE NUMBER: 295466487

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC	Y	Y	SI8ML00172-211	8/1/2021	8/1/2022	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 500,000 MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
C	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ☒ NON-OWNED AUTOS	Y	Y	SI8CA00088-211	8/1/2021	8/1/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	UMBRELLA LIAB ☒ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$	Y	Y	P-001-000167877-03	8/1/2021	8/1/2022	EACH OCCURRENCE \$ 4,000,000 AGGREGATE \$ 4,000,000 \$
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y	N/A	R2WC260568 (TN)	11/26/2021	11/26/2022	☒ WC STATUTORY LIMITS ☐ OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Additional Insured extension of coverage is provided by above referenced General Liability policy where required by written agreement. Pyrotechnic and Flame effects for the band "Skillet" on the 2022 Winter Jam Tour. Additional Insured: EMU Convocation Center, the City of Ypsilanti and their respective officials, agents, directors, officers, employees and personnel. John Cooper, Corey Cooper, Skillet Touring, LLC, Q Management Group, Zack Kelm, Michael Flannery, Newsong Ministries, Premier Productions, LLC. and their respective officials, officers, agents directors, assigned touring staff and employees. Mike Kinard (Tour Shooter/Operator)

CERTIFICATE HOLDER

CANCELLATION

EMU Convocation Center 799 N. Hewitt Road Ypsilanti MI 48197	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

© 1988-2010 ACORD CORPORATION. All rights reserved.

ACORD 25 (2010/05)

The ACORD name and logo are registered marks of ACORD



REQUEST FOR LEGISLATION

TO: Mayor and City Council
FROM: Christopher Jacobs
DATE: January 11, 2022
SUBJECT: EDA Grant Memorandum of Understanding

DESCRIPTION:

EDA Grant Memorandum of Understanding

SUMMARY:

In August of 2020, the Parties submitted a grant application for the U.S. Economic Development Administration ("EDA") Public Works and Economic Adjustment Assistance Program entitled ED-900 General Application for EDA Programs, attached and incorporated as Exhibit A ("Grant Application"). Spark acted as Lead Applicant, with Ann Arbor and Ypsilanti as co-applicants. The American Center for Mobility was initially a co-applicant, but later omitted from the application process and is neither an award recipient nor a party to this Agreement.

The Grant Application requested funds for construction of the Corridor Fiber Optic Backbone project to connect downtown Ann Arbor with downtown Ypsilanti, a multi-phased project to create a public broadband infrastructure consisting of approximately twenty (20) miles of underground high capacity fiber-optic cable and conduit in Ann Arbor, Ypsilanti, Washtenaw County, and the Michigan Department of Transportation (MDOT) rights of way, connecting to Ann Arbor's existing 35-mile fiber network (the "Project"). Phase 1 of the Project had been previously funded by the Ann Arbor/Ypsilanti Local Development Finance Authority ("LDFA") grant and construction was underway at the time of the Grant Application.

In response to the Grant Application, on July 22, 2021 the EDA issued a Financial Assistance Award to SPARK, Ann Arbor and Ypsilanti in the amount of Two Million Four Hundred Thousand Dollars (\$2,400,000) under Federal Award ID Number 06-79-06299 ("Grant") attached and incorporated as Exhibit B. The Grant required a "recipient share of cost" contribution of Six Hundred Thousand Dollars (\$600,000) to cover the total estimated cost of the Project of Three Million Dollars (\$3,000,000).

The attached MOU has been reviewed by Mr. Barr and is ready for Council to consider.

RECOMMENDED ACTION: Approval

ATTACHMENTS: Mémorandum of Understanding

CITY MANAGER APPROVAL: _____ COUNCIL AGENDA DATE: _____

CITY MANAGER COMMENTS: _____

FISCAL SERVICES DIRECTOR APPROVAL: _____



Resolution No. 2022-010
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

WHEREAS, Ann Arbor SPARK, City of Ann Arbor, and City of Ypsilanti seek to establish new fiber optic cable connections utilizing a recently awarded EDA Grant; and

WHEREAS, Ann Arbor SPARK is the lead applicant who will administer the grant; and

WHEREAS, City of Ypsilanti will not incur any costs associated with construction of the Fiber and Conduit Network Backbone; and

WHEREAS, an integral part of this goal is the connection of the Ann Arbor downtown Tech Park with the City of Ypsilanti and the American Center for Mobility; and

WHEREAS, the installation of a robust conduit and fiber system linking Downtown Ann Arbor to Ypsilanti, running through Ypsilanti Township and Pittsfield Township will leverage existing infrastructure investments and make it easier for companies to innovate and grow; and

NOW THEREFORE BE IT RESOLVED THAT the Ypsilanti City Council approves the Memorandum of Understanding as provided.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this 11 day of January 2022

#Resolution No. 2022-010

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING ("**MOU**" of "**Agreement**") is made as of the "**Effective Date**" (defined in Section 12(i)) by and among the CITY OF ANN ARBOR, a Michigan municipal corporation ("**Ann Arbor**"), 301 E. Huron Street, Ann Arbor, Michigan 48104, ANN ARBOR SPARK, 330 E. Liberty Street, Ann Arbor, MI 48104 ("**Spark**"), and the CITY OF YPSILANTI, One South Huron St., Ypsilanti, MI 48197 ("**Ypsilanti**") (individually "**Party**" and collectively the "**Parties**"), with respect to the following.

Background

A. In August of 2020, the Parties submitted a grant application for the U.S. Economic Development Administration ("**EDA**") Public Works and Economic Adjustment Assistance Program entitled ED-900 General Application for EDA Programs, attached and incorporated as Exhibit A ("**Grant Application**"). Spark acted as Lead Applicant, with Ann Arbor and Ypsilanti as co-applicants. The American Center for Mobility was initially a co-applicant, but later omitted from the application process and is neither an award recipient nor a party to this Agreement.

B. The Grant Application requested funds for construction of the Corridor Fiber Optic Backbone project to connect downtown Ann Arbor with downtown Ypsilanti, a multi-phased project to create a public broadband infrastructure consisting of approximately twenty (20) miles of underground high capacity fiber-optic cable and conduit in Ann Arbor, Ypsilanti, Washtenaw County, and the Michigan Department of Transportation (MDOT) rights of way, connecting to Ann Arbor's existing 35-mile fiber network (the "**Project**"). Phase 1 of the Project had been previously funded by the Ann Arbor/Ypsilanti Local Development Finance Authority ("**LDFA**") grant and construction was underway at the time of the Grant Application.

C. In response to the Grant Application, on July 22, 2021 the EDA issued a Financial Assistance Award to SPARK, Ann Arbor and Ypsilanti in the amount of Two Million Four Hundred Thousand Dollars (\$2,400,000) under Federal Award ID Number 06-79-06299 ("**Grant**") attached and incorporated as Exhibit B. The Grant required a "recipient share of cost" contribution of Six Hundred Thousand Dollars (\$600,000) to cover the total estimated cost of the Project of Three Million Dollars (\$3,000,000).

Agreement

Acknowledging the accuracy of the Background facts recited above, the Parties enter into this MOU in an effort to memorialize their understanding of their mutual goals, and their respective roles in the administration of the Grant and construction of the Project. To that end, the Parties agree as follows:

1. Grant Terms and Conditions. The Parties agree to abide by all terms and conditions of the Grant promulgated by the U.S. Department of Commerce in all aspects of administration and construction of the Project. The Parties acknowledge and agree that they are bound by the Department of Commerce's Terms and Conditions, the EDA's Construction Standard Terms and Conditions and all other guidelines promulgated by the Department of Commerce and EDA in connection with the Grant.
2. Project Goals. The Parties' mutual purpose under this Agreement and for the use of the Grant funds is to construct approximately twenty miles of underground conduit and fiber in the City of Ann Arbor, the City of Ypsilanti, Washtenaw County, and the Michigan Department of Transportation rights-of-way. Conduit will be constructed by directional

boring at a minimum depth of twenty-four inches. Conduit configuration will consist of two two-inch ducts. In one of the ducts a single 432-count loose-tube fiber optic cable with tracer wire will be installed and spliced. In addition, approximately 150 underground vaults and handholes of various sizes will be installed and all necessary site restoration will be completed, including pavement repair, erosion control, maintenance of traffic, landscape, and related appurtenances. These stated goals shall not be construed to limit alternative engineering solutions where required or in the best interests of facilitating completion of the Project.

3. Matching Funds. SPARK, Ann Arbor, Washtenaw County and the LDFA have each contributed to the required "recipient share" under the Grant, totaling Six Hundred Thousand Dollars (\$600,000) ("**Matching Funds**"). The Matching Funds are held in a separate account administered by SPARK. The City shall submit Project-related invoices for payment to SPARK using the Matching Funds. SPARK shall obtain disbursements from the EDA to replenish the Matching Funds used in the payment of Project invoices. SPARK will not be required to pay invoices out of any fund outside of the Matching Funds.

4. SPARK Responsibilities and Obligations.

SPARK is the Lead Applicant per the Grant and, as such, shall perform all duties of Grant Administrator, including but not limited to the following:

- (a) Hold and account for all Matching Funds.
- (b) Administer all Project funds, including receipt, tracking and payment of all invoices, reimbursements of costs from the EDA and disbursements to required Parties and contractors.
- (c) Perform all scheduled financial reporting to the EDA.
- (d) Act as signatory for all documents pursuant to the EDA's terms and conditions.

5. Ann Arbor Responsibilities and Obligations.

Ann Arbor shall be responsible for management of the Project design, planning, and construction, under the direction of the Ann Arbor IT Director, including but not limited to the following:

- (a) Conduct regular Project status meetings with staff deemed necessary by the IT Director.
- (b) Create the Project plan.
- (c) Establish a central website and repository for all Project-related communications, resources and documentation to which all Parties have access.
- (d) Create and issue detailed design and construction RFPs or ITBs and select winning bidders of RFP/ITB according to RFP/ATB, ordinances and policies of Ann Arbor and enter into contract(s) with selected contractors for project design and construction.
- (e) Manage and oversee completion of detailed Project design and construction in accordance with the applicable contract documents.
- (f) Manage/oversee all vendors' and contractors' performance in accordance with the applicable contract documents.
- (g) Perform scheduled Project reporting to the EDA.

- (h) Abide by Ann Arbor procurement policies, procedures and ordinances, in addition to applicable EDA project terms and conditions.
- (i) Assume ownership of, and maintenance responsibilities for all infrastructure including the fiber-optic cable and conduit upon Project completion.

6. Ypsilanti Responsibilities and Obligations.

Ypsilanti shall comply with all Grant requirements and fulfil their duties as a co-applicant of the Grant pursuant to all EDA guidelines.

7. Duration. The duration of this MOU coincides with the grant period of performance, which ends thirty-four months from the date of the award ("**Grant Period**"). The Parties agree to full cooperation and participation, with one another and the EDA, toward achieving the Project goals throughout the Grant Period from July 22, 2021 through May 22, 2024, as well as any extensions of the Grant Period permitted by the EDA.
8. Ownership of Infrastructure. The Parties acknowledge and agree that Ann Arbor is the sole owner of all infrastructure installed pursuant to the Project, regardless of its location.
9. Compliance and Monitoring. The EDA has assigned a project manager to assist and support the Parties during the Project. The Parties shall abide by the directives of the EDA project manager throughout the duration of the Project, including responses to requests for status updates and submission of required and/or requested documentation.
10. Default and Remedies. A party alleged to be in default of this Agreement must have written notice and a reasonable opportunity to cure. Unless the circumstances dictate otherwise (due to a deadline, hearing, or the like) the cure period will be 10 days after notice. Without limitation, this Agreement may be specifically enforced.
11. Notices.

Notices required or given pursuant to this MOU shall be directed as follows:

SPARK:

Liz Perpich
SPARK VP Administration and Finance
330 East Liberty Street
Ann Arbor, MI 48104
Phone: 734-527-9167
Cell: 734-262-0350
liz@annarborusa.org

Ann Arbor:

Tom Shewchuk,
IT Director, City of Ann Arbor
301 E. Huron Street
Ann Arbor, MI 48107
Phone: 724-794-6551
Cell: 517-719-4162
tshewchuk@a2gov.org

Ypsilanti:

Frances McMullan
City Manager, City of Ypsilanti
One South Huron Street
Ypsilanti, MI 48197
Phone: 734-483-1100
fmcmullan@thecityofypsilanti.com

12. General Provisions.

(a) Entire Agreement. This MOU and the exhibits and documents referenced herein contain the complete understanding of the Parties with respect to their subject matter and all other agreements and discussions are merged herein.

(b) Amendments. No variation, modification, or alteration of this MOU shall be binding or effective unless in a writing signed by all parties. There will be no oral modification of this MOU. This section shall not prohibit the parties from entering into separate, two-party bilateral contracts among each other and/or users of this MOU.

(c) Counterparts and Delivery. This MOU may be executed in any number of counterparts and delivered by any reasonable means (including email); each such counterpart shall be deemed to be an original instrument, but all such counterparts together shall constitute by one agreement.

(d) Governing Law. This MOU shall be governed by and construed according to the laws of the State of Michigan. The Parties agrees to submit to the jurisdiction and venue of the Circuit Court of Washtenaw County, MI, or if original jurisdiction is established, the U.S. District Ct. for Eastern District of MI, Southern Division. The Parties stipulate venues referenced are convenient and waive any claim of non-convenience. If any term herein is found to be ineffective, unenforceable or illegal under any present or future laws, such term shall be fully severable, and the remaining terms shall not be affected and shall remain full force and effect.

(e) Binding Effect. All of the terms and provisions in this MOU shall bind and inure to the benefit of the parties and their respective heirs, personal representatives, successors, and assigns.

(f) Construction. This MOU shall not be construed more strictly against one party than against the other merely by virtue of the fact that it may have been prepared by

counsel for one of the parties, it being acknowledged and agreed that this MOU shall be interpreted in light of the probable intent of the parties.

(g) Severability: The invalidity or enforceability of a particular provision of this MOU shall not affect the other provisions hereof, and this MOU shall be construed in all respects as if such invalid or unenforceable provision were omitted.

(h) Time of Essence. It is understood and agreed that time is deemed of the essence of this MOU.

(i) Effective Date. The "**Effective Date**" of this MOU shall be the date the last party hereto executes this MOU below.

ANN ARBOR

By _____
Milton Dohoney Jr., Interim City Administrator

By _____
Tom Shewchuk, IT Director

Approved as to form and content

By _____
Stephen K. Postema, City Attorney

SPARK

By _____ Date _____

YPSILANTI

By _____ Date _____

EXHIBIT A
(Grant Application)

DRAFT

EXHIBIT B
(Financial Assistance Award)

DRAFT



**Barr,
Anhut &
Associates, P.C.**
ATTORNEYS AT LAW

105 Pearl Street
Ypsilanti, MI 48197
(734) 481-1234
Fax (734) 483-3871
www.barrlawfirm.com
e-mail: jbarr@barrlawfirm.com

John M. Barr
Karl A. Barr

Jesse O'Jack ~ Of Counsel
Jennifer A. Merritt ~ Legal Assistant

MEMORANDUM

**To: Christopher Jacobs, Ypsilanti Community Development
Director**
From: John M. Barr, Ypsilanti City Attorney
Date: December 17, 2021
Re: MOU Internet Broadband Backbone

You have requested my legal opinion on an MOU. The background as stated in the MOU is as follows:

A. In August of 2020, the Parties submitted a grant application for the U.S. Economic Development Administration ("**EDA**") Public Works and Economic Adjustment Assistance Program entitled ED-900 General Application for EDA Programs, attached and incorporated as **Exhibit A** ("**Grant Application**"). Spark acted as Lead Applicant, with Ann Arbor and Ypsilanti as co-applicants. The American Center for Mobility was initially a co-applicant, but later omitted from the application process and is neither an award recipient nor a party to this Agreement.

B. The Grant Application requested funds for construction of the Corridor Fiber Optic Backbone project to connect downtown Ann Arbor with downtown Ypsilanti, a multi-phased project to create a public broadband infrastructure consisting of approximately twenty (20) miles of underground high capacity fiber-optic cable and conduit in Ann Arbor, Ypsilanti, Washtenaw County, and the Michigan Department of Transportation (MDOT) rights of way, connecting to Ann Arbor's existing 35-mile fiber network (the "**Project**"). Phase 1 of the Project had been previously funded by the Ann Arbor/Ypsilanti Local Development Finance Authority ("LDFA") grant and construction was underway at the time of the Grant Application.

C. In response to the Grant Application, on July 22, 2021 the EDA issued a Financial Assistance Award to SPARK, Ann Arbor and Ypsilanti in the amount of Two Million Four Hundred Thousand Dollars (\$2,400,000) under Federal Award ID Number 06-79-06299 ("**Grant**") attached and incorporated as **Exhibit B**. The Grant required a "recipient share of cost" contribution of Six Hundred Thousand Dollars (\$600,000) to cover the total estimated cost of the Project of Three Million Dollars (\$3,000,000).



**Barr,
Anhut &
Associates, P.C.**
ATTORNEYS AT LAW

105 Pearl Street
Ypsilanti, MI 48197
(734) 481-1234
Fax (734) 483-3871
www.barrlawfirm.com
e-mail: jbarr@barrlawfirm.com

John M. Barr
Karl A. Barr

Jesse O'Jack ~ Of Counsel
Jennifer A. Merritt~ Legal Assistant

I have reviewed the MOU and find that there is no financial commitment from the City of Ypsilanti, as the match is being funded by the City of Ann Arbor, Washtenaw County, SPARK and the LDFA.

Cable will be installed to connect the City of Ypsilanti with the City of Ann Arbor, including in the City of Ypsilanti. The cable will be owned by the City of Ann Arbor.

The terms concerning the City of Ypsilanti are legally acceptable and I approve the MOU as to legal form.



Resolution No. 2022-011

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

WHEREAS, Dr. Martin Luther King, Jr., changed our Nation forever through his leadership, service, and clarity of vision; and
WHEREAS, Dr. King devoted his life to strengthening the content of the American character and called on our Nation to live up to its founding principles of life, liberty, and the pursuit of happiness for all its citizens; and
WHEREAS, Through his determination, spirit, and resolve, Dr. King helped lift souls and lead one of the greatest movements for equality and freedom in history; and
WHEREAS, the City of Ypsilanti wishes to honor the lasting legacy of this great American, remember the ideals for which he fought, and recommit ourselves to ensuring that our country's promise extends to all Americans across the great land; and
WHEREAS, on November 2, 1983, Ronald Reagan, the 40th President of the United States, signed a bill creating a federal holiday to honor Dr. King on the third Monday of January every year.
NOW THEREFORE BE IT RESOLVED THAT, as we observe Dr. King's birthday, the City of Ypsilanti encourages all Americans to honor Dr. King by living out his teachings as we continue to work for the day when the dignity and humanity of every person is respected and to celebrate his memory by performing acts of kindness through service to others.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this day of _____

#Resolution No. 2022-011

Citizen Advisory Boards and Commissions Participation Resume

The people of Ypsilanti are involved in their City government and are an important part of the community's achievements. Individuals interested in receiving more information in regards to serving on an advisory board or commission are invited to contact the City Clerk's Office at 734-483-1100. Alternatively, citizens who would like to participate can submit their information in the form below.

Qualifications

Must be a resident/business owner in the city for at least two years. Or Council must determine your expertise is essential and not available in an applicant that meets the qualifications above. Must be eligible to vote in the state if not applying for youth membership.

Name	Roberta Wojcik-Andrews
Email Address	
Address	
City	Ypsilanti
State	MI
Zip Code	48197
Phone Number	
Number of Years in the Community	20
Ward You Live In	1
Education	Juris Doctor
Occupation	Attorney
Employer	Firebaugh & Andrews PLLC (owner)
Are you applying for youth membership?	No
Are you registered to vote in the City of Ypsilanti?	Yes

I would like to be considered and could devote sufficient time to serve on the following board or commission:

Review and Tax Assessment Board

Party Affiliation

Field not completed.

Field not completed.

Why are you interested in serving on these boards/commissions?

I have been on the Board of Review and Tax Assessment for several years and would like to continue. I am interested in making sure properties are assessed fairly and in making a contribution to our City. The time involved is within what I have the ability to manage.

Work/volunteer experience related to the board or commission:

As a bankruptcy attorney, I am involved in determining values of real estate as a part of representing my clients.

I understand that appointment to a City of Ypsilanti board or commission requires regular attendance at board meetings.

Yes

I hereby certify that all of the information above is true.

Yes

Email not displaying correctly? [View it in your browser.](#)



Resolution No. 2022-012
January 11, 2022

RESOLVED BY THE COUNCIL OF THE CITY OF YPSILANTI:

That the City Council Meeting be adjourned, on call, by the Mayor or three (3) members of Council.

OFFERED BY: _____

SECONDED BY: _____

YES: NO: ABSENT: VOTE:

This resolution is adopted by the Council of the City of Ypsilanti and approved by the Mayor this 11 day of January 2022

#Resolution No. 2022-012