

# CHAMELEON

## Operation and Safety Manual

The Chameleon is a small canister driven flame effect for use with theme parks, stage shows and concerts etc. Various colours are available which allow a rich colour flame set to be produced. Flame height adjustment allows the Chameleon to be used where restrictions apply. Fire ball effects will still be effective regardless of this adjustment due to an in built reservoir tube.

### Overview

The Chameleon burns Methanol / Ethanol combined with a propellant and colour 'salts' to provide it's impressive flame effects. This method allows very low percentages of the colour mix to create the vivid colours without compromising safety issues.

The Chameleon is DMX driven, using three channels to control it's operation. These three channels control the ignition mechanism (Hot surface igniter, Hsi), the flame solenoids, and an external mains power output socket.

The Hot surface igniter will take approximately 10 seconds to reach the correct operating temperature, after which flame operation will be allowed. A flashing display indicates that this heating process is taking place. The current passing through this device is constantly monitored such that a failing device will be detected and shut all operations down.

The flame solenoids control the supply from the canisters and are physically situated at the 'source' and output stages of the machine, providing maximum operational safety. These will be shut down on both the above error, as well as if the machine is tilted more than 60 degrees.

The external mains power output socket provides a means of controlling warning beacons in the area of flame operations for further safety measures.

All three DMX channels on any one machine can be set and stored to any value desired, the only restrictions applying being that channels cannot be set equal or more than 256 channels apart. This allows for common Hot surface igniter and Beacon channels whilst the Flame channels can be set either common or individually in multiple unit use.

A 'flow' adjustment valve is accessible on the underside of the machine, which allows a pre-determined flame height to be set. Once set, and the Chameleon in situ, this adjustment feature is purposely not readily accessed. This is a further safety feature.

Any operational error will be indicated by a rapid flashing display, and will require a mains off/on reset in order to resume operation.

The Chameleon is supplied set to PRG 2 mode whereby separate DMX channels control the two solenoids.

Hsi = channel1, Nozzle solenoid = channel2,  
Canister + Beacon output = channel3

Please refer to the Program Type information at the end of this document if the alternate mode is required.

## Dangers and Safety Precautions

The Chameleon produces real flame effects, which by their very nature, are extremely hot and potentially dangerous.

Safety must be paramount when using any flame effect, particularly indoors, because of this the Chameleon is designed to be used by professional users only and not by the general public.

The user is responsible to ensure that all reasonable safety precautions are taken before using the Chameleon.

In all situations, no matter what the application, it must be ensured that no person can touch, get within 2 metres or look over the Chameleon unit as severe burns can be caused by the flame and the unit may “fire” without any prior notice – this is also why a direct line-of-sight must be maintained between the operator and the unit.

Tests must be carried out before use in any new installation. The maximum flame height must be ascertained and set via the flame height adjuster before programming begins. Remember that the temperature immediately above the flame can be as hot as the flame itself so the height adjustment must also take this into consideration.

Under no circumstances should any foreign body or chemical be introduced into the flame itself – this is potentially very dangerous.

There are no user serviceable parts within the Chameleon system and any faults should be dealt with by a qualified engineer or the unit should be returned to the manufacture for repair.

It is a requirement that all portable gas appliances are tested and serviced annually. Please contact the manufacturer or your supplier to arrange this. Failure to undertake an annual service could infringe certain safety regulations and leave the operator open to prosecution.

The Chameleon should only be used in sheltered conditions and never in the wet or rain. Care should also be taken if using the Chameleon in windy conditions as the flame could be blown sideways or at an unexpected angle.

Never use the Chameleon near flammable surfaces.

If in any doubt about the safe use of the Chameleon, contact the manufacturer or your supplier, before using it.

## Precautions and Using the Chameleon.

The Chameleon is a two-canister machine, and should only be used with two canisters fitted. Any colour mix is allowable, although the 'expected' flame colour may not result due to the mixing of flame colour temperatures.

The nature of the design allowing flame ball effects will mean that fluid will remain within the machine after the removal of canisters. This fluid should be ignited and thus the system 'flushed' as a final shutdown procedure. Failure to do this might result in an unexpected flame output when the Chameleon is next commissioned.

Canisters should be removed from the Chameleon and the system 'flushed' (as above) during transport or when not in use.

Care should be taken not to allow the ingress of any particles or foreign body into the canister bases, as this could lead to the solenoids jamming open.

Regardless of knowing if the Chameleon has been flushed or not, it should be checked before use, without canisters, and assumed that a flame will result upon flame activation. The Chameleon should be sited in a safe environment (assuming maximum flame height) and run through operational procedures.

The DMX channels should be set, and the panel set to receive DMX signals. Ideally the DMX signals should be transmitting before the unit is switched on. The Hot surface igniter should be activated until the control display stops flashing, then the flame channel activated. If fluid remains in the system, this will be burnt off. When viewing the Hot surface igniter stay at least 3 metres from the machine.

After all fluid has been burnt off, solenoids can be heard to 'click' on flame activation.

Attach a mains driven beacon, or similar device, to the external power socket and check that the allocated DMX channel can activate this.

The Chameleon should be tilted to check the operation of this safety device. Tilting the Chameleon away from the display side will allow the flashing display to be viewed.

The Chameleon should now be switched off and all surfaces allowed to cool. At this point canisters can be fitted. No fluid should eject from the canister bases. Listen for any escaping fluid (hissing sound), be it from internal fittings or from the output nozzle in the flame flue. Ideally use a gas leak detector if one is available.

After these checks have been made, the Chameleon can be commissioned for use.

## The Control Panel

The control panel provides the following functions:

A SELECT button allows the Hot surface igniter, Flame, and Beacon DMX addresses to be selected individually as well as setting the Chameleon into the DMX receive mode. Continual presses of this button will cycle through these events.

UP and DOWN buttons allow each address to be adjusted to suit the user. These addresses are not allowed to be equal or more than 256 steps apart. A warning will be given on the display to reset these values should this occur. Whilst in the mode of setting addresses the STORE/VIEW button will place these values in memory.

When the DMX mode is selected for receiving data, the STORE/VIEW button will allow the received DMX data value to be viewed for each channel. ( 0 to 99%)

H = Hot surface igniter. F = Flame. b = Beacon.

When the DMX mode is selected, and there is no DMX data the display will read doF. (DMX off)

With no DMX connection a special function STORE/VIEW + UP button will set a value in memory which relates to the time required for the Hot surface igniter to reach the correct working temperature and allow the Flame solenoids to function.

The UP/DOWN buttons will vary the set value from 0 to 254. To exit from this feature, press the SELECT button.

Typically a value of 50 will equal a 5 second delay. A value of 100 will equal 11 seconds and a value of 200 will equal around 35 seconds. Each time this value is changed by the button presses, it will be stored in memory.

This value may need to be changed if the Hot Surface igniter is replaced, or special user circumstances require it.

Changing this value and allowing a shorter time before Flaming is allowed may well create unsafe or hazardous conditions, allowing unburned fluid to be ejected. The onus of responsible will lie with user.

## Software System Control

### Hsi Delay Time

The delay time associated with the Hot surface igniter can be varied and set for particular conditions.

This can be set by disconnecting the DMX signal where the 'doF' display is active.

Pressing the 'Store/View' button along with the 'Up' button will display a scrolling 'dEL'.

After this disappears a numeric value will appear. This can be altered and stored.

A value of 50 is approximately 5 seconds, 100 = 11 seconds 200 = 35 seconds.

After setting and storing pressing the 'Select' button will revert to normal mode.

### Purge Setting

This allows solenoid action with no Hot surface igniter action. Where gas can be issued safely, this mode allows the system to be purged of gas. The Hsi will be disabled to prevent flames.

To access this mode, reduce the above delay setting to below 10. Remember to return the delay setting value to its original value and store it.

## Program Type

This setting is accessed by disconnecting the DMX signal where the 'doF' display is active and pressing the 'Store/View' along with the 'Down' button. A scrolling PrG display appears before displaying PrG 1 or PrG 2, depending which setting is presently active. The 'Up' button selects PrG 2 and the 'Down' button selects PrG 1.

PrG 1 : This mode uses the DMX channels as follows.

DMX channel 1 = Hot surface igniter.  
DMX channel 2 = both Flame Solenoids  
DMX channel 3 = Beacon output.

The Flame solenoid will not operate until the Hot surface igniter has timed out, and will be shut down on igniter failure or tilt.

The Beacon output can be operated at any time.

Wiring - Solenoids to 'Sol can' and 'Sol FI' connections on the PCB  
Beacon output to 'Beacon' connection on the PCB

PrG 2: This mode uses the DMX channels as follows.

DMX channel 1 = Hot surface igniter  
DMX channel 2 = Flame nozzle solenoid  
DMX channel 3 = Canister solenoid and Beacon output.

The Flame and Canister solenoids, along with the Beacon will not operate until the Hot surface igniter has timed out, and will both be shut down on igniter failure or tilt.

This mode allows for independent control of both solenoids, but requires two DMX channels to initiate the flame. It allows for individual solenoid proofing in the above 'purge' mode.

Hardwiring of the solenoids to the PCB connectors must be altered depending on what program is selected.

Wiring - Nozzle Solenoid to 'Sol FI' connection on the PCB  
Canister Solenoid and Beacon wires to the 'Beacon' connection on the PCB.

## Technical Details.

Size: (mm)	H 405	L 360	W 275
Weight:	12Kg (approx)		
Flame media	Le Maitre Canisters : 2 required		
Flame Height Control	Yes		
Flame Height Max	5m		
Flame Height Min	1m		
Control Channels	3 Channel DMX		
Suitable for outdoor use	Hot surface igniter, Flame, Beacon output		
Line-of-site required	No		
Power Requirements	230Vac 50Hz 250 Watts max		
Fuse Rating	2Amps T		

## Manufacturer

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