



Flame Simulator

User Manual

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BURNERS • IGNITERS • DAMPERS • CONTROLS

WWW.FORNEYCORP.COM

Introduction

This manual contains information for the Flame Simulator from Forney Corporation, 16479 Dallas Parkway, Suite 600, Addison, Texas. www.forneycorp.com

All personnel should become thoroughly familiar with the contents of this manual before attempting to use the Forney Flame Simulator. Because it is virtually impossible to cover every situation that might occur during operation and maintenance of the equipment described in this publication, personnel are expected to use good engineering judgment when confronted with situations that are not specifically mentioned herein.

Proprietary Notice

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Section 1 Description

Forney Flame Simulator is designed to help quickly test Forney's Flame Detector line of products. The Flame Simulator (FS-01) emits UV and IR light to approximately replicate radiations from a typical burner or igniter flame.

The FS-01 has a tungsten filament lamp to emit visible to infrared light spectrum. The IR light intensity can be adjusted using the 'IR Intensity' knob of the FS-01 (See Figure 1). The UV light is produced by a fixed intensity LED emitting UV light at 280 nm wavelength. No adjustment of the UV intensity is provided.

Light beams from the IR lamp and UV LED pass through a motor driven chopper wheel to replicate flickering light out of a typical burner flame. The flicker frequency of the light beam can be varied by changing the motor speed using the 'Frequency' knob of the FS-01 (See Figure 1).

The Flame Simulator is powered using a wall mounted power pack which is rated for 90-264 VAC at 50/60 Hz and delivers 0.19A (max) output current and 10.0 W power. The device may be powered using any equivalent battery pack with a matching power plug connector.

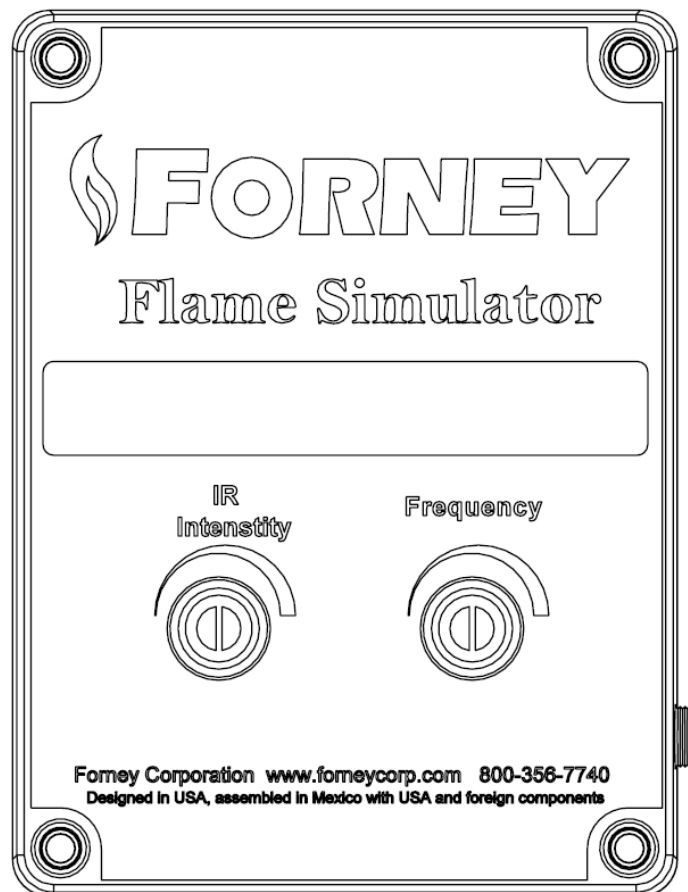


Figure 1 Forney Flame Simulator Controls

Section 2 Specifications

Physical

Dimensions:	4.72 x 2.36 x 3.54 in (120 x 60 x 90 mm)
Weight:	0.6 lbs. (275 grams)

Environmental

Operating Temperature:	0° C to 50° C (32°F to 122°F)
Storage Temperature:	0°C to 50°C (32°F to 122°F)
Cooling	Convection
Operating Humidity	20 – 80% RH
Storage Humidity	10 – 90% RH

Power Pack

Input Voltage:	AC 90 – 264VAC
Input Frequency	50 – 60Hz
Input Current	0.19A Max
Protection	Internal Primary Current Use Inrush Limiting
Output Voltage:	6.0 VDC
Output Current	1.5 A
Output Power:	10.0 W
Approvals:	UL, CE

Light Beams

UV Light	Ultraviolet 280 nm
IR Light	Visible to IR
Frequency	Adjustable chopper wheel speed


Compliance

RoHS	
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Section 3 Safety

Safety is the responsibility of each individual who installs, operates, or maintains Forney equipment.

Forney Flame Simulator is not designed for use in hazardous locations. Direct exposure to potentially explosive gases and/or substances must be avoided.

 <p>Caution: UV Light</p>	<p>This device includes an ultraviolet LED. During operation, the LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes.</p> <p>UV light is hazardous to skin and may cause cancer. Avoid exposure to UV light when LED is operational.</p> <p>Precautions must be taken to avoid looking directly at the UV light without the use of UV light protective glasses.</p>
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Section 4 Operation

Two types of detectors can be tested using the Flame Simulator – IR and UV. Please refer to Forney’s Flame Detector manuals for detailed information on how to set up and test each. In general, the Flame Simulator will aid the user by providing a light source that can be varied to test the detector’s flame off / flame on capability. The Flame Simulator is not calibrated and is not capable to provide a specific output level. As such it is only useful to provide a relative source of light to indicate overall functionality.

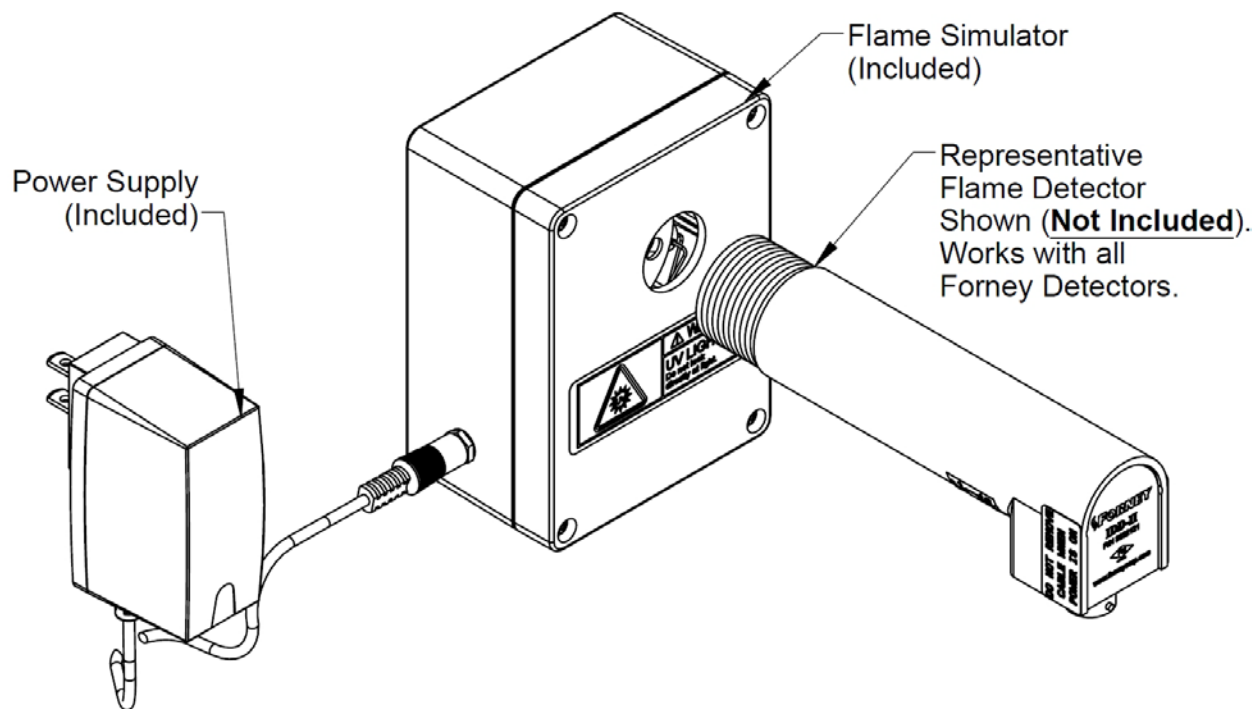


Figure 2 Flame Simulator Set-up

4.1 IR Flame Detectors

1. Place the Forney Flame Simulator approximately 5 to 15 inches away from the flame detector under test.
2. Refer to the instruction manual of the flame detector under test to set parameters appropriate for the target burner flame.
3. Vary either intensity or frequency of the light beam or both in the Forney Flame Simulator using their respective knobs. The flame intensity signal of flame detector should vary in response to these variations.
4. Verify flame relay pick-up / drop-out function of the flame detector under test by varying intensity & frequency of the light beam from the Forney Flame Simulator.

4.2 UV Flame Detectors

1. Place the Forney Flame Simulator approximately 5 to 15 inches away from the flame detector under test.
2. Refer to the instruction manual of the flame detector under test to set parameters appropriate for the target burner flame.
3. Vary frequency of the light beam in the Forney Flame Simulator using the ‘Frequency’ knob. Intensity of the UV light beam is fixed and can be changed only by moving the Forney Flame Simulator closer or farther away from the flame detector under test. The flame intensity signal should vary in response to these variations on a fully functional flame detector.
4. Verify flame relay pick-up / drop-out function of the flame detector under test by varying the frequency of the beam from the Forney Flame Simulator by adjusting the ‘Frequency’ knob.

4.3 Troubleshooting

If the assembly malfunctions, refer to Table 1 for troubleshooting information.

Table 1 Troubleshooting

Symptom	Probable Cause	Remedy
Unit fails to turn on.	1. Input voltage low	1. Provide correct supply voltage.
	2. Power supply failure	2. Replace power supply
UV LED does not turn on.	1. Damaged LED Driver diode	1. Replace unit.
	2. Defective UV LED	2. Replace UV LED
IR Light does not come on.	1. Lose connection 2. Bulb is burned out.	Replace IR light bulb
Light does not flicker.	Chopper wheel not moving	Replace motor.

Note: The UV LED and IR Light bulb have approximately 500 hours operating life. Do not keep the Flame Simulator powered when not in use.

Section 5 Storage

Store the Flame Simulator in a clean, dry environment. When possible, store the Flame Simulator in its original shipping container when not in use.

Section 6 RMA / Warranty

Forney Corporation warrants this product to be free of defective material and workmanship. Forney will replace this equipment as long as it is being used for its intended use and is found to be defective upon receipt up to the expiration of the warranty period.

Prior to returning any material to Forney, please contact your Forney customer service representative and provide the contract number or the customer purchase order number.

Section 7 Spare Parts

When ordering spare parts, contact Forney’s Aftermarket Department via any one of the following methods and furnish the following information.

E-mail	Phone	Fax
spares@forneycorp.com	972-458-6100 or 972-458-6142 or 1-800-356-7740 (24-hour direct line)	972-458-6600

7.1 Recommended Spare Parts

The following spare parts are available from Forney.

Table 2 Recommended Spare Parts List

Part Description	Part Number
UV LED	92615-02
IR Light Bulb	92615-03
Power Pack	92615-07
Motor	92615-04