

**MICROPACK**  
FIRE & GAS

# FS301

## FLAME SIMULATOR

SAFETY & TECHNICAL  
MANUAL

Ref: 2301.6042

ECN: 4431



ISO 9001:2008 Certified

[micropack.co.uk](http://micropack.co.uk)



## HELP US TO HELP YOU

Every effort has been made to ensure the accuracy in the contents of our documents; however, Micropack (Engineering) Ltd can assume no responsibility for any errors or omissions in our documents or their consequences.

Micropack (Engineering) Ltd would greatly appreciate being informed of any errors or omissions that may be found in our documents. To this end we include a form, given in Appendix A, for you to photocopy, complete and return to us so that we take the appropriate action. **Thank you.**

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# 1 Safety Instructions

**For the correct and effective use of this equipment, to maintain safety and avoid hazards it is essential that you read and understand these instructions fully and act accordingly BEFORE operating this equipment.**



**PAY PARTICULAR ATTENTION TO ALL SAFETY WARNINGS, CAUTIONS AND IMPORTANT NOTICES**

## 1.1 Warnings

- This equipment is certified and intended for use in potentially hazardous areas.
- For installations in North America the National Electrical Code (NEC) should be strictly observed.
- Where appropriate local or national regulations should be used.
- The enclosure lid and body should always be fully tightened and locked into position before energising the equipment.
- Do not open the enclosure in the presence of a flammable atmosphere.
- All permits and proper site procedures and practices must be followed.
- Repair of equipment should never be performed by non-trained personnel.

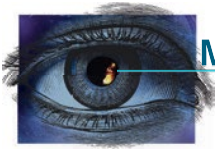
## 1.2 Cautions

- Use only approved parts and accessories with this equipment.
- Do not attempt to replace the window as the glass and the front cover are individually matched pairs to meet the stringent requirement of the Hazardous area certification.
- The threaded portions of the detector are flame paths. These threads and the flame paths around the window are not to be repaired.
- To maintain safety standards, regular maintenance should be performed by qualified personnel.

## 1.3 Important Notices

- Pay attention to the guidelines given throughout this document.
- If in any doubt ask your local sales representative or contact Micropack (Engineering) Ltd.
- Micropack (Engineering) Ltd takes no responsibility for use of its equipment if this is not in accordance with the appropriate issue and/or amendment of the manual.
- Micropack (Engineering) Ltd reserve the right to change or revise the information contained herein without notice and without obligation to notify any person or organisation of such action.





# 2 Introduction

The Micropack FS301 Flame Simulator is used to test the correct operation of Micropack FDS300 and FDS301 Visual Flame Detectors.

The simulator has been designed specifically to enable long range testing of FDS300 and FDS301 Visual Flame Detectors. The device has been designed for hand held use by a single operator. The device is a completely self contained, portable unit. A single charge is sufficient to test up to fifty Flame Detectors.



The simulator has been designed specifically for use in the extreme marine environments experienced offshore.

## 2.1 Features

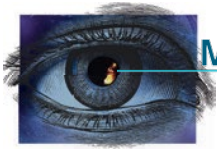
- **Long Range** – The simulator can reliably operate FDS 300 and FDS301 Visual Flame Detectors at distance between 3m & 8m.
- **Portable** – The flame simulator is a portable hand held unit designed for single operator operation.
- **Robust and Reliable** – The flame simulator has been designed for extreme offshore conditions.
- **Reduced Maintenance Costs** – Reduces the need for scaffold or ladder access to the detector.

## 2.2 Flame Simulator Enclosure

The flame simulator electronics are housed in an enclosure which is certified for use in hazardous areas. For the exact certification and conditions of use see certification label on the device, or the example drawing below:

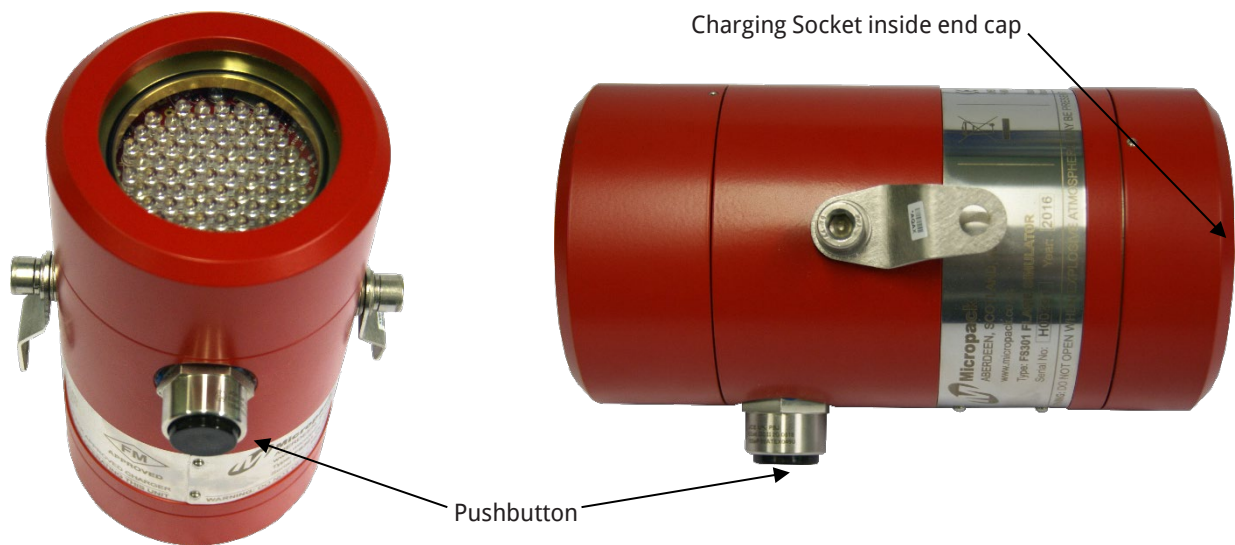
 <p><b>Micropack</b> ABERDEEN, SCOTLAND, AB12 4RR www.micropack.co.uk Type: <b>FS301 FLAME SIMULATOR</b> Serial No: <input type="text"/> Year: <input type="text"/></p>	<p>CE 2809 Ex II 2 (2) G Ex db (op is T6 Gb) IIC T6 Gb IP66          AMBIENT: -10°C +50°C          FM09ATEX0034          Maximum Voltage (Charge): 24Vdc          Maximum Current (Charge): 660mA</p>	<p><b>CAUTION:</b> HIGH INTENSITY LED RADIATION - DO NOT STARE INTO BEAM DO NOT REPAIR FLAME PATHS ONLY USE MICROPACK APPROVED CHARGER</p> 
<p><b>WARNING: DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE MAY BE PRESENT</b>      REFER TO FS301 TECHNICAL MANUAL BEFORE CHARGING OR OPERATING THIS UNIT</p>		

The enclosure comprises of two enclosure covers (one with a faceplate window), the enclosure body (with certification label) and fixing collars to connect the enclosure body and covers together.

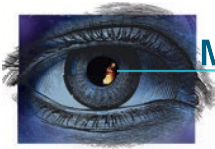


# 3 | Operating Instructions

The flame simulator operation is extremely simple. Once aligned, simply press the button, maintaining alignment, and wait for the detector to go into alarm. The flame simulator LED's will flash when energised, and the detector response time should typically be less than 10 seconds. The switch is spring loaded and releasing the pressure from the switch will disconnect the power.



The picture above shows the FS301 flame simulator. The on/off pushbutton is shown to the underside of the flame simulator. The charging socket is on the reverse end from the faceplate window, inside the end cap. The FS301 flame simulator will operate for a maximum of 60 seconds before timing out.



# 4 Maintenance and Testing

## 4.1 Routine

There is no set maintenance routine for the flame simulator due to the simplicity of the device. All internal maintenance or repair must be conducted by Micropack (Engineering) Ltd.

Therefore, routine maintenance is simply limited to ensuring the faceplate window is kept clean and that no damage to the integrity of the enclosure or flame paths is caused.

## 4.2 Battery Charging

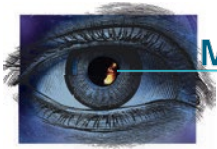
A charging unit is supplied with the flame simulator. Simply remove the reverse cover to reveal the charging socket, and conduct the following:

- Connect plug to flame simulator.
- Connect Charger unit to mains socket (adaptors supplied for various world locations).
- Switch on mains supply.
- Wait until red LED (on charger unit) stops flashing.
- Press yellow button on charger unit.
- Wait until charger LED is green.

The yellow button causes the charger unit to completely discharge the battery pack prior to re-charging. Unless this is done the battery pack will retain memory charge and charging capability will be limited. Full re-charge will take between 3 and 10 hours.

A “fast” charge may be applied by simply not pressing the yellow button – however, as indicated above, battery memory effects will result in the battery pack not maintaining a full charge and limit the battery life. Charging in this way will take approximately 1 hour. Eventually, battery life will be so limited that a full discharge / recharge cycle will be required.

**NOTE: BATTERY CHARGING SHOULD NEVER TAKE PLACE WITHIN A HAZARDOUS AREA.**



# 5 | Fault Finding

## 5.1 Diagnostics

Fault finding by personnel other than Micropack employees is prohibited and non-compliance of this will invalidate the warranty. If the flame simulator fails to operate there are two simple causes:

- (a) The flame simulator batteries need recharged, or
- (b) The unit is faulty and needs to be returned to Micropack.

## 5.2 Replacement and Repair

The flame simulator contains no user serviceable parts.





# 6 Technical Specification

## 6.1 Electrical Specification

Battery Pack		Charger
4 cells	1.2 V each	100-240 Vac
Current	2.6 A	660mA Max
Capacity	1.8 Ahr	50/60Hz
Fast charge	1 hour	
Full discharge / charge	10 hours	

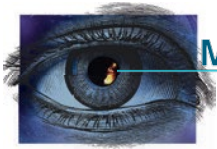
## 6.2 Mechanical Specification

Parameter	Units	Value	Comment
<b>Enclosure</b>			
Overall Dimensions	mm	100 Diameter x 200 Length	
Shipping Weight	Kg	2.5	
Material		LM25 Alloy	
Coating	Colour	Red Epoxy Coated Finish	
Pushbutton	mm	1 x M25	
Ingress Protection	IP	66	
<b>Transit Case</b>			
Overall Dimensions	mm	410L x 200H x 175W	
Shipping Weight	kg	4.5	

## 6.3 Environmental Specification

Parameter	Units	Min	Max	Comment
Operating Temperature	°C	-10	+50	
Charging Temperature	°C	0	+45	
Relative Humidity	% RH	0	100	Non Condensing





## 6.4 Certification and Approvals

Parameter	Authority/Standard	Approval	Certificate
Hazardous Area Certification	EN 60079-1:2014	Ex II 2 (2) G Ex db (op is T6 Gb) IIC T6 Gb IP66	FM09ATEX0034
Explosive Atmospheres	EN 60079-28:2007	Ex II 2 (2) G Ex db (op is T6 Gb) IIC T6 Gb IP66	FM09ATEX0034





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