# Microsense II

## Extinguishant Control Panel

## Operation and Maintenance Manual

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## General Description

Microsense II is a control unit designed to operate an electrically activated gas generator or "Metron" actuator to release extinguishant agent for localised fire suppression.

Activation can be achieved by automatic smoke, heat or flame detection or by operation of the inbuilt manual release switch.

Volt free changeover contacts are available for control of shutoff valves or local plant and for signalling alarm and fault conditions to main fire control panels.

The detection and extinguishant control outputs are monitored for cable faults to ensure the integrity of the system at all times.

The unit requires a 230V or 110V AC mains supply and incorporates a charger for 1.2 Ah sealed lead acid standby batteries which will maintain the control panel operation for 24 hours in the event of a mains failure.

# 1. SAFETY

IMPORTANT
**READ THIS SECTION FIRST!**

1.1 Suppliers of articles for use at work are required under section 6 of the Health and Safety at Work Act 1974 to ensure as reasonably as is practical that the article will be safe and without risk to health when properly used. An article is not regarded as properly used if it is used "without regard to any relevant information or advice" relating to its use made available by the supplier.

1.2 This product should be installed, commissioned and maintained by or under the supervision of competent persons according to good engineering practice and:-

i) IEE regulations for the electrical equipment of buildings.
ii) Codes of practice.
iii) Statutory requirements.
iv) Any instructions specifically advised by the manufacturer.

According to the provisions of the act you are therefore requested to take such steps as are necessary to ensure that any appropriate information about this product is made available by you to anyone concerned with its use.

1.3 This equipment is designed to be operated from 220-240V AC mains supplies and is of class I construction. As such it must be connected to a protective earthing conductor in the fixed wiring of the installation.

1.4 Failure to ensure that all conductive accessible parts of this equipment are adequately bonded to the protective earth will render the equipment unsafe.

# 2. CONSTRUCTION

2.1 The control panel consists of a robust, fully welded steel enclosure containing six 20mm knockouts for cable glanding.

Space is provided to fit two 1.2 Ah sealed lead acid batteries with ample room for cable termination.

The fascia of the unit is hinged and key locked to allow convenient access for servicing and maintenance.

Three mounting holes are provided for easy fixing onto any flat surface.

2.2 Both the back box and fascia are finished in a tough polyester coated finish with two part epoxy printed legends for use in hostile environments.

2.3 See annex 2

# 3. DETECTION CIRCUIT

3.1 The detection circuit will support most commonly available 24V smoke, heat or flame detectors. Up to 20 detectors can be connected to the detection circuit.

3.2 A switch inside the control panel allows the selection of two modes of operation.

a) Single activation b) Coincidence activation

In single activation mode, operation of any detector will immediately sound the internal alarm, light both the fire LED and the released LED, operate the 1st and 2nd stage volt free contacts and activate the extinguishant release output.

In coincidence activation mode, operation of the first detector on the circuit will light the fire LED, sound the internal alarm and operate the 1st stage volt free contact .

Operation of a subsequent detector will operate the 2nd stage volt free contact and the extinguishant release output.

The coincidence mode can be used in "dirty" environments to prevent accidental discharges from the detection of steam or vapours which may be present in small quantities during normal operation of generators, boiler houses and the like.

3.3 All detectors connect to one pair of wires which, by fitting an end of line monitoring resistor, can be monitored for open or short circuit cable faults.

3.4 For manual release only applications, a standard manual release break glass call point can be fitted to the detection circuit and will operate in single activation mode.

# 4. EXTINGUISHANT OUTPUT

4.1 The extinguishant output is primarily designed to initiate gas generators or "Metron" actuators. Upon activation of the circuit, the output will supply 5 Amps for 10 milliseconds via a capacitor bank which has been trickle charged during the quiescent condition.

This circuit is monitored for open circuit faults only and passes a small current (approximately 3 milliamps) through the gas generator or "Metron" at all times. A break in the wiring or disconnection of the actuator will be shown as a fault.

# 5. VOLT FREE CONTACTS

5.1 To enable the control of plant associated with the protected equipment, two volt free changeover contacts are provided.

The 1st stage contact will operate upon detection of a fire in both single and coincidence modes and will remain operated until the panel is reset.

The 2nd stage contact will operate immediately upon detection of a fire in single activation mode but in coincidence activation mode, will only operate upon detection by a second detector. This contact will remain operated until the panel is reset.

5.2 A volt free changeover contact is also provided which will operate upon detection of a fault on the detection circuit, a fault on the extinguishant circuit or disconnection of the mains or battery power supplies.

5.3 All contacts are rated at 1 Amp 30 Volts DC.

# 6. CONTROLS

6.1 Reset - Activation of the detection input causes the condition to be latched at the control panel and on some detectors. To clear the alarm condition following an activation the reset button must be pressed.

Pressing the reset button whilst the system is in the normal condition will illuminate all LED indicators for testing purposes.

6.2 Silence - Operation of any alarm or fault condition will cause the internal sounder to operate. This can be silenced by operation of the silence button.

6.3 Enable - To prevent unauthorised silencing or reseting of the system, the reset and silence controls are disabled until the enable position on the keyswitch is selected.

6.4 Isolate - The extinguishant output may be isolated for maintenance or testing purposes by selecting the isolate position on the keyswitch.

6.5 Manual release - To provide a means of extinguishant release which is independent of the detection circuit, a sealed, flap protected manual release pushbutton is provided on the front of the control panel.

Operation of this switch will immediately illuminate both the Fire and Released LEDS and operate the extinguishant output.

# 7. INDICATIONS

All front panel indicators are large area (200mm squared) multi-element LED indicators configured to give maximum visibility in a wide range of ambient lighting conditions.

7.1 Fire - The fire LED will illuminate upon operation of the detection circuit input or manual release in both single activation and coincidence activation modes.

7.2 Released - The released LED will illuminate upon operation of a first detector in single activation mode and upon operation of a second detector in coincidence activation mode.

Operation of the manual release will illuminate the released LED regardless of mode.

7.4 Power on - The power on LED will be illuminated constantly whilst power is being supplied to the panel.

7.5 Fault - The fault LED will illuminate upon a fault in the detection circuit wiring, the extinguishant output circuit wiring or failure of either the mains or battery supply.

Diagnostic LEDS are fitted inside the control panel to identify the nature of the fault.

7.6 Isolated - The isolated LED will illuminate when the keyswitch is turned to the isolated position to indicate that the extinguishant circuit is inoperative.

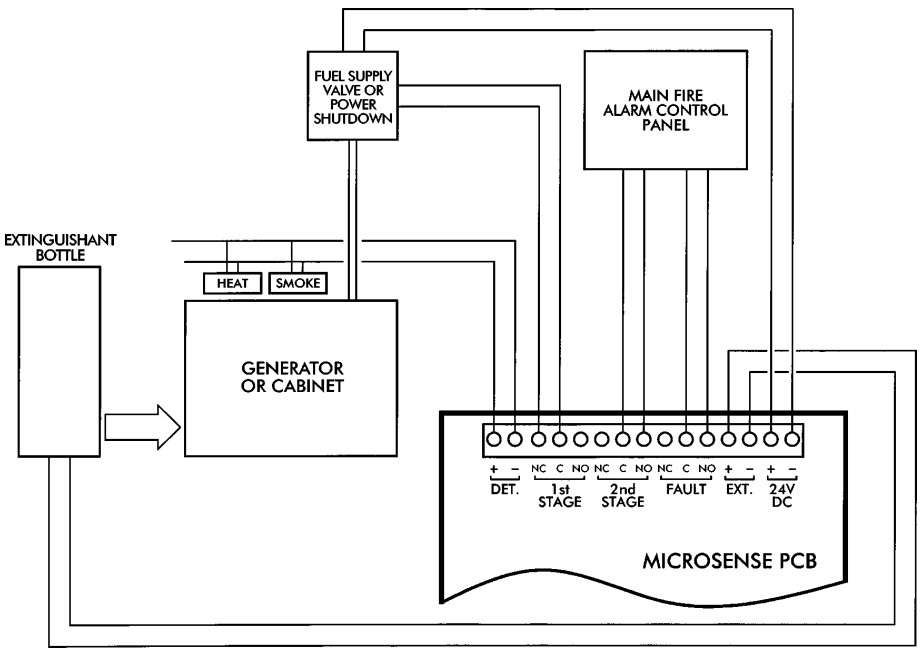
# 8. SPECIFICATIONS

| | |
|---|---|
| Size | - 145 Wide X 355 High X 104 Deep |
| Weight | - 2 Kg (excluding batteries) |
| Construction | - 1.2mm fully welded sheet steel |
| Finish/Colour | - Epoxy powder/Two tone grey |
| Extinguishant output ("Metron"/"Safebottle") | - 5 Amps for 10mS |
| Extinguishant output (solenoid) | - 400mA 28V DC max. (for 1 second) |
| 1st stage/2nd stage contact | - 1 Amp 30V DC maximum |
| 24 V DC output | - fused at 500mA |
| Detection circuit quiescent current | - 1.6mA maximum |
| Detection circuit trigger resistance | - 1st stage - 350 to 750 Ohms (10 % tol.)<br>2nd stage - 100 to 350 Ohms (10% tol.) |
| Mains supply | - 230V AC or 110V AC |
| Battery capacity | - 1.2 Ah (gives 24 hour standby) |
| Operating temperature | - +50 to -5 degrees Celsius |
| Operating humidity | - to 95% (non condensing) |
| Power supply rating | - 750mA maximum at 28V DC (350mA continuous) |

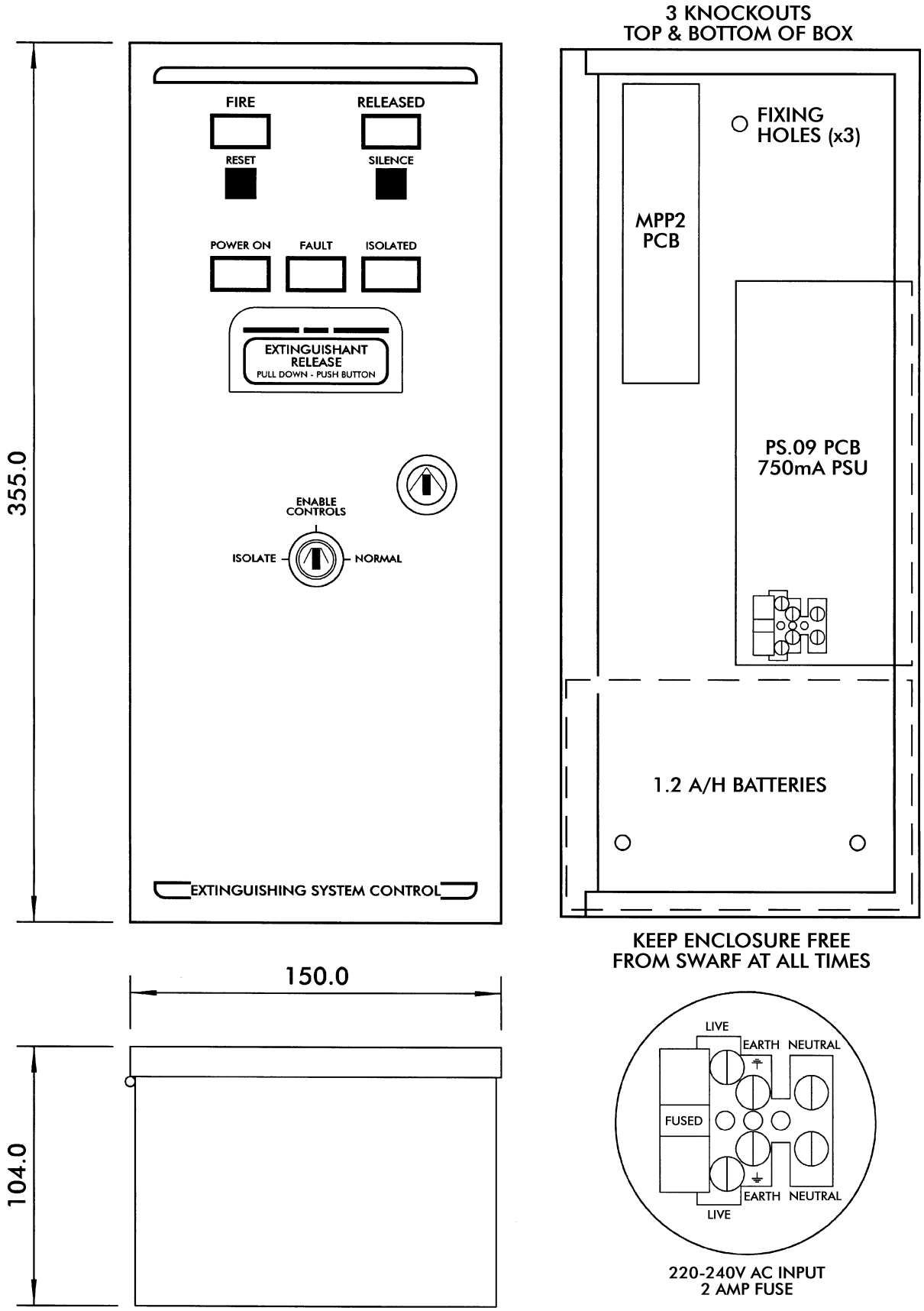
# ANNEXE 1

This example shows a generator protected by a smoke detector and a heat detector configured such that both smoke and heat must be detected before the extinguishant discharge is activated. Upon detection of either smoke or heat the panel will operate a 24V DC solenoid to cut off the fuel supply to the generator.

The 2nd stage or "released" contact and the fault contact are wired to the main fire alarm system to provide remote indication of the danger in this unmanned area.



# ANNEXE 2


3 KNOCKOUTS
TOP & BOTTOM OF BOX
FIRE
RELEASED
RESET
SILENCE
POWER ON
FAULT
ISOLATED
EXTINGUISHANT
RELEASE
PULL DOWN - PUSH BUTTON
ENABLE
CONTROLS
ISOLATE
NORMAL
EXTINGUISHING SYSTEM CONTROL
355.0
150.0
104.0
FIXING
HOLES (x3)
MPP2
PCB
PS.09 PCB
750mA PSU
1.2 A/H BATTERIES
KEEP ENCLOSURE FREE
FROM SWARF AT ALL TIMES
LIVE
EARTH
NEUTRAL
FUSED
EARTH
NEUTRAL
LIVE
220-240V AC INPUT
2 AMP FUSE