



TEST EQUIPEMENT

TECHNICAL DOCUMENTATION LOOP CONTROLLER

PN/SI : 9240 SIS

PN/SI : 9240 SI

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RECORD OF REVISIONS

Rev No	Issue on	Date of revision	Visa
1	Calibration procedure	08/93	J.P
2	Accuracy of measure	11/96	J.P
3	Change part number reference	03/99	J.P
4	Isolation measure operating Functional temperature	11/99	J.P
5	Chapter III suppression not 2 « Calibration »	02/2011	F.B

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1 INTRODUCTION :

The LOOP CONTROLLER allows to control continuous fire (overhead) detection (CFD) elements in accordance with the manufacturer characteristic.

2 MAINFRAME

Permit to detect a malfunctionning of a CFD element.

3 GENERAL INFORMATION

3.1 Composition

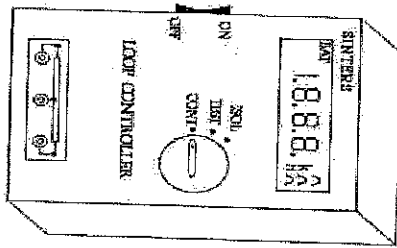
The LOOP CONTROLLER is composed of :

- 1 Loop controller :
PN : 9240 SI
- 1 Connection lead :
PN : 9240 SI-1
- 1 Technical documentation :
PN : 9240 SI-5
- 1 Case :
PN : 9240 SI-11



LOOP CONTROLLER
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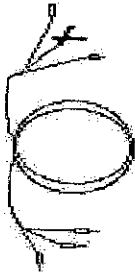
3.2 Composition



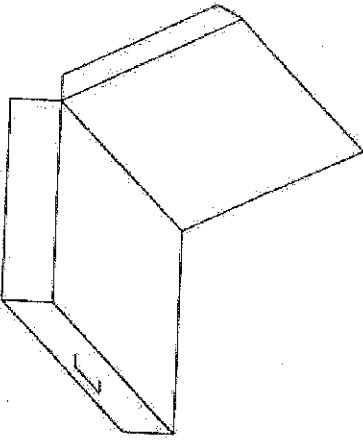
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LEAD
PN : 9240 SI-1

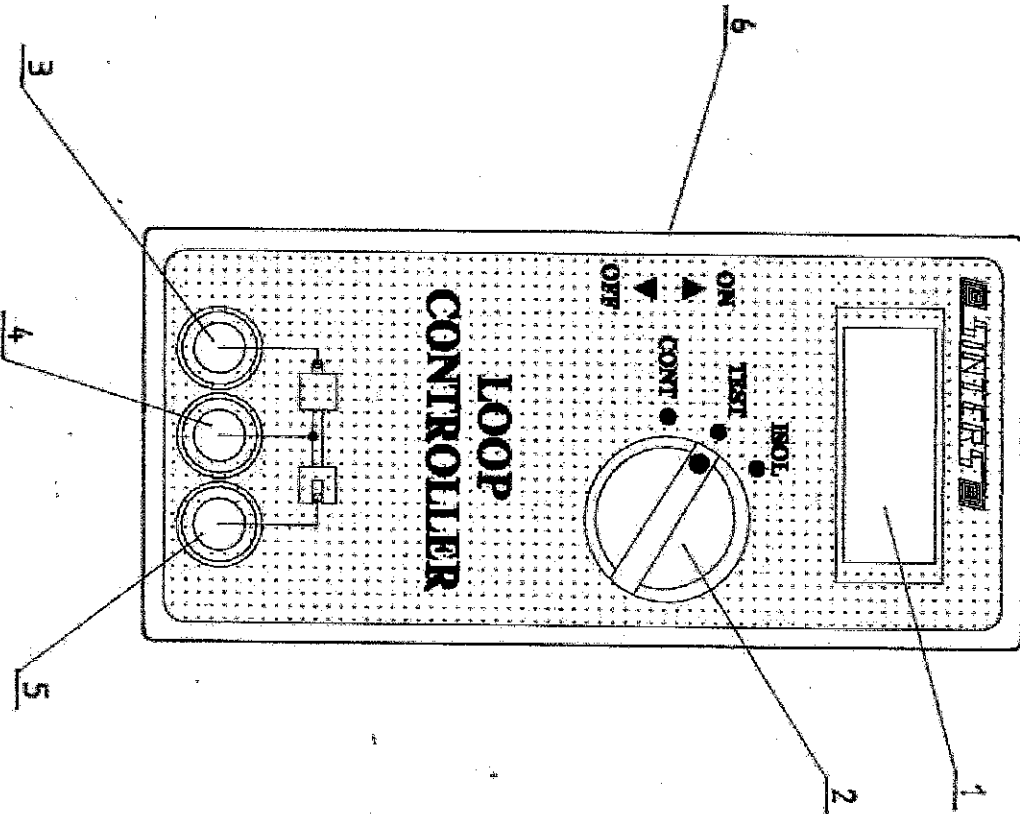


CASE
PN : 9240 SI-11



LOOP CONTROLLER
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3.3 Front panel



4 INSTALLATION AND OPERATING

CAUTION

Do not connect the loop controller to a powered CFD element or to any AC or DC power supply

4.1 Functional temperature

+5 °C to +40 °C

4.2 General considerations

The Loop controller can execute two different measure :

- A measure of continuity between 0 and 50 Ohms.
- An measure of isolation between 800 Ohms and 2 Mohms.

4.3 Operating requirements

To select the measure, use the 3 positions selector switch. operation allows to select three different functions.

- Continuity measure (CONT position)
- Test isolation (TEST position)
- Isolation measure (ISO position)

4.4 Continuity measure :

- Connect, using the lead, the both end of the CFD elements between the red (5) and green (3) terminal stud.
- Put the power switch on position ON (6)
- Put the selector switch on CONT position (2)
- Read the measure on the display (1)
- If the measure read is over the measure range, the display set HI.
- Measure accuracy : +/- 10 % of full scale.

4.5 Isolation test :

- Put the power switch on position ON (6)
- Put the selector switch on TEST position (2)
- Read the message on the display (1)
 - « YES » if test ok
 - « Err » if test bad

4.6 Isolation measure :

- Connect, using the lead, the center conductor of the CFD elements on the red (5) terminal stud and the outer sheath of the CFD elements on the black (4) terminal stud.
- Put the power switch on position ON (6)
- Put the selector switch on TEST position (2)
- Read the message on the display (1) :
 - « YES » if test ok
 - « Err » if test bad
- Put the selector switch on ISO position (2)
- Read the measure on the display (1)
- If the measure read is over the measure range (2 MΩ), the display set HI.
- If the measure read is under the measure range (800Ω), the display set LO.
- If the display message « CAL. » appear, put the selector switch on TEST position
- Read the message on the display (1) :
 - « YES » if test ok
 - « Err » if test bad
- If test ok, back to ISO position (2)
- Measure accuracy : +/- 20%

Nota : For a best accuracy measure, it is better to back to the test position before all isolation measure.

THEORY OF OPERATIONS

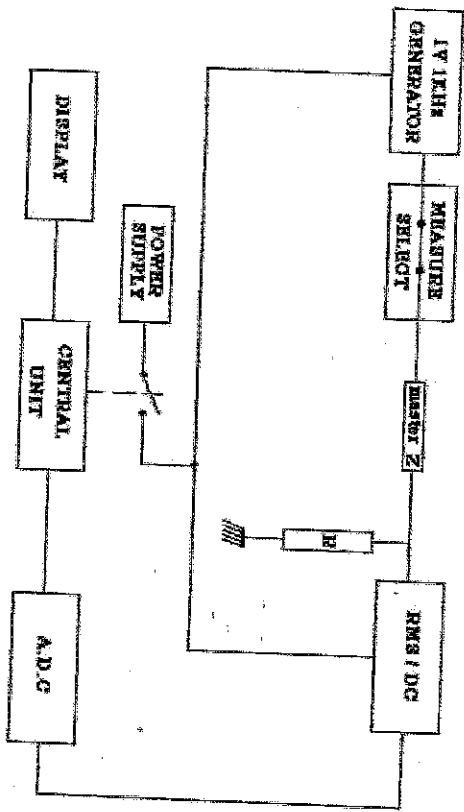
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1 DESCRIPTION

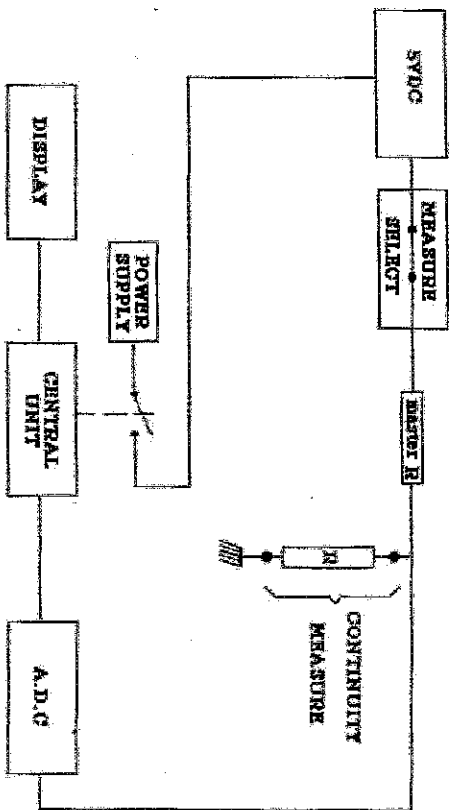
The principle of the measure is based on a reading of current through an impedance with a constant terminal voltage. The voltage apply on the isolation measure is an AC signal of 1 kilohertz frequency and an voltage of 1 Volts RMS in accordance with the CFD element manufacturer. For the continuity measure, a 5VDC voltage is apply.

2 THEORY OF OPERATIONS

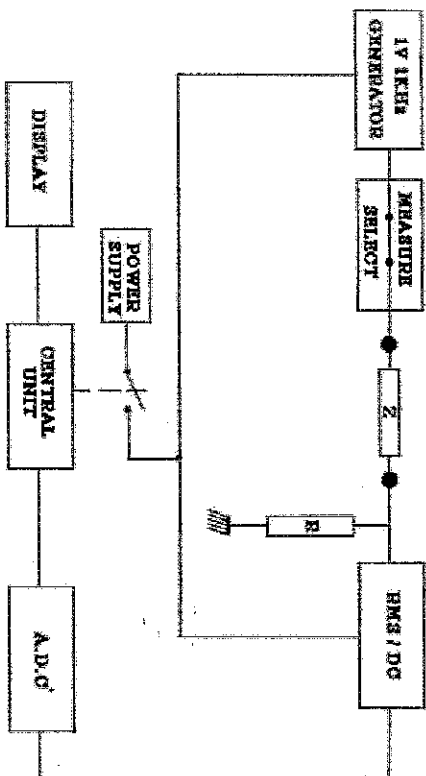
2.1 Isolation measure block diagram



2.2 Continuity measure block diagram



2.3 Isolation test block diagram



2.4 Electronical operation :

2.4.1 Measure select :

A selector switch permit to select the following function :

- 1° position : continually measure
- 2° position : test isolation
- 3° position : isolation measure

2.4.2 1V/1KHz generator

For testing CFD elements in accordance with the manufacturer, it is necessary to generate a signal of 1 volt RMS voltage and 1 kilohertz frequency.

2.4.3 RMS / DC converter :

The AC voltage consequent of the measure is converted in a DC voltage across a RMS / DC converter.

2.4.4 Analog to Digital Converter (ADC) :

The central unit can only work with digital signal. So, the analogic signal is converted on a digital signal across an Analogic to Digital Converter.

2.4.5 Central Unit

It is necessary to process the data information coming from the converter before set them to the display. The central unit process differently the isolation measure data and continually measure data in accordance with select control. The result of the impedance computation is set on the display. The central unit manages the cell state to.

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2.4.6 Display ,

The display module set the information of the central unit on a LCD display.

2.4.7 Power supply

The Loop controller use an 9VDC cell. A message is set on display when the cell is low

The power supply is divided on two different part :

- Analogic power supply
- Logic power supply



The analogic power supply is powered on by the central unit only when it is necessary and this to reduce current draw.

3 MECHANICAL

The Loop Controller is composed of an electronical card fixed on a box. The box is composed of :

- 1 superior shell
- 1 bottom part
- 1 selector knob

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SERVICE

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1 DISASSEMBLY - ASSEMBLY PROCEDURE

1.1 Disassembly of the loop controller

- Unscrew 4 screws from the bottom of the tool
- Take back the superior shell

1.2 Assembly procedure

Inverse processing

1.3 Remove the electrical card

- Disassemble the Loop Controller
- Unscrew 2 screws which fixe the electrical card to the bottom
- Remove the electrical card

1.4 Install the electrical card

Inverse processing

2 TROUBLESHOOTING

2.1 Troubleshooting procedure

TROUBLE	SOLUTIONS
The tool doesn't power on	- Change the cell - Check the power switch - Change the electrical card
Segments of the LCD displays do not light up	- Check the LCD display connexions when the tool is powered on - Change the LCD display - Change the electrical card
The measure select doesn't operate	- Check the selector knob - Check the selector switch - Change the electrical card
The measure is not correct or doesn't operate	- Check the terminals stud connexions - Check the fuses - Change the electrical card
The test is not correct -	- Change the electrical card

2.2 Replaceable part

- 1 electrical card PN: 9240SI-300
- 1 Loop controller box PN: 9240SI-400
- 1 selector knob PN: 9240SI-500
- 1 Selector switch PN: 9240SI-600
- 1 LCD display PN: 9240SI-700
- 3 Terminal studs package PN: 9240SI-800



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Chapter IV

STORAGE

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1 STORAGE TEMPERATURE

-25 °C to +70 °C

2 FUNCTIONAL TEMPERATURE

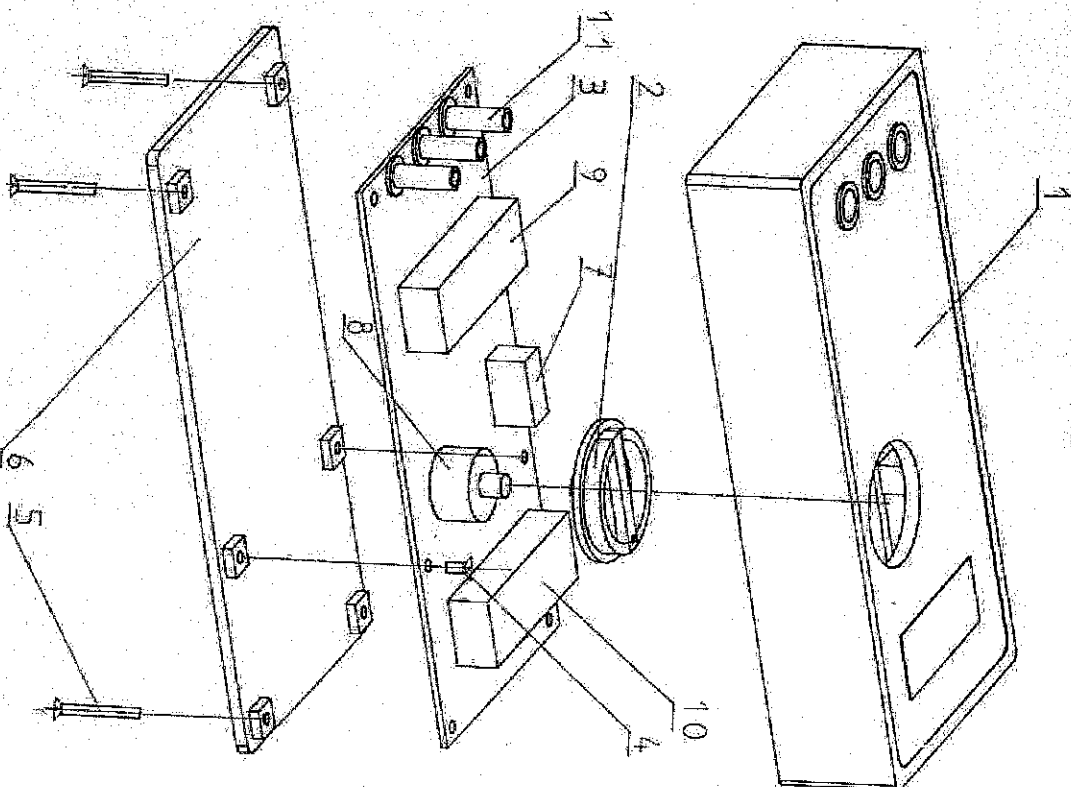
5 °C to + 40 °C

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Chapter V

APPENDIX

LOOP CONTROLLER
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LOOP CONTROLLER
PN : 9240 SI

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3	ELECTRONICAL CARD	JP 9240 SI-300
4	SCREWS	JP 9240 SI-9
5	SCREWS	JP 9240 SI-9
6	BOTTOM PART	JP 9240 SI-10
7	POWER SWITCH	JP 9240 SI-11
8	SELECTOR SWITCH	JP 9240 SI-600
9	CBL	JP 9240 SI-13
10	LCD DISPLAY	JP 9240 SI-700
11	TERMINAL STUD	JP 9240 SI-800