

SD2200 series

Smoke Detector for Duct Mounting

Feature & Application

- Low Price & Fast Delivery
- 2 SPDT 5 Amp Relay output
- Auto Calibration
- Sensitivity Adjustment by decade potentiometer
- Photo Coupler Sensor
- Velocity 0.03 – 25 Meter Per Second
- Response Time 1–2 seconds
- Easy installation and maintenance free
- No Sampling Tube required



General

The Model SD2200 is an advanced Smoke Detector. The SD2200 Smoke Detector Photo Coupler sensor operates on the law that fluids absorb and refract the light.

Therefore a photo coupler sensor placed inside probe receive the light from transmission sensor when the light is refracted through the smoke particle. The model SD2200 is a new duct smoke detector built-in a photo coupler which has an excellent in sensitivity, stability and for easy for installation in duct smoke monitoring. The SD2200 can be used in air velocity range of from 0.03 to 25 meter per second and has a photo coupler sensor inside bottom of the probe which is the part of directly contact the smoke. Thus the SD2200 does not require a sampling tube. It also can control fans, blowers .

In addition SD2200 provides auxiliary alarm device such as buzzer, annunciater with alarm signal. The operation alarm signal maintain its status although the smoke is removed from the inside duct and the normal condition is recovered. And the resetting the switch located on the bottom will return to stand-by alarm operation.

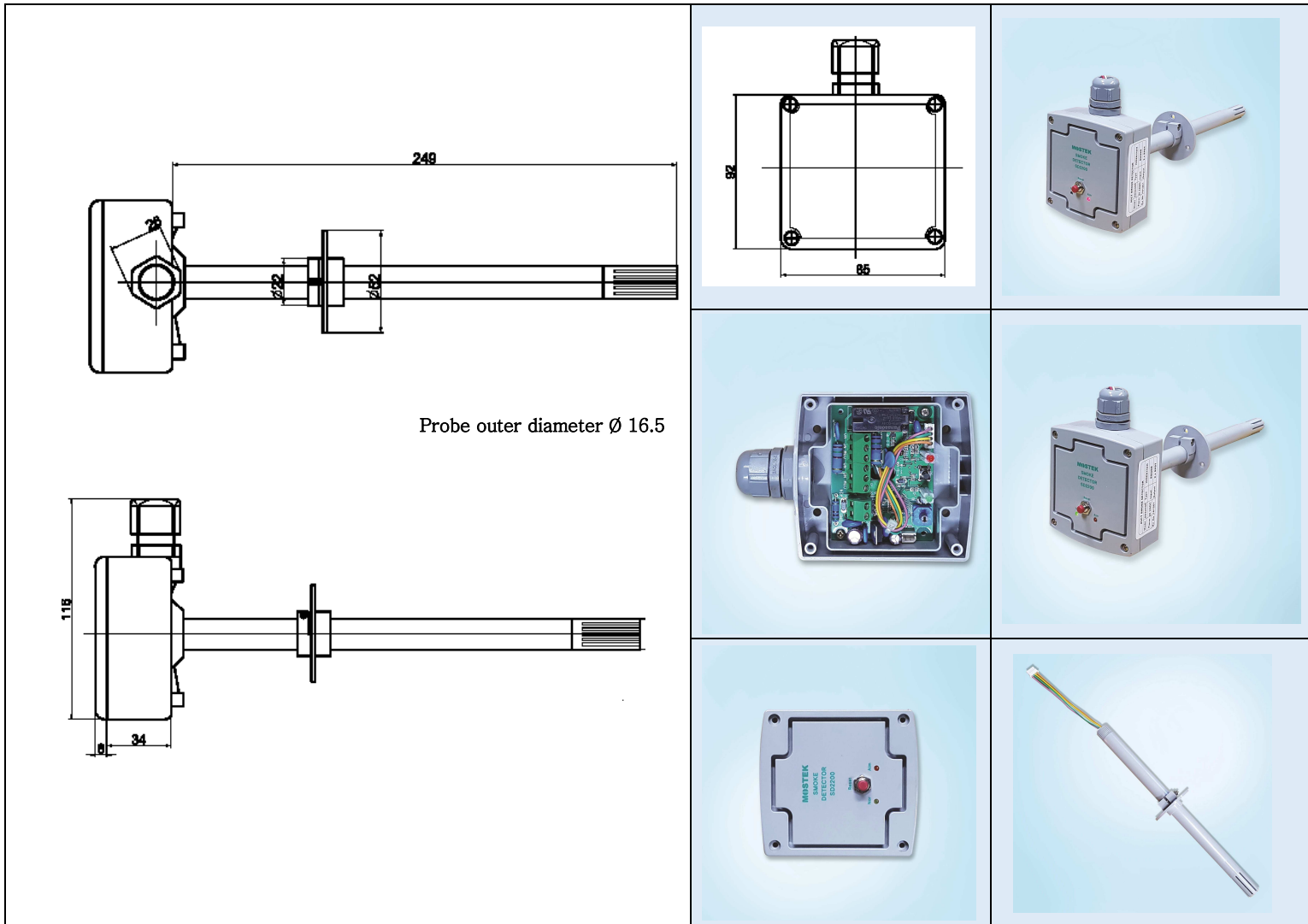
The SD2200 can be used in 24 VDC and designed in order for alarm and supervisory relay contact to connect with such control panel as well.

When the sensor failure, power fault, SD2200 gives trouble alarm contact. A green LED indicates power on as normal condition, red LED indicates alarm smoke status.

Technical Data

- | | |
|--|---|
| • Sensor Type : Photo-Coupler | • Measuring Range : Air velocity 0.03 – 25 meter per second |
| • Power Supply : 24 VDC | • Alarm Output Signal : 2 x SPDT 5 Amp Relay Contact |
| • Indication Lamp : Power on, Alarm on | • Latching Release : Reset Switch in the Front Cover |
| • Operating Temp : -20 °C ~ 90 °C | • Humidity : 0 ~ 99% RH |

DIMENSION

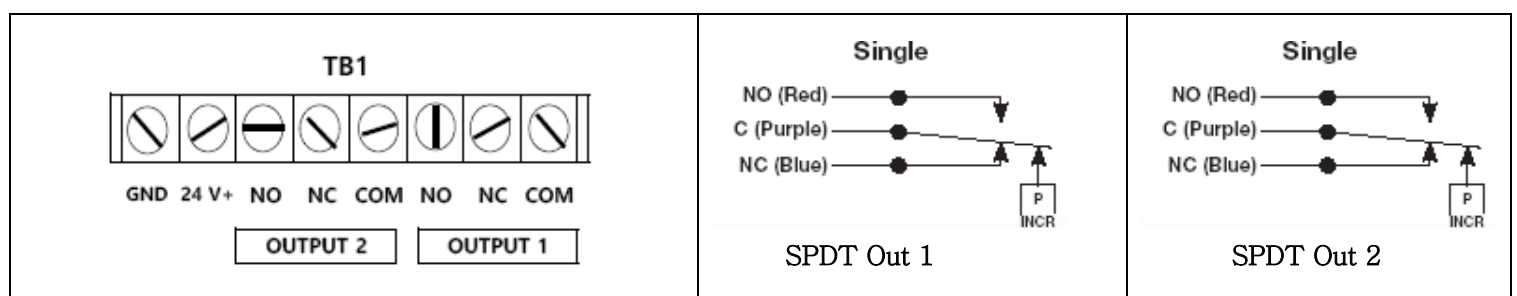


• Mostek reserves the right to make changes without further notice to any products to improve reliability , function, or design.

CODE

Parent Model Code		SD2200	Smoke Detector for Duct
Feature 1	Probe Length	25L	25 Cm (other length on request)
Feature 2	Probe Material	PM1	ABS Plastic (other material on request)
Feature 3	Power Supply	IP1	24 VDC (other on request)
Feature 4	Output	OP1	SPDT Relay Contact (2) 5A 30VDC , 5A 240 VAC
Feature 5	Mounting Accessory	M1 M9	3/4-inch Insertion ABS Flange On request

WIRING



MOSTEK®

INSTRUCTION MANUAL



MODEL SD2200

DUCT SMOKE DETECTOR

166 BUN-GIL, GAHYUN-RO, TONGKIN-EUP
GIMPO-CITY, GYUNGKI-DO 10030, KOREA

140805 Revision B

Notice

This publication must be read in its entirety before performing any operation. Failure to understand and follow these instructions could result in serious personal injury and/or damage to the equipment. Should this equipment require repair or adjustment beyond the procedures given herein, contact the factory at :

MOSTEK

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Download Technical Data Sheets from our website: www.mostek.co.kr

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1. Introduction

1-1. Scope

This Instruction Manual describes the electrical and mechanical considerations involved with installing and maintaining the hardware associated with the Mostek SD2200 Duct Smoke Detector.

This manual is divided into the following sections:

Introduction :

Installation :

Start up :

Preventive maintenance :

Troubleshooting

1-2. Product Description

Theory of Operation

The Model SD2200 is an advanced Smoke Detector. The SD2200 Smoke Detector Photo Coupler sensor operates on the law that fluids absorb and refract the light.

Therefore a photo coupler sensor placed inside probe receive the light from transmission sensor when the light is refracted through the smoke particle. The model SD2200 is a new duct smoke detector built-in a photo coupler which has an excellent in sensitivity, stability and for easy for installation in duct smoke monitoring. The SD2200 can be used in air velocity range of from 0.03 to 25 meter per second and has a photo coupler sensor inside bottom of the probe which is the part of directly contact the smoke. Thus the SD2200 does not require a sampling tube. It also can control fans, blowers .

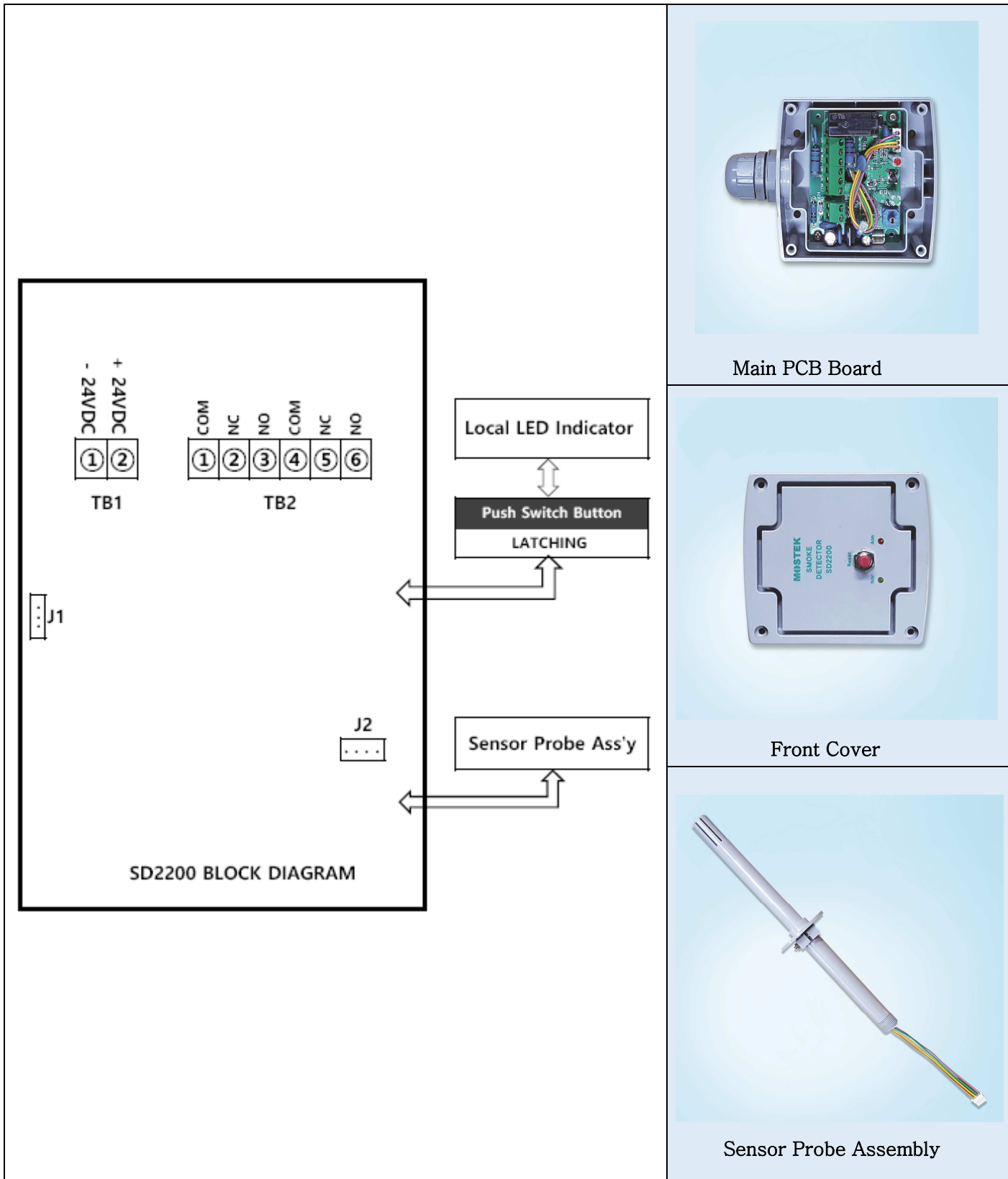
In addition SD2200 provides auxiliary alarm device such as buzzer, annunciater with alarm signal. The operation alarm signal maintain its status although the smoke is removed from the inside duct and the normal condition is recovered. And the resetting the switch located on the bottom will return to stand-by alarm operation.

The SD2200 can be used in 24 VDC and designed in order for alarm and supervisory relay contact to connect with such control panel as well.

When the sensor failure, power fault, SD2200 gives trouble alarm contact. A green LED indicates power on as normal condition, red LED indicates alarm smoke status.

1-3. Block Diagram

The main part of SD2200 Duct Smoke Detector are : The SD2200 main board, the sensor probe assembly, an optional front panel display. The main PCB is mounted inside of the enclosure and the sensor probe assembly is mounted external to the enclosure.



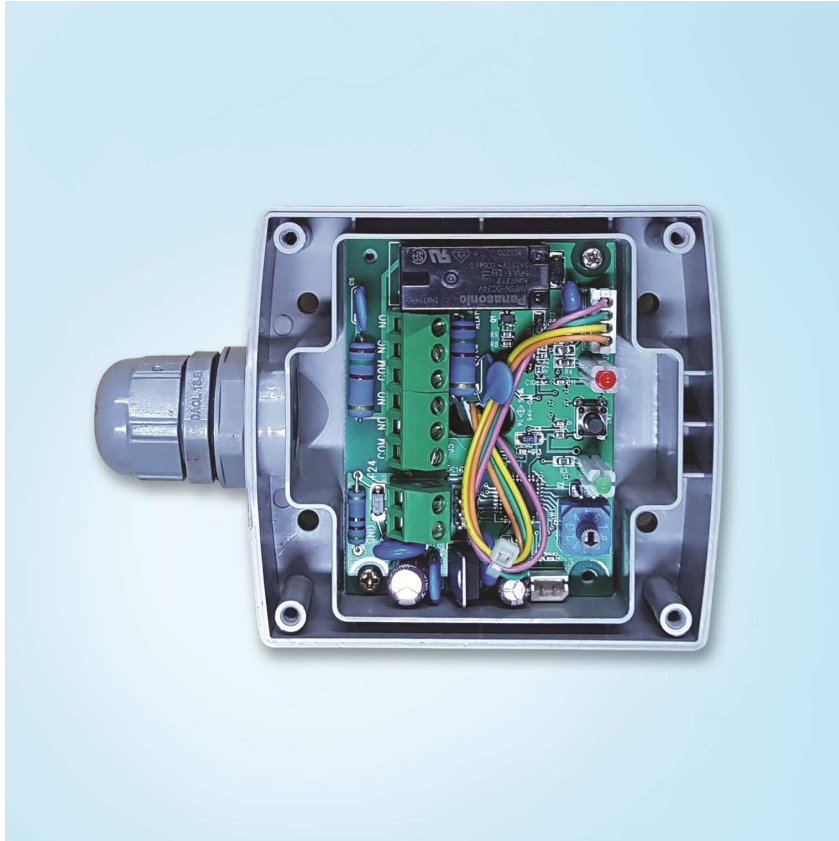


Figure 1 SD2200 MAIN-BOARD FRONT VIEW

1-4. Analog Relay Contact Output

Two industry standard SPDT relay contacts are available to monitor smoke. (Refer to figure 1 and Block Diagram)

1-5. Local LED Indication

There are two LED (Green & Red) available. The green LED illuminates while normal operation, and red LED illuminates while alarm smoke.



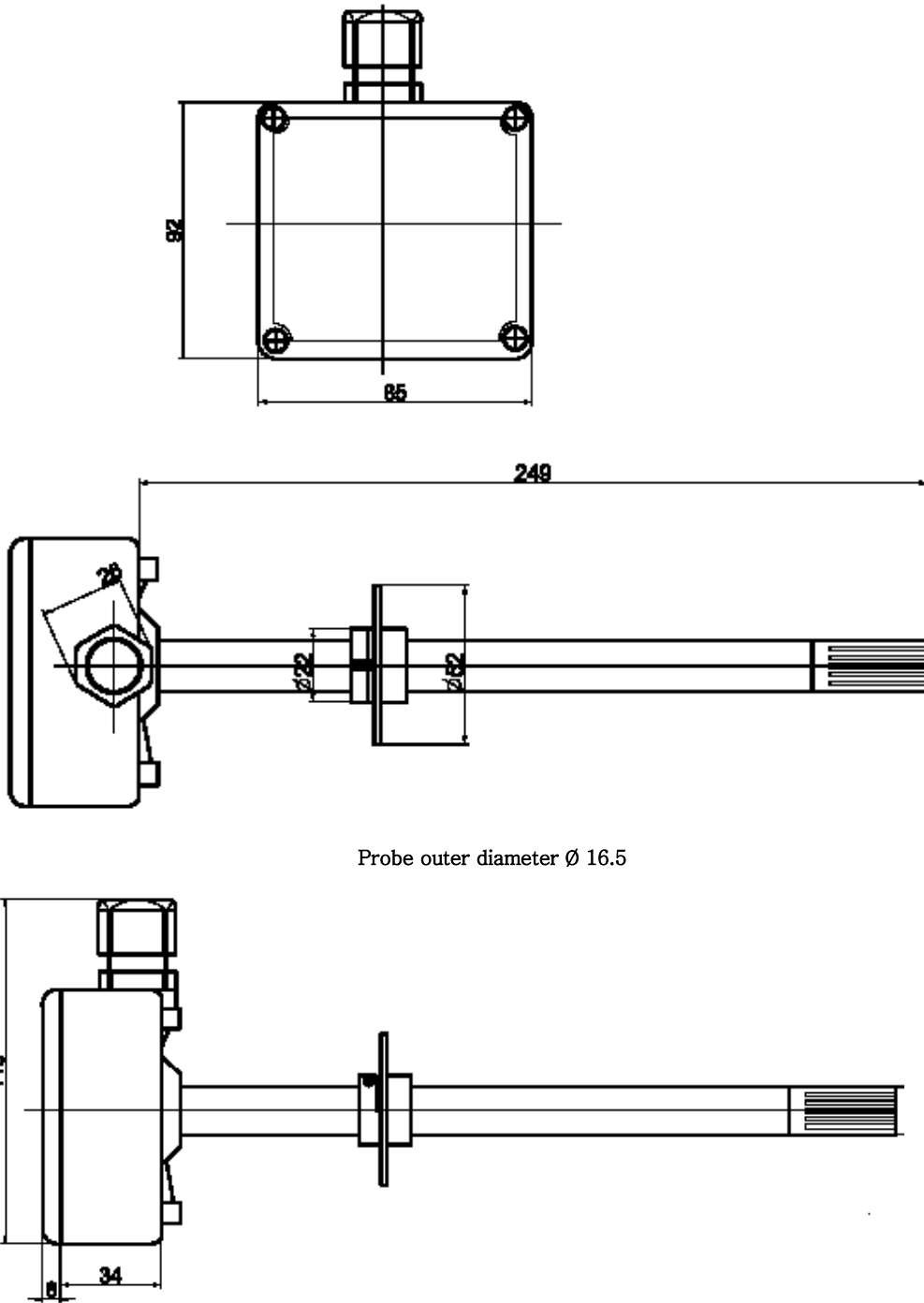
Front Cover

Normal Working

Alarm Working

Figure 2 LOCAL LED INDICATION

1-6. Dimension Detail



Probe outer diameter \varnothing 16.5

2. Installation

2-1 Scope

This section describes how to install the SD2200 Duct Smoke Detector and how to get started.

2-2 Insertion Style

2-2-1 Mounting - Insertion Style

The Model SD2200 is mounted through a 3/4-inch ABS Plastic Flange.

Installation procedure must be a combination of end user's best engineering practices, in compliance with local codes, and manufacturer's recommendations.

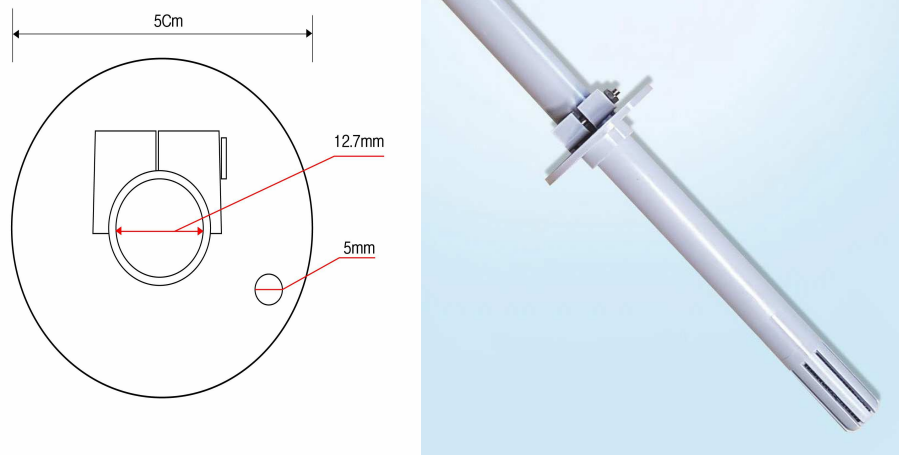


Figure 3 ABS Plastic Mounting Flange

2-2-2 Installation Depth

- a. Mount the 3/4-inch ABS Plastic flange and fix onto the outside duct with 3 screws.
- b. Insert probe into the duct along the proper depth.
- c. Tighten the probe using the holding screw located flange.
- d. Hook up the wiring for input power 24 VDC and 2 SPDT relay contacts.

2-2-4 Duct Smoke Detector Placement

Install the model SD2200 insertion style duct smoke detector so that it is close enough from smoke source in the pipe.

3. Start Up

3-1. Scope

This section describes the steps needed to get the SD2200 duct smoke detector.

3-2. Wiring

Warning ! All installation procedures must be performed with power off

All plumbing and electrical installation of duct smoke detector must be a combination of the end of end user's best engineering practices, in compliance with local codes, and the manufacturer's recommendation.

3-2-1 Wiring Installation

Wiring is accomplished by removing the 4 screws holding the cover of the enclosure to expose the electronic circuit boards. Bring customer supplied wires into the enclosure through the conduit access on the top of the enclosure. Cut the wires for a 4-inch service loop. Use standard copper wire, no larger than 16-gauge.

3-2-2 Power Input Wiring and Grounding

Bring the power supply wiring in through the top conduit hub. Connect power supply input terminal TB1 (+24V, -24V). Make sure to verify the power supply polarity. (see The following wiring diagram)

An external power supply must supply 24 VDC +/- 5%, at one amp minimum. The electronic board must be properly grounded with a quality earth ground to protect the electronics from the static discharges. It is recommended that 16 gauge, standard wire be used.

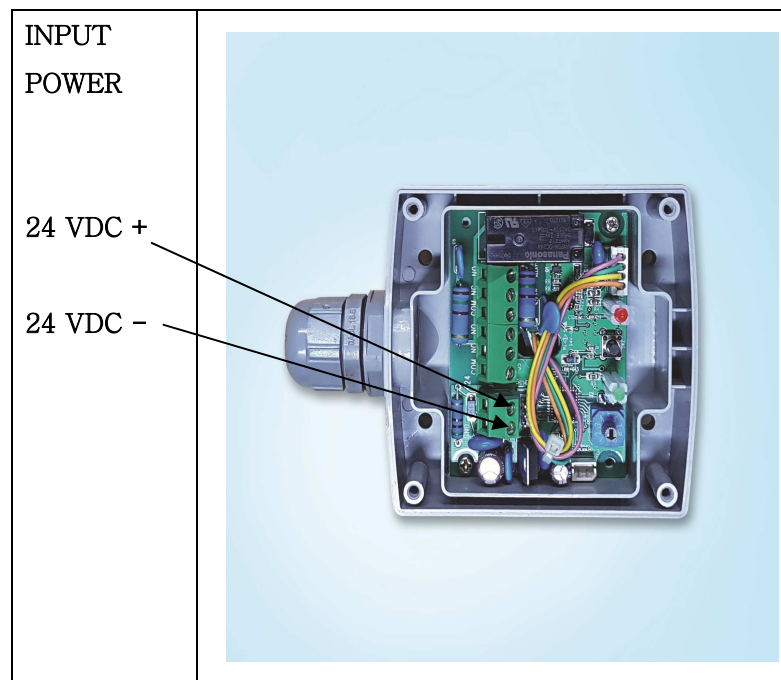


Figure 4 Power Input Wiring

3-2-3 Relay Contact 2 x SPDT Output Wiring

Bring the 2 x SPDT relay contact wiring in through the top conduit hub. Connect relay contact 2 x SPDT to TB2 (COM, NC, NO)

Signal Wires

Always use a separate shielded cable for each output signal, select the proper wire gauge.

The recommended wire gauge is 18 to 22 AWG.

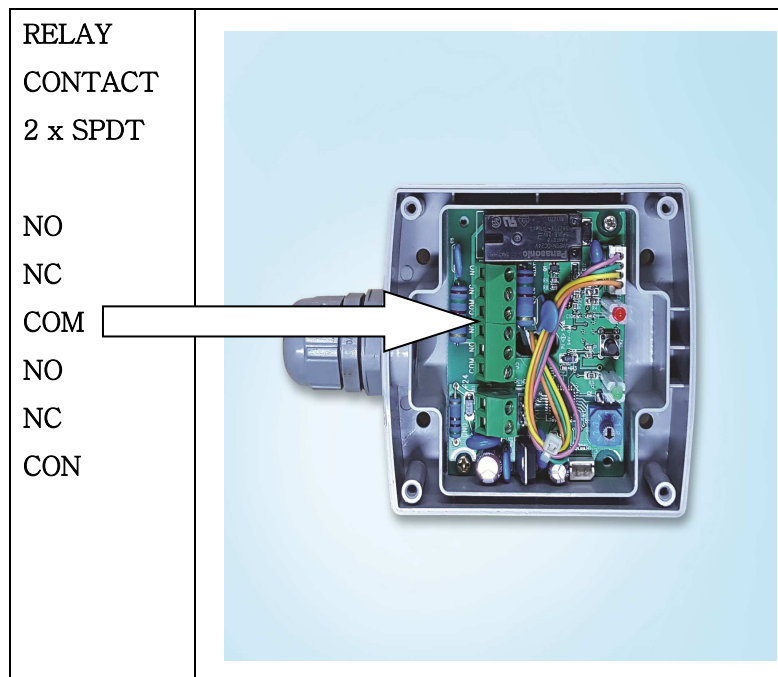


Figure 5 Relay Contact 2 x SPDT Output Wiring

3-2-4 Reset Switch Wiring

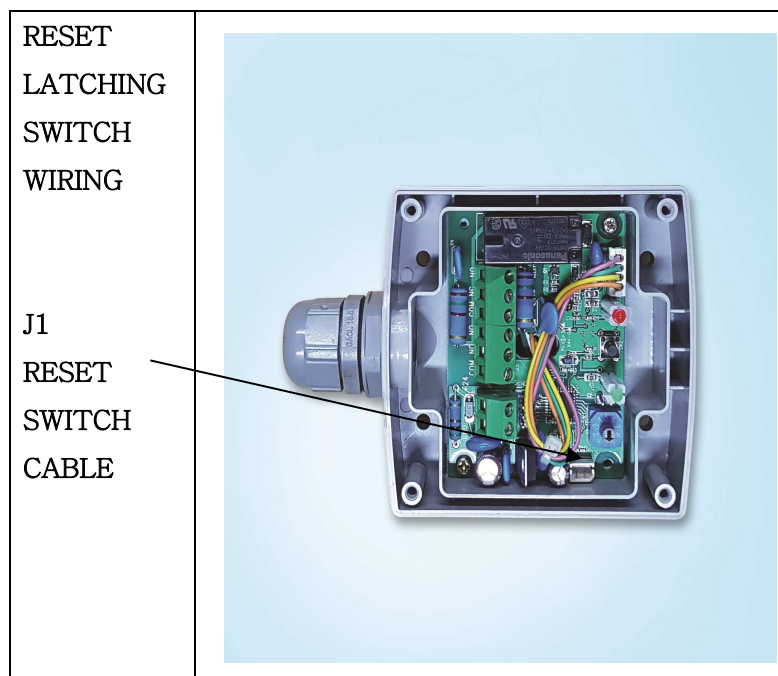


Figure 6 Reset Switch Wiring

Note : The reset switch cable is connected as factory default.
 Do not disconnect except for replacement.

3-2-5 Probe Sensor Wiring

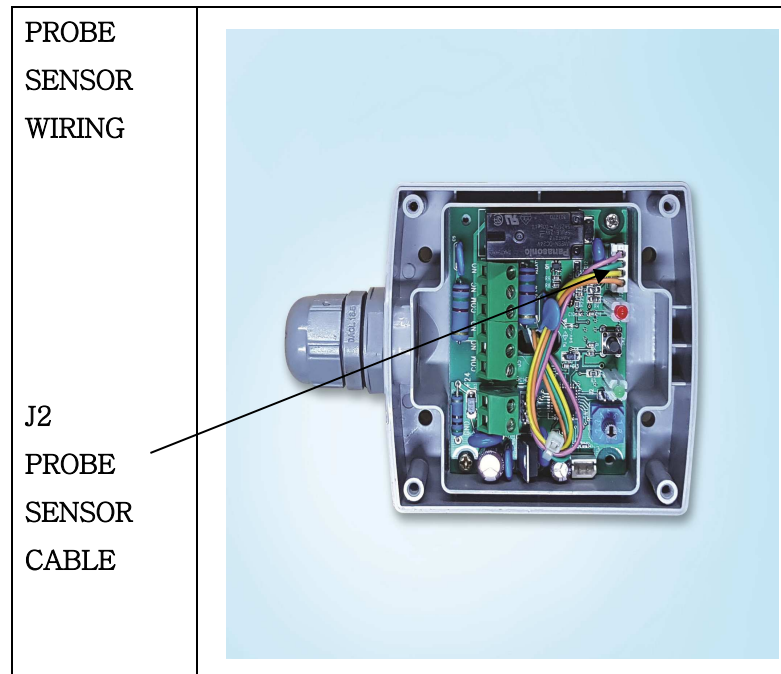


Figure 7 Probe Sensor assembly Wiring

Note : The probe sensor assembly cable is connected as factory default.
Do not disconnect except for replacement.

4. Preventative Maintenance

Warning ! : Before attempting any maintenance , take the necessary safety precautions before removing the probe from the duct (example : purge lines of toxic and/or explosive gas, depressurize, etc.)

Turn OFF input power before removing or installing a circuit board assembly from the enclosure.

4-1 Access to Electronics

After turning OFF the power, remove the 4 screws from the cover plate to expose the circuit boards. This should give to the TB1 connector.

Caution need to be exercised not to damage the cable connecting the LED display board to the main board.

4-2 Broken or Damaged Probe

If the sensor is broken or damaged, the probe and electronics must be returned to the factory. A new sensor will be installed and calibrated. Refer to Section 6.2, Return Procedure.

4-3 Re-calibration

To insure continuing high accuracy of your Model SD2200 Duct Smoke Detector, Mostek provides a full automatic calibration. Please follow the procedure below.

This procedure should be performed when probe sensor is replaced and/or new electronics is replaced.

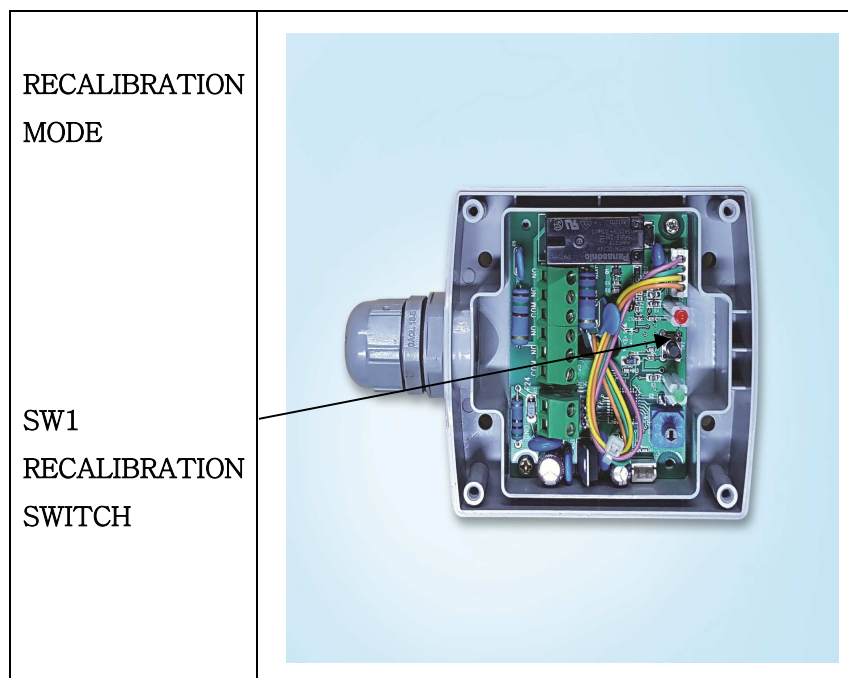


Figure 8 Recalibration Wiring

Note : This procedure should be done while power is normally on.

- 1) Press SW1 for 1-2 seconds.
- 2) Two LED (Green & Red) are blinking continuously for a while.
- 3) After self-calibration, the Green LED is on.
- 4) The Green LED ON is normal working condition.

4-4 Reset

When smoke is detected by SD2200 the Alarm LED (RED) will be illuminated and 2 SPDT Relay Contacts are in active.

Please note that RESETTING will not operate until the purging (without smoke) inside duct is complete.

When purging is complete inside duct, two LED (RED, GREEN) are illuminated simultaneously, and then Reset switch will work. (RED LED is off and Green LED is ON which is normal condition)



Figure 9 Reset Latching Status

4-5 Actual Smoke Testing

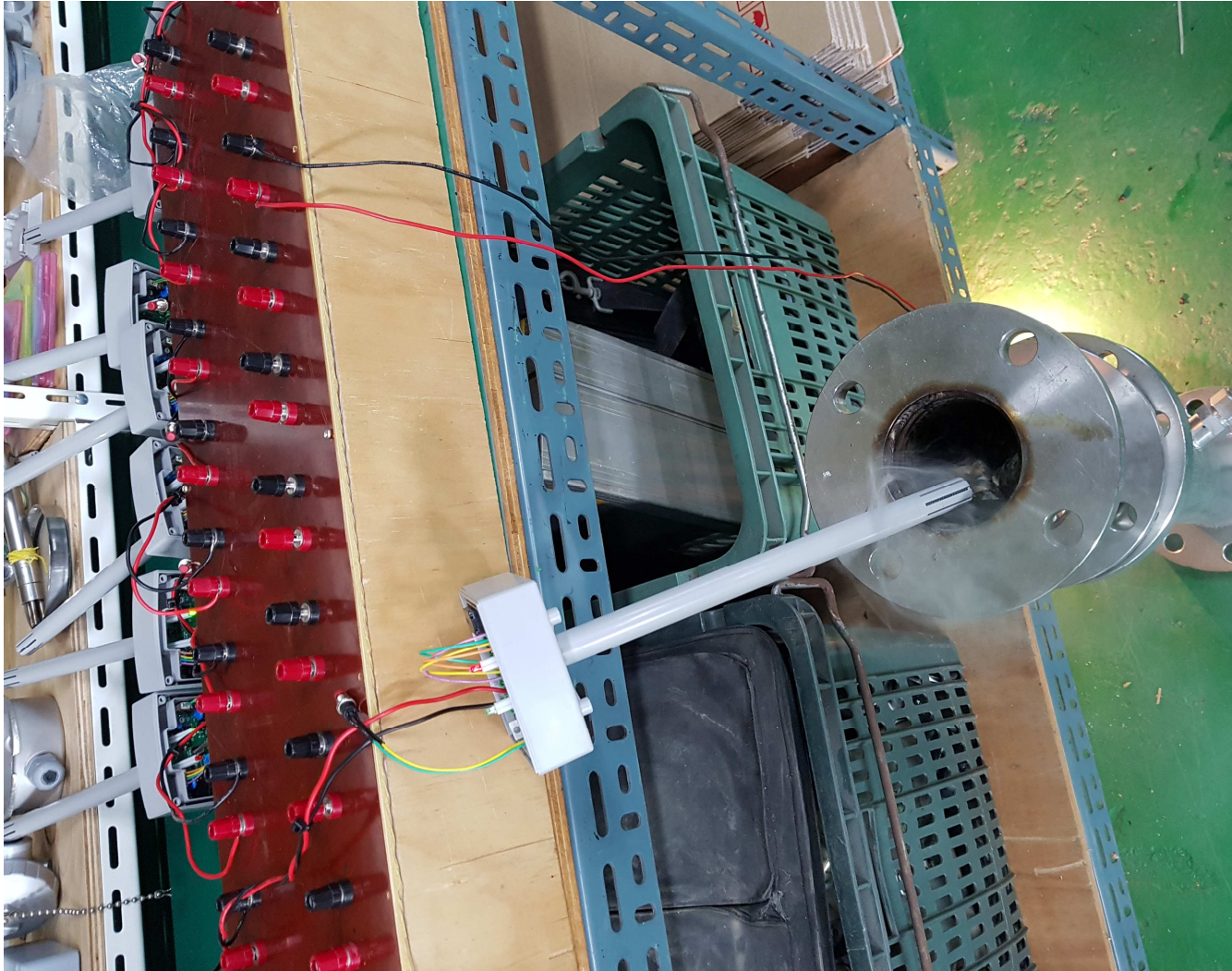


Figure 10 Actual Smoke Testing

Caution ! : The electronics, sensor and sensor interconnect wires supplied by Mostek are calibrated as a single precision duct smoke detector. Interchanging sensors or sensor wiring will impair the accuracy of the flow meter.

If you experience any problem with your Model SD2200 Duct Smoke Detector, call Mostek’s Customer Service Department, Technical Assistance at (82-31-982-3909)

Problem	Possible Cause	Action
Unit will not power-up	a) No power input b) Bad power supply	a) Turn power on b) Verify 24 VDC input power
Smoke measurement seems low	a) Sensor Probe not in active b) Sensor dirty	a) Check input power 24 VDC b) Clean sensor
Smoke measurement is erratic or fluctuating	a) Sensor dirty b) Sensor broken c) Probe not mounted securely d) Malfunction in smoke detector	a) Clean sensor b) Return flow meter to Mostek for repair. c) probe must be mounted securely without vibration d) Return flow meter to Mostek for repair.

The following is a summary listing of problems occasionally encountered with the SD2200 Duct Smoke Detector and it’s installation.

1. Inadequate power source

For the model that is powered by 24 VDC, a 24VDC+/-1 VDC, 5-watt power supply is recommended. If the voltage supplied is not within this range or if the power supply is not rated for 5-watt minimum, a variety of problems can occur including inaccurate flow readings, dim display LED and faulty functions. The input voltage must be within the range of 23 to 25 VDC as measured at the power input terminal of the detector electronics.

2. Improper wiring connections for power and/or 2xSPDT Relay Contact output signal.

The SD2200 requires a separate power source for the main board. Two wires supply 24 VDC power to the main board (not loop powered).

3. Improper 2 x SPDT wiring

The SD2200 duct smoke detector have the two SDDT relay contact output which is isolation configuration”. To create 2 x SPDT relay contacts do not receive any power loop from the PLC, DCS, DDC etc .

6.1 Replacements Parts

Front Panel Display Module

Probe & Sensor Assembly

Electronic Main Board

6.2 Return Procedure

The Mostek Customer Service Department can be reached at (81)-(31-982-3909). Please have the model and serial number available when you call. If it becomes necessary to return a Model SD2200 Duct Smoke Detector to Mostek, obtain a Return Authorization Number from Customer Service Department.

Unless specially instructed to do otherwise, the entire flow meter must be returned, including all electronics.

Please include information describing the difficulties experienced, purchase order number under which the equipment was purchased, and a contact name and phone number .

Be sure to include complete return shipping instructions. We can not deliver to post office boxes. Ship to the following address.

MOSTEK

166 BUN-GIL, GAHYUN-RI, TONGJIN-EUP, GIMPO-CITY

GYEONGGI-DO, 10030, KOREA

TELEPHONE : 031-982-3909

FAX : 031-982-6909

WEBSITE : WWW.MOSTEK.CO.KR

EMAIL : INFO@MOSTEK.CO.KR

Warranty

- (a) Mostek warrants that the products furnished under this agreement will be free from defects in material and workmanship for a periods of one year from the date of shipment. The customer shall provide notice of any defect to Mostek, within one week after the customer's discovery of such defect. The sole obligation and liability of Mostek , under this warranty shall be repair or replace, at its option, without cost to the customer, the defective product or part.
- (b) Upon request by Mostek, the product or part claimed to be defective shall immediately be returned at the customer's expense to Mostek. Replaced or repaired products or parts will be shipped to the customer at the expense of Mostek. Mostek shall have the right of final determination as to the existence and cause of defect.
- (c) There shall be no warranty or liability for any products or parts that have been subject to misuse, accident, negligence, failure of electric power or modification by the customer without the written approval by Mostek. Final determination of warranty eligibility shall be made by Mostek. If a warranty claim is considered invalid for any reason, the customer will be charged for service charge performed and expenses incurred by Mostek, in handling and shipping the returned unit.
- (d) The liability of Mostek shall be limited to replacing or repairing, at its option, any defective parts which are returned. Labor and related expenses incurred to install replacement pars are not covered by this warranty.
- (e) As to replacement parts supplied or repairs made during the original warranty period, the warranty period for the replacement or repaired part shall terminate with the termination of the warranty period of the original product or part.
- (f) The use of these products is under exclusive control of the purchaser and Mostek specially denies any responsibility for the calibration of units and/or accuracy of work performed or the safety of the system in which Mostek products is used. EXTERNAL SAFETY DEVICES MUST BE USED WITH THIS EQUIPMENT.
- (g) No warranty is made with respect to custom equipment or products produced to buyer's specifications except as specifically stated in writing by Mostek and contained in the agreement.
- (h) THE FOREGOING WARRANTY CONSTITUTES THE SOLE LIABILITY OF MOSTEK, AND THE CUSTOMER'S SOLE REMEDY WITH RESPECT TO THE PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, LIABILITIES, AND REMEDIES. EXCEPT AS THUS PROVIDED , MOSTEK, DISCLAIMS ALL WARANTIES, EXPRESS OR IMPLIED,INCLUDING ANY WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE.

In no case are products to be returned without first obtaining permission and a Return Material Authorization number from Mostek.

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