NORDEN®

INTELLIGENT ADDRESSABLE

OPTICAL SMOKE DETECTOR
INSTALLATION AND OPERATION MANUAL

Product Safety

To prevent severe injury and loss of life or property, read the instruction carefully before installing the detector to ensure proper and safe operation of the system.

European Union directive

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points.

For more information, please visit the website at www.recyclethis.info

EN54 Part 7 Compliance

NFA-T01SD Intelligent Addressable Optical Smoke Detector complies with the requirements of EN 54-7:2018.

EN54 ✓   EN54 Standard Conformity Information

LPCB
LOSS PREVENTION CERTIFICATION BOARD
EN54-7:2018
1330b/01

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NFA-T01SD
EN 54-7:2018

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1.Introduction

1.1.Overview

The NFA-T01SD Intelligent Addressable Optical Smoke Detector is well-suited for a wide range of applications, thanks to its excellent linear response to various smoke patterns. Manufactured to meet the sensitivity requirements of the European Standard EN 54 part 7, this unit features an aesthetically pleasing and unobtrusive design that complements modern building aesthetics. Additionally, it incorporates an intelligent processor with features such as an Algorithm map, inbuilt A/D converter, Drift compensation, and Self-Diagnosis and History log.

The Intelligent Addressable Optical Smoke Detector ensures secure and rapid communication through its onboard processor, allowing the detector to make autonomous decisions for greater automation. During a fire event, the integral microprocessor analyzes the signal based on factors like signal strength and rate of increase. It then cross-references these patterns with pre-programmed fire scenarios and smoke patterns, resulting in a faster and safer response. Once confirmed, the LED indicates the sensor status and simultaneously sends a communication signal to the control panel. The NFA-T01SD detector seamlessly integrates with the NFA-T04FP Intelligent Addressable Fire Alarm Control Panel and eliminating any addressable communication compatibility issues.

1.2.Feature and Benefits

- EN54-7 Compliance
- Using microprocessor technology with memory capacity up to 10 events
- Analogue sensing and digital addressing
- Provide real time algorithm to the control panel
- Smart linear drift compensation
- Onsite adjustable parameter
- 360 degree visual indicator
- Removable chamber against dust and small insect
- Ancillary remote indicator output
- Aesthetically pleasing design

1.3.Technical Specification

•	Listed	LPCB Certification
•	Compliance	EN54-7:2018
•	Input Voltage	24VDC [16V to 28V]
•	Current Consumption Standby	0.6mA, Alarm: 4mA
•	Protocol/Addressing	Norden, Value range from 1 to 254
•	Sensitivity	As per stipulated standard
•	Indicator	Single LED / 360 degree Visual
•	Material / Colour	ABS / White Glossy finishing
•	Dimension / Height	Diameter 99.7 mm / 57 mm
•	Weight	145g (with Base), 90g (without Base)
•	Operating Temperature	-10°C to +50°C
•	Humidity	0 to 95% Relative Humidity, Noncondensing

2.Installation

2.1.Installation Preparation

This detector must be installed, commissioned and maintained by a qualified or factory trained service personnel. The installation must be installed in compliance with all local codes having a jurisdiction in the area or BS 5839 Part 1 and EN54.

The Intelligent Addressable Optical Smoke Detector operate on the principle of infra-red light refracting off smoke particles entering the chambers. This makes detector more sensitive to smouldering fires such as modern fabric or furnishing. Optical detectors are more prone to false alarm from steam or dusty environment. For best sensing ability, avoid installing the smoke detector in these areas.

- In open air applications as the detectors require ceilings to direct the smoke from the plume by convection.
- On side walls, this will severely delay the response time of a detector and where ceiling heights exceed 10.5m.
- In Rooms where cooking will take place such kitchens, or similar areas where steam and condensation are present.
- Where exhaust fumes are present like car parks.
- Where smoke particles will not be produced by fire.
- Plant Rooms (unless full discussions regarding the room contents and status subject to a fire have been made between Client and Manufacturer), Boiler and Generator Rooms.

2.2.Installation and Wiring

1. Mount the NFA-T01NB Normal base on standard one [1] gang electrical back box. Do not over-tighten the screws otherwise the base will twist. Use M4 standard screws.
2. Connect the wire in terminal as shown in Figure two [2]. Verify the device number or other device parameters if desired using programming tool then stick on the label before attaching detector. The sticker labels are available on the control panel.
3. Attach the detector to the base, point the detector in the base by the mark-line and secure the detector in that position by rotating it clockwise, until it reaches the next mark line.
4. Do not remove the red plastic dust cover until the final handover is done.
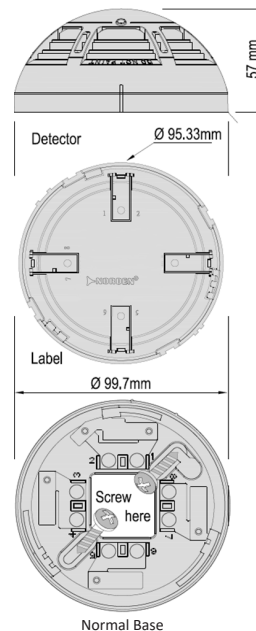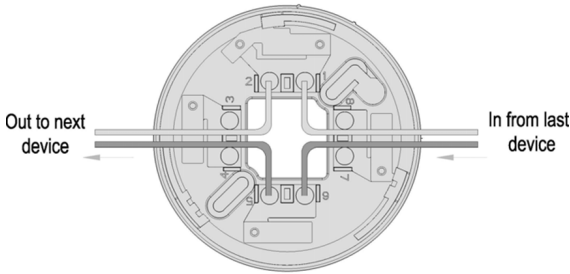5. The connecting line of remote indicator should be less than 30 meters.

Figure 1

Figure 2

Terminal Description

1	Signal In (+)
2	Signal Out (+)
3	Remote Indicator (+)
4	Remote Indicator (+)
5	Signal In (-)
6	Signal Out (-)
7	Remote Indicator (-)
8	Remote Indicator (-)

3. Detector Configuration

3.1. Preparation

The NFA-T01PT programming tool is used to configure smoke detectors soft address and parameter. This Programming tool is not included, must be purchased separately. The programming tool is packed with twin 1.5V AA battery and cable, ready for usage once received.

It is mandatory for the commissioning personnel to have programming tool in order to adjust the detector conferring to the site situation and environmental requirements.
Program a unique address number for each device according to the project layout before placing from the Terminal Base.

Warning: *Disconnect the loop connection whilst connecting to the programming tool.*

3.2. Write: Addressing

1. Connect the programming cable to 1 and 6 terminals (Figure 3). Press "**Power**" to switch on the unit.
2. Switch-on the programming tool, then press button "**Write**" or number "**2**" to enter Write Address mode (Figure 4).
3. Input the desire device address value from 1 to 254, and then press "**Write**" to save the new address (Figure 5).

   Note: If display "**Success**", means the entered address is confirmed. If display "**Fail**", means failure to program the address (Figure 6).

Figure 3

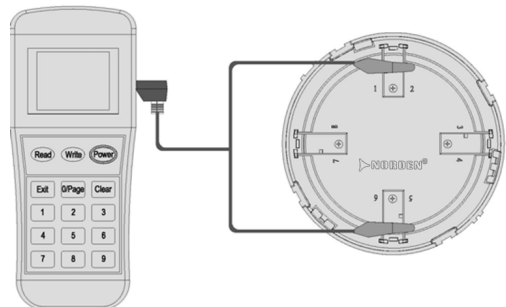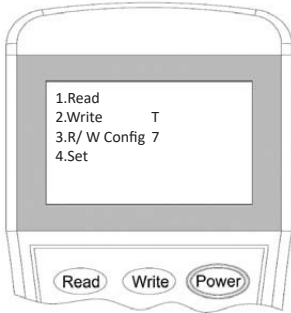|		
1.Read 2.Write T 3.R/ W Config 7 4.Set	Address: 001 Next Address: 002 Success	Address: 001 Fail
Figure 4	Figure 5	Figure 6

4. Press " **Exit**" key to go back Main Menu. Press " **Power**" key to switch-off the programming tool.

3.3.Set: LED On/Off

1. The LED indicator can be turn-off if desired, the sensing ability of the detector will not disrupt even the LED is off.
2. Attach the programming cable to 1 and 6 Terminals of detector. Press "**Power**" to switch-on the unit.
3. Switch-on the programming tool, then press button "**4**" to enter to Setting mode (Figure 7).
4. Input the "**1**" then press "**Write**" to change the setting (Figure 8) and LED will turn-off. To resume the default setting, press "**Clear**" and then press "**Write**".
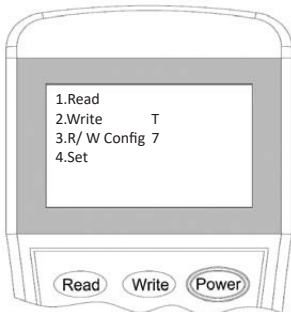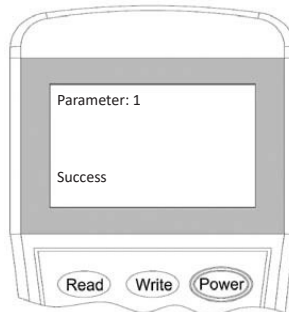

1.Read 2.Write T 3.R/ W Config 7 4.Set	Parameter: 1 Success	**Parameter Description** **0-** LED On (Default) **1-** LED Off
Figure 7	Figure 8	

5. Press "**Exit**" key to go back to the Main Menu. Press "**Power**" to switch off the programming tool.

3.4.Read Configuration

1. Attach the programming cable to 1 and 6 terminals of detector. Press "**Power**" to switch on the unit.
2. Switch-on the programming tool, then press button "**Read**" or "**1**" to enter to Read mode (Figure 9). The programming tool will display the configuration after few seconds. (Figure 10).
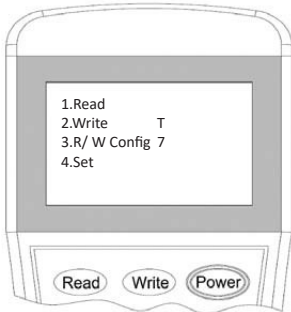

Figure 9   Figure 10

3. Press "**Exit**" key to go back to the Main Menu. Press "**Power**" to switch off the programming tool.

4.General Maintenance

1. Inform the suitable personnel before conducting the maintenance.
2. Disable the detector on the control panel to prevent false alarm.
3. Do not attempt to adjust or modify the detector, it may affect the ability of the detector to respond to a fire condition and will void the manufacturer's warranty.
4. Use a damp cloth to clean the detector. Do not use cleaning chemicals that may leave residue on the electronic parts and smoke chamber.
5. Notify again proper personnel after conducting the maintenance and make sure to enable the detector and confirm if it is up and running.
6. Perform the maintenance semi-annually or quarterly depending on the site conditions.

4.1.Cleaning

1. Remove the detector cover by snooping away the four sides tabs using a flat screwdriver and then pulling the cover from the base. (Figure 11).
2. Remove the protective screen by pulling it straight out. (Figure 12).
3. Carefully vacuum the chamber and screen. If there is stain, wash with running water and ensure it is completely dry.
4. Position the chamber and screen by aligning three tiny holes over the sensing component. (Figure 12).
5. Align the LED tube and tabs and gently push the cover until it locks into place. (Figure 12).
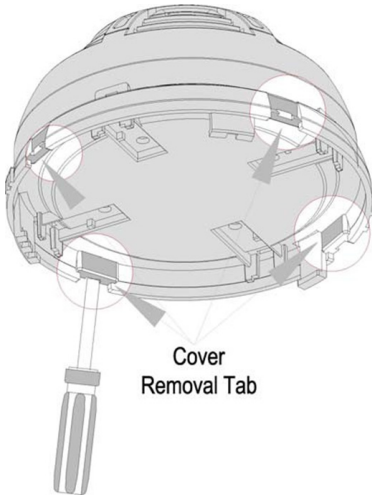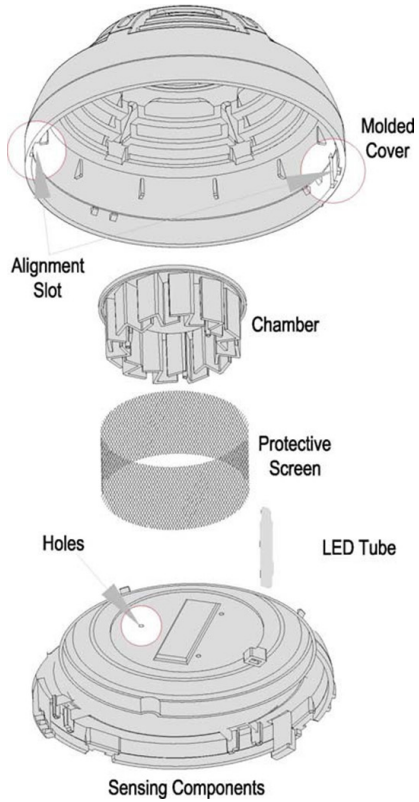6. Re-install and test the detector.

Figure 11

Figure 12

5.Troubleshooting Guide

What you notice	What it means	What to do
Address not enrolling	The wiring is loose The address is duplicate	Conduct maintenance Re-Commission the device
Unable to commission	The damage is in the electronic circuit	Replace the detector
Keep Indicating Fire signal	The detector chamber is dirty	Clean the detector

Appendix 1

Limitation of Intelligent Addressable Optical Smoke Detector

The smoke detector is designed for triggering and initiating emergency fire equipment, however it only functions when matching with other equipment's. The installation of this smoke detector must conform to electrical codes and country standards.

All kinds of smoke detectors have restrictions, since fire develops in various ways and are often unpredictable in their progression, it is unforeseen able which type of detector will provide the earliest warning. No type of smoke detector can sense every form of fire all the time. Detectors may not warn you about fire caused by insufficient safety measures, violent explosions, leaking gas, improper storage of flammable materials like diluents and other safety hazards, arson or children playing with fire. The alarm of a smoke detector used in high velocity environment will be delayed due to dilution of smoke by frequent and fast airflow. What's more, the smoke detector must be frequently maintained for it is exposed to more dust contamination.

The smoke detector cannot last forever. To keep the detector working in good condition, please maintain the equipment continuously according to recommendations from manufacturers and relative nation codes and laws. Take specific maintenance measures on the basis of different environments.

The smoke detector contains electronic parts. Even though it is made to last for a long period of time, any of these parts could fail at any time. Therefore, test your smoke detector at least every half-year according to national codes or laws. Any smoke detectors, fire alarm devices or any other components of the system must be repaired and/or replaced immediately if they fail.