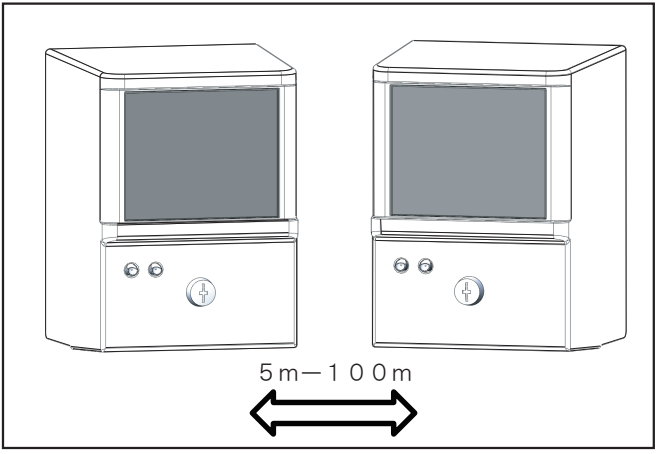
TN51541e-1

OPERATING MANUAL

Projected Beam Type Smoke Detector

Models FDGJ103/203-D-X/XHT



CAUTION

Be sure to read this manual before use of this product. In addition, carefully read and understand all the warning/cautions/notes in this manual to use/operate this product.

- Please keep this operating manual in place so that it may be available at all the times.
- Be sure to conduct the regular inspection and maintenance for this product.

NOHMI®

INTRODUCTION

Thank you for purchasing our projected beam type smoke detector. This detector has passed various tests in accordance with the standards of the Japanese Fire Service Law and is approved as the national type approval product.
Be sure to read this manual carefully before use of this product to properly use/operate this product in case of fire. Please keep this operating manual in place so that it may be available at all the times.

CONTENTS

1. FEATURES OF THIS PRODUCT

- Sensitivity Compensation Function to Keep Stable Function
  : The detector sensitivity is automatically compensated and adjusted even in case that the level of the light received by the light receiver is decreased due to contamination on the detector lens surface.
- Light Axis Adjustment without Voltmeter (Tester)
  : Light output can be checked by means of the light emitting pattern of the indicator lamps, without using a voltmeter.
- Easy Installation
  : This product can be installed as an unit with the assembled state by changing the assembling Combination of the base, the cover and the body depending on the installation site conditions.

2. BEFORE USE

- To use this product safely, this operating manual contains various cautions. Before using this product, understand the following caution markings together with the statements and read this manual. When using this product, be sure to bring this manual at all times.

⚠ WARNING

Mishandling may result in the user exposed to serious injuries or damage. Failure to observe these guidelines may also cause serious damages to a part of the fire protection function of the product.

⚠ CAUTION

Mishandling may result in the user injuries. Failure to observe these guidelines may also have an adverse effect on the fire protection function of the product. It is important to observe these guidelines at all times in order to effectively utilize the fire protection functions over long-term use.

■ CAUTION Markings

	This mark shows a matter related to Danger, Warning or Caution.
	This mark shows the prohibition of actions.
	This mark shows an action to be taken or the instructions on actions.

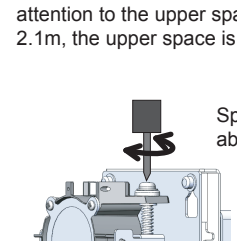
3. CAUTIONS FOR USE

As this product is not of outdoor type, DO NOT install it in any of the following places. (If installed, it may cause a malfunction or abnormal operation.)

⚠ WARNING

Prohibition

- Where it is directly exposed to rain or water.
- Where smoke or mist is usually generated.
- Where the light receiver is subjected to direct sunlight or strong illumination light.
- Where the ambient temperature is lowered below -10°C or exceeds 50°C.
- Where the mounting position of the detector is subjected to vibration or strain. (Install the detector on a rigid position such as a support/pillar of the main structure.)
- Where it is difficult to perform maintenance and inspection.(Space of 50cm in vertical and horizontal directions (50cm each in left/right/up/down directions) is required for surrounding of the detector. In case that the ceiling height is 2.5 m or lower, pay attention to the upper space. Example: If the ceiling height is 2.1m, the upper space is to be 42cm.)



Space for a screwdriver is required in the above of the detector.

Installation Standard :
The detector shall be installed so that the height of the light axis exceeds 80% of the ceiling

- Where the light axis (between the light transmitter and receiver) may be interrupted due to transportation of objects or a transparent obstacle such as glass.
- In a place where a ball or a bar is usually used, such as gymnasium, apply the protective cover (Model FZP014).

4. CAUTIONS ON INSTALLATION WORK AND OPERATION

When installing and operating this product, pay attention to the following matters.

⚠ WARNING

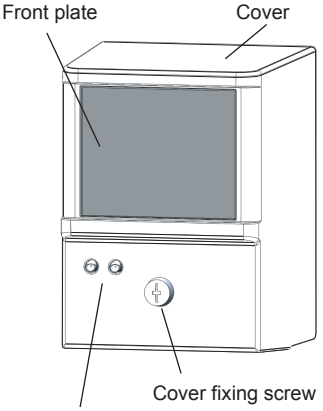
INSTRUC-TIONS	● Be sure to arrange a secure scaffold. ● Make sure that nobody is located under the worker installing the detector. ● Turn OFF the power supply of the fire control panel and remove the battery provided in the panel as the auxiliary power. (Excl. the case for light axis adjustment after installation work) ● Ensure that this product is not damaged due to drop, impact or handling of a tool.
Prohi-bition	● DO NOT touch the front plate nor the lens. (If touched, the front plate or the lens may contaminated, causing an adverse effect on the detector function.) ● The Models FDGJ103/203-D-XHT are equipped with a heater. As the heater becomes hot, NEVER touch. If touched, you may get burnt. (Position of heater ⇒ Refer to **6. NAME OF EACH PART** on Page 6.)
	● NEVER apply any vibration or impact/shock to the product, disassemble/modify the product, or insert any foreign material into the product, as these actions may cause a fault in the product. ● As this product is a component device of the automatic fire alarm system stipulated in the Japanese Fire Service Law, do not use it for any other applications.

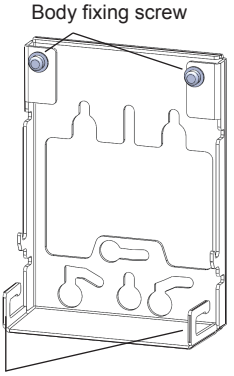
5. ITEMS REQUIRED FOR INSTALLATION

To install this product, the following items are used.
Arrange them according to the necessity.

No.	DESCRIPTION	REMARK
1	Phillips type screwdriver	For M4 and M5 screws
2	Test filter set (Model FXG012C)	———
3	Battery connector for detector test	If the auxiliary battery (for test) (24V, with connector) is used, arrange it.
4	Auxiliary battery (for test) (24V, with connector)	The light axis of this detector can be adjusted with the auxiliary power supply (Battery, 0.225AH to 3.5AH).
5	Solderless tool and terminals (with heater type)	In case of the detector with heater, connection of the heater power is made with solderless method. (AWG22(0.3mm^2) and AWG20 (0.5mm^2) wires one each)

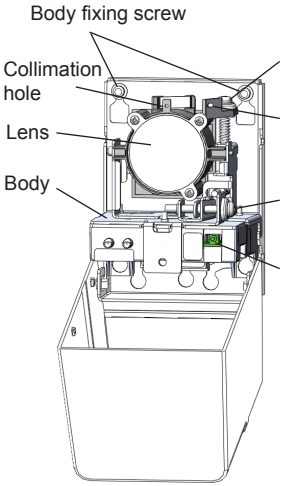
6. NAME OF EACH PART

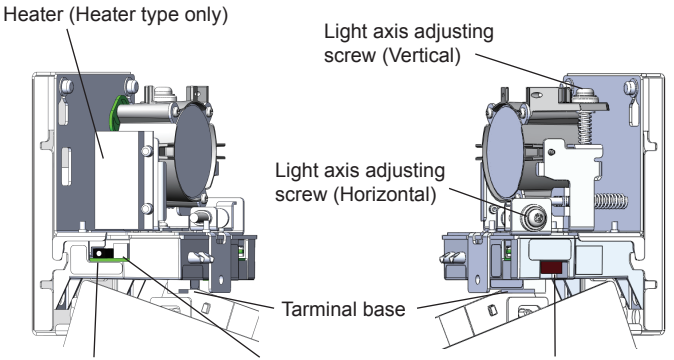




Light receiver
Left :Fire alarm lamp
(Red)
Right:Trouble lamp
(Yellow)

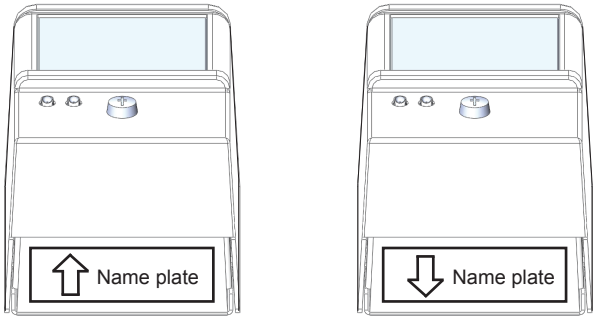
Light transmitter
Left :Power lamp
(Green)
Right:Test lamp
(Red)





Left side view

Right side view



Light transmitter

Light receiver

Bottom view

7. WORK FLOW

Install this product according to the following work flow.
We recommend to install the light receiver first.

Light Receiver

※Fine adjustment is not required for the light receiver.

Light Transmitter

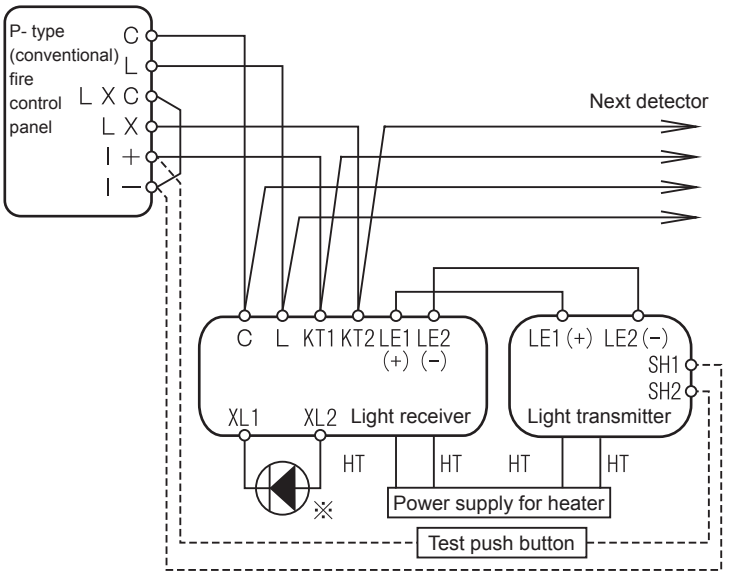
※Setting is not required for the light transmitter.

8. CONNECTION WITH FIRE CONTROL PANEL

- Line resistance between the fire control panel and the light receiver of the detector (C-L, KT1-KT2) shall be 50Ω or less.
- Line resistance between the light transmitter and the light receiver of the detector (LE1, LE2) shall be 30Ω or less.

Connection shall be made as shown below.(Applicable wire for the terminal base of the detector is a single line, φ0.4 to φ1.6.)

As the synchronization lines(LE1(+), LE2(-))has the **polarities**, pay attention to their connection. As for connection of the heater, refer to
10. CONNECTION OF HEATER (HEATER TYPE ONLY) on Page11.



※ As the remote indicator lamp FLL061 and the signal transmission adaptors FRL014,pay attention to the polarities of the terminals XL1 and XL2.

9. INSTALLATION/CONNECTION/SETTING

When installing and operating this product, pay attention to the following matters.

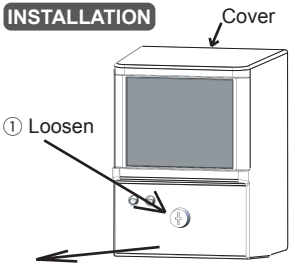
WARNING

INSTRUC-TIONS

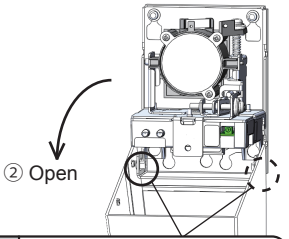
- Be sure to arrange a secure scaffold.If not, an installation worker may fall down the scaffold and be injured.
- Mount the light transmitter and receiver of the detector on the rigid wall and the like. If installed on an unstable location, the detector may not perform normal monitoring.

As fine adjustment is to be performed on the light transmitter, install the light receiver and adjust the light axis of the light receiver first, and then, install the light transmitter and adjust the light axis of the light transmitter.

INSTALLATION

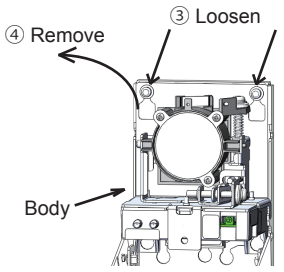


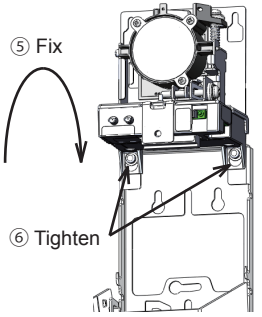
If loosen the cover fixing screw, the cover moves toward you.



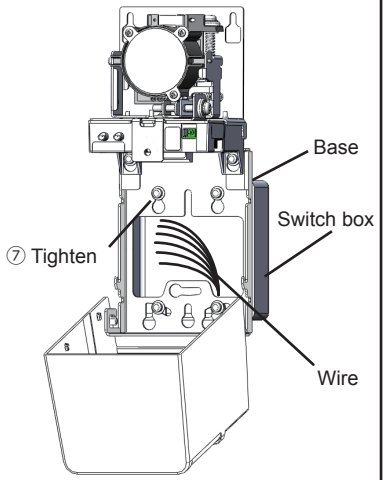
CAUTION

Make sure that the cover is secured to the cover hooks on both sides of the detector base. If not, the cover may drop.



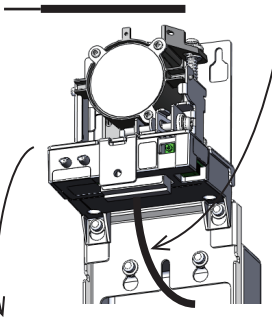


Securely fix the detector to the switch box with four M4 screws



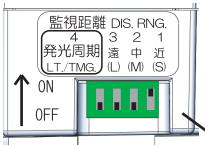
CONNECTION

⑧ Insert the wire into the terminal base. Refer to 8. CONNECTION WITH FIRE CONTROL PANEL on Page 8.
As the terminals **LE1(+)** and **LE2(-)** have the polarities, pay attention when connecting the wire.
Applicable wire : φ0.4 to 1.6mm
Strip gage : 10mm

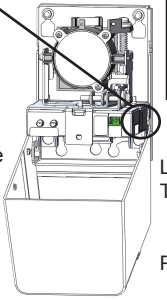


⑨Remove the body and mount it again to the original position and tighten the two screws.
As for connection of the heater, refer to 10. CONNECTION OF HEATER (HEATER TYPE ONLY) on Page 11.
After installing the light transmitter, proceed to 11. LIGHT AXIS ADJUSTMENT METHOD on Page 12.

SETTING



In case of the light receiver, set the monitoring range and the light emission cycle.



⑩ Select
S:(ON)Short range (5-20m)
M:(ON)Medium range (20-40m)
L:(ON)Long range (40-100m)

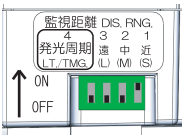
LT. / TMG.:
The light emission cycle:
(ON) 2.8 second / (OFF) 3.0 second

Please refer to next page for details.

Setting of Monitoring Range and Light Emission Cycle

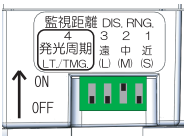
S:(ON) Short range (5-20m)

1:(ON)



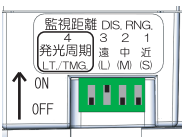
M:(ON) Medium range (20-40m)

2:(ON)



L:(ON) Long range (40-100m)

3:(ON)



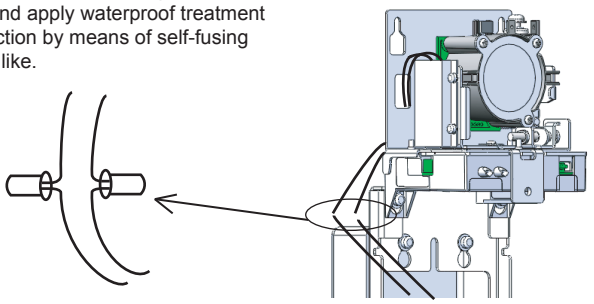
INSTRUC-TIONS

To prevent interference, set the light emission cycle No.4 of the adjoining detectors to ON and OFF alternately.

10. CONNECTION OF HEATER (HEATER TYPE ONLY)

To install the heater type (Models FDGJ103-D-XHT and 203-D-XHT), connect the heater with the power supply for heater.

Connect the heater with the power lines of heater by means of insulated open-end connectors and apply waterproof treatment to the connection by means of self-fusing tape and the like.



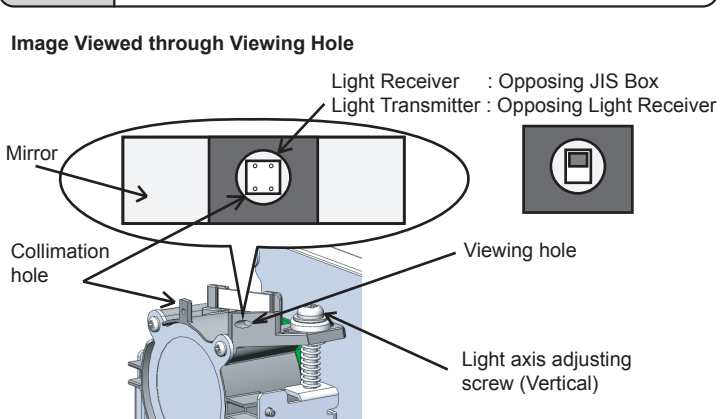
11. LIGHT AXIS ADJUSTING METHOD

11.1. Coarse Adjustment with Collimation Hole (Common to Light Transmitter and Receiver)

View the mirror through the viewing hole, and turn the light axis adjusting screw(s) (vertically and/or horizontally) so that opposing light receiver (viewed from the transmitter) and the opposing JIS box (viewed from the receiver) may be located in the viewing hole.

HIGH TEMP.	When the heater (for preventing dew condensation) is energized, it becomes hot (about 60°C). Therefore, pay attention not to touch it during the installation work. If touched, it may cause you to be burnt.

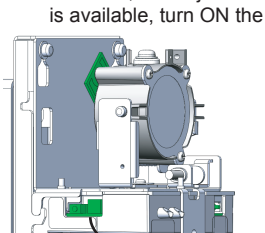
Image Viewed through Viewing Hole



INSTRUC-TIONS	After adjusting the light axis, set the cover again and tighten the screw. In case of the light transmitter, proceed to the installation of the light transmitter (Paragraph 9 on Page 9) and in case of the light transmitter, proceed to Para.11.2 on the next page.

11.2. Power Energization (Recommend to energize to Light Transmitter)

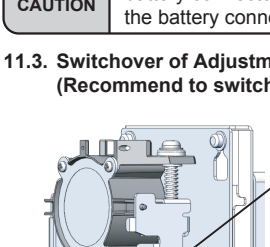
Connect the battery connector for detector test to the connector on the left side of the detector (when viewed from the front of the detector), and next, connect the battery connector for detector test to the auxiliary battery. In this case, the Adjustment Mode alone is effective. (In case that no battery is available, turn ON the power of the fire control panel.)



At a lapse of about 10 seconds after power ON, the detector
becomes operational.(In case that the power is fed through the battery connector of the light receiver, the green LED of the receiver lights every 3 seconds. When the power is fed to the light transmitter, the green LED of the receiver does not light.

INSTRUC-TIONS	The power can be supplied through the battery connector of the light transmitter or light receiver or the terminals C and L of the light receiver. To avoid a malfunction, ensure that the power is supplied **via one route.**
CAUTION	No adjustment can be made when the **Fire Alarm Lamp on the light receiver is lighting.** In case that the power is supplied through the battery connector of the light receiver, pull out the battery connector and wait for about 15 seconds. Then, connect the battery connector again.

11.3. Switchover of Adjustment Mode
(Recommend to switch over Adjustment Mode on Light Transmitter)

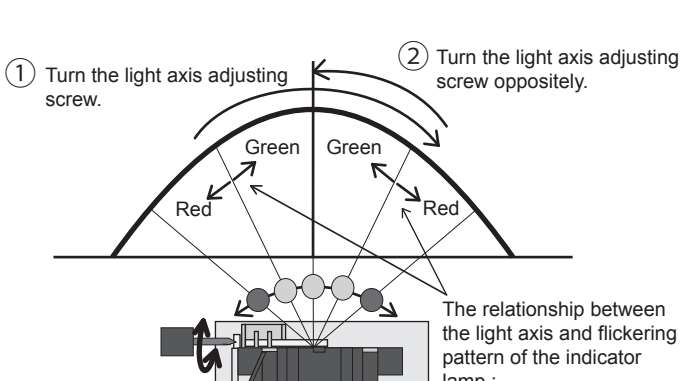


Stand at a position **so that you may not interrupt the light axis** (You can see the detector as shown on the left figure.).
Press MONITOR/ADJUST. Switch for one second and then, release the switch, and the indicator lamps emit lights as follows ;
※In case of the **light receiver,** operate the **MONITOR/ADJUST. Switch** in the same way.
(Light Transmitter : Green and red LEDs light at the same time and then, flicker alternately.)(Light Receiver : Yellow LED flickers every one sec.)**Wait (about 4 sec.) until alternate flickering of the indicator lamps is finished.**

Image of Fine Adjustment of Light Trnsmitter

Image of the Paragraphs 11.4 and 11.5 on Page 15 and Paragraph 12 on Page 17 is shown below.

The relationship between the light emission pattern and output of the light transmitter in case of the light axis adjustment is as follows.



To ensure stable monitoring of the detector for long period, set the light output to the peak as possible as you can according to the following steps ① → ② (Allowance for imperfect alignment of light axis generated after installation).

①Turn the Light Axis Adjusting Screw until green flickering of the indicator lamp (Power Lamp) of the light transmitter becomes red on the left and right side ends. Then, set the light axis to the center within the green flickering range.

②Adjust the light axis in the vertical direction in the same manner as stated in the above ①

11.4. Fine Adjustment of Light Transmitter (in Horizontal Direction)

Turn the Light Axis Adjusting Screw (Horizontal), and the flickering pattern of the green indicator lamp changes according to the condition of the received light output.

CAUTION	DO NOT use a motor-driven screwdriver. If used, it may cause the screw to be damaged.

Normally, the indicator lamp flickers in green first. Turn the screw clockwise or counterclockwise to flicker it in red. Change flickering of the lamp in the order of "red→green→red" and check the range of green flickering and align the light axis to the center of it.

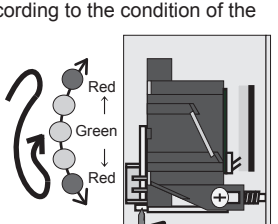


Image of light emission pattern in Horizontal direction (Viewed from the top.)

Make the fine adjustment of the light axis by means of the Light Axis Adjusting Screw so that the indicator lamp (Power Lamp) of the light transmitter flickers only in green.

⇒ Refer to Para.12 LIGHT AXIS ADJUSTMENT METHOD (FLICKERRING PATERN)

11.5 Fine Adjustment of Light Transmitter (in Vertical Direction)

Adjust the light axis in the vertical direction in the same manner as described in the above 11.4.

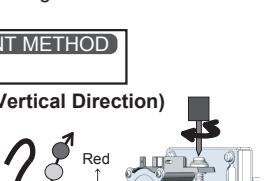


Image of light emission pattern in Vertical direction (Viewed from the side.)

11.6 Switchover of Monitoring Mode

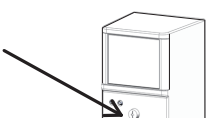
If the green indicator lamp flickers after adjusting the light axis in the vertical and horizontal directions, press the MONITOR/ADJUST. Switch for two seconds or over and then,release it. (Both the green and red indicator lamps light at the same time.)

After green flickering of the indicator lamp goes out, pull out the battery connector for detector test. In case that the power is fed through the terminals C and L, it is not necessary to cut off the power supply of the fire control panel.

INSTRUC-TIONS	DO NOT interrupt the light axis during the switchover of the Adjustment and Monitoring Modes.

11.7. Mounting of Cover (Completion of Adjustment)

Close the cover and tighten the screw. If tightened, the cover, is fixed to the detector body.



INSTRUC-TIONS	In this case, NEVER touch the front plate (black) as the light output may lower due to contamination of the front plate.
	In case that the power is fed from the fire control panel, be sure to close the cover **within one minute after green flickering of the indicator lamp goes out.**(If the cover is closed after a lapse of more than one minute, the detector may fail to monitor fire properly.

11.8. List of Flickering Patterns

	Indicator Lamp	Flickering Pattern	Status/Operation
①	Red		Initial stage of adjustment :Turn the Light Axis Adjusting Screw clockwise or counterclockwise.
②	Red (quick flickering)		Insufficient output of received light :Turn the Light Axis Adjusting Screw in the reverse direction of the above ①.
③	Green		Sufficient monitoring output :Set the light axis in the center of this range (In case that the indicator lamp does not flickers quickly.).
④	Green (quick flickering)		Increase in output of received light : Set the light axis in the center of this range.

INSTRUC-TIONS	If the status of the indicator lamp (**② RED, quick flickering) in the above table** does not change, chek the setting of monitoring range of the light receiver and press the MONITOR/ADJUST. Switch.

In case of Trouble	Green/Red (simultane-ous flickering)		Check for the request of switch operation (output saturation and the like) and status of light receiver/ transmitter, and press the MONITOR/ ADJUST. Switch.

12. LIGHT AXIS ADJUSTING METHOD (FLICKERING PATTERN)

Flow of Fine Adjustment

Operation and flickering pattern of the indicator lamps on the light transmitter during light axis adjustment are as shown in table below.

	Adjustment	Flickering Pattern of Indicator Lamps on Light Transmitter
1	Press the MONITOR/ADJUST. Switch for one second and then, release it.	Green and red indicator lamps flicker at the same time.(one time)
2	Wait for about four seconds, without interrupting the light axis by your hand or body and the like.	Green and red indicator lamps flicker alternately.
3	Then, the green indicator lamp alone starts flickering. As it means that you are ready for light axis adjustment, perform the steps 4 to 6 below in every four directions (UP/DOWN/LEFT/RIGHT) respectively to align the light axis to the center. (If the light axis is interrupted by your hand or body and the like, the red indicator starts flickering. In this case, repeat the same operation from the above step 1 again.)	Green indicator lamp starts flickering.
4	Turn the Light Axis Adjusting Screw clockwise to the point that the green indicator lamp stops flickering and the red one starts flickering.	Green indicator lamp flickers. ↓ Red indicator lamp flickers.

	Adjustment	Flickering Pattern of Indicator Lamps on Light Transmitter
5	Turn the Light Axis Adjusting Screw counterclockwise to the point that the red indicator lamp stops flickering and the green one starts flickering and next, the green indicator lamp stops flickering and the red one starts flickering again.	Red indicator lamp flickers. ↓ Green indicator lamp flickers. ↓ Red indicator lamp flickers. 
6	Set the light axis to the center of green flickering range. (Turn the screw clockwise by the half volume turned counterclockwise at the above step 5.)	Red indicator lamp flickers. ↓ Green indi cator lamp flickers. 
Supplement	When the Light Axis Adjusting Screw is turned, flickering of the green indicator lamp may turn into quick flickering. In this case, set the light axis to the center of green quick flickering range (Turning volume of the screw can be reduced.)	Green indicator lamp flickers. ↓ Green indicator lamp flickers quickly. 
7	Press the MONITOR/ADJUST. Switch for 2 seconds, and release it, and the green and the green and red indicator lamps flicker at he same time. Then, the green lamp alone flickering and finally it goes out. After the green indicator lamp goes out, mount the cover.	Green indicator lamp flickers. ↓ Green and red indicator lamps flicker at the same time. ↓ Green indicator lamp flickers. ↓ Green indicator lamp goes out. 

13. TROUBLESHOOTING

13.1. Status of Detector and Indicator Lamps

Status of Detector	Indicator Lamps	
	Light Receiver	Light Transmitter
In normal monitoring condition	Extinguished	Green flickering
In alarming condition	Red lighting	Extinguished
In trouble condition	Yellow flickering	Green flickering
In open fault of synchronization line (LE1, LE2)	Yellow flickering	Extinguished
During remote test	Red lighting	Green and red

※The indicator lamps flicker at the light emission cycle (every 3 seconds).

13.2. In case of Trouble Lamp Flickering

When the detector is in any of the status indicated In the table on Page 19, the detector sends a trouble signal to the fire control panel (In the Adjustment Mode, the signal is not sent.) and the Trouble Lamp (yellow) of the light receiver flickers.

In this case, take an appropriate action.

⚠ CAUTION

INSTRUC-TIONS

In case that the Trouble Lamp flickers, take any of the actions in the table below.
As the trouble signal is not reset even if the cause of the trouble is eliminated, perform the reset operation on the fire control panel.
If the trouble signal is not reset, the detector CAN NOT perform the normal fire monitoring.

Flickering Times per Light Emission Cycle (Every 3 seconds)	Status of Detector	Actions
One time	In Adjustment Mode	Press the MONITOR/ADJUST. Switch, and the detector is turned into the MONITOR Mode.
Two times	Interruption of light axis or line open in light transmitter	Remove an obstacle which interrupts the light axis. If no obstacle is found, measure the voltage across the terminals LE1 (+) and LE2(-) to check and see if the transmitter is free from line open. Normal voltage range : 6 to 8V
Three times	Insufficient output of received light	Take the following actions and check the detector status in the following order. ① Cleaning of cover and front plate (See Para.14.2 on Page 22.) ② Cleaning of lens surface in the cover (See Para.14.2 on Page 22.) ③ Adjustment of light axis (See Para.11 on Page 12 to Para.12 on Page 17.)
Four times	Excessive output of received light	Adjust the light axis again.

※ The proper voltage range is 1.2V to 3.1V.
(It can be checked at the sensor output jack.)

13.3. Other Cases

⚠ CAUTION

INSTRUC-TIONS

In case that this product may be faulty, take any of the actions shown in the table below.

Phenomenon	Causer	Actions
The green indicator lamp of the light transmitter does not emit light after the power is turned ON.	Faulty connection	Inspect the line connection to the terminals C, L, LE1(+) and LE2(-). (The lines are to be connected to the correct terminals with proper polarities.)
During the light axis adjustment, flickering pattern of the indicator lamps in the Adjustment Mode is abnormal or the yellow indicator lamp of the light receiver does not emit light.	Connection of the battery	Inspect the line connection to the battery connector.(The lines are to be connected to the connector with proper polarities.)
	Faulty connection	Inspect the line connection to the terminals LE1(+) and LE2(-). (The lines are to be connected to the correct terminals with proper polarities.)
	Insufficient capacity of battery	Replace the battery with new one.
During the light axis adjustment, flickering pattern of the indicator lamps is kept in red flickering or simultaneous flickering in green and red and does not change.	Incorrect setting of monitoring range	Check the monitoring range setting of the light receiver.
	Interruption of light axis	Check and see if no obstacle is located on the light axis.

14. REGULAR MAINTENANCE & INSPECTION

⚠ CAUTION

INSTRUC-TIONS	When conducting cleaning of the front plate, adjustment of the light axis and check for voltage level of the received light, be sure to open the cover of the light receiver or the transmitter and press the MONITOR/ADJUST. Switch to set the detector into the Adjustment Mode. On completion of these activities, be sure to reset the detector into the Monitoring Mode. If any of these activities is conducted with the detector in the Monitoring Mode, the detector may send a fire alarm signal or a trouble signal to the fire control panel.(After the power is turned ON, the detector is turned into the Monitoring Mode. It is same as the case in the auxiliary power supply.)

⚠ WARNING

CAUTION	Be sure to perform the maintenance and inspection of this product by a qualified person stipulated by the applicable regulations. When installing this product in a high place, be sure to arrange a secure scaffold.

14.1. Installation Condition

Ensure that the light transmitter and receiver of the detector and their bases are fixed securely and free from looseness and play.
Also, ensure that there is no obstacle between the light transmitter and receiver which interrupts the light axis.

14.2. Cleaning of Front Plate

Wipe the front plate with a dry cloth or clean it with a wet cloth. In this case, NEVER use a neutral detergent or volatile liquid such as alcohol. As the front plate is made of resin material, DO NOT rub the front plate strongly not to make scratch marks on it.
Be sure to take the same care to clean the lens surface in the cover.

14.3. Functional Test

Conduct the fire alarm test, non-operation test and trouble alarm test regularly.

15. SPECIFICATIONS

Classification	Projected Beam Type Smoke Detector (Class 1)	Projected Beam Type Smoke Detector (Class 2)
Model No.	FDGJ103-D-X/XHT	FDGJ203-D-X/XHT
National Type Approval No.	KAN25-25	KAN25-26
Type Description	Sensitivity Class 1(FDGJ103)/Sensitivity Class 2 (FDGJ203),(24V, 75mA), Non-Waterproof Type, Ordinary Type, Repeated-Use Type, Light Obscuration Type	
Sensitivity	Short : 20%, Medium : 30%, Long : 50%	Short : 30%, Medium : 50%, Long : 70%
Rated Voltage and Current • Fire alarm signal line • Trouble signal line • Remote test line • Heater power line (-XHT type only)	Operating voltage ranges are shown in ( ) below. C-L : 24VDC, 75mA (18 to 30VDC) KT1-KT2 : 24VDC, 75mA (18 to 30VDC) SH1-SH2 : 24VDC, 5mA (18 to 30VDC) HT-HT : 24VAC/DC, 180mA (18 to 30VAC/DC)	
Current Consumption in Monitoring Mode	• Fire alarm signal line (C-L) : 600μA (2mA for 30 sec. after power ON) • Trouble signal line (KT1-KT2) : 1μA	
Compatible Fire Control Panels	• NOHMI FAP 128/129 Series fire control panels (Trouble signal is received via the spare indication circuit.) • NOHMI FCS 112 Series fire & smoke control panels or newer (Trouble signal is received via the smoke control equipment response circuit or the spare indication circuit.) • R12/21/22/24 Series transmitter for projected beam type detector • Fire control panels for projected beam type detector (with projected beam type detector trouble lamp circuit)	

(Continued to next page →)

Max. Number of Detectors to be Connected	Two units /line
Number of Lines	•Between Fire control panel and light receiver :4 lines : Fire alarm signal : C, L, Trouble signal : KT1, KT2 •Between Fire control panel and light transmitter :2 lines : Remote test line : SH1, SH2 •Between light receiver and light transmitter :2 lines : Synchronization lines : LE1(+), LE2(-) (Polarity, 30Ω, 0.5μF) •Heater power line(Model -XHT only) :4 lines (2 lines each for light transmitter and receiver)
Indicator Lamps	1) Light receiver : Fire Alarm Lamp(red) : Lights on receipt of fire alarm signal. Trouble Lamp(yellow) : Flickers in case of trouble and adjustment. 2) Light transmitter : Power Lamp(green) : Flickers when the light transmitter emits light. Test Lamp(red) : Flickers in case of test.
Permissible Ambient Temperature	-10°C to 50°C°(without dew condensation)
Adjustable Range of Light Axis	20° in Vertical and Horizontal Directions (Each 10° (UP/DOWN/LEFT/RIGHT) from the center)
Materials	Cover and front plate : Polycarbonate resin Base : SPCC
Outside Dimensions	142.5mm × 107.2mm × 95mm
Weight	Light receiver : Approx. 750g, Light transmitter : Approx. 750g

NOHMI BOSAI LTD.

HEAD OFFICE
7-3,Kudan-Minami 4-chome,Chiyoda-ku,Tokyo 102-8277,Japan
INTERNATIONAL DIVISION
Phone:(81)3-3265-0231 Fax:(81)3-3265-5348
URL http://www.nohmi.co.jp