

Portable Gas Detector  
NXA-D

# Instruction Manual

- This Instruction Manual is only available in digital format. You may download it from the New Cosmos website and refer to it when needed.
- Carefully read this manual prior to use.
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- Carefully read this manual prior to use.



| Target Gas       |                  |
|------------------|------------------|
| Oxygen           | O <sub>2</sub>   |
| Carbon monoxide  | CO               |
| Hydrogen sulfide | H <sub>2</sub> S |

**NEW COSMOS ELECTRIC CO., LTD.**



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## Package Contents

A standard package consists of the following items. If any items are missing or damaged, please contact New Cosmos or its authorized representative for replacement.

| Item                                                | Quantity |
|-----------------------------------------------------|----------|
| Portable gas detector <sup>*1</sup>                 | 1        |
| Alligator clip (attached to the gas detector)       | 1        |
| Replacement sensor filter (x 1 pc)                  | 1        |
| Replacement charcoal filter (x 2 pcs) <sup>*2</sup> | 1        |
| Quick start guide                                   | 1        |
| Inspection certificate                              | 1        |
| Screen protector (x 2 pcs)                          | 1        |

\*1: Please check that the installed sensor module matches the specifications you designated when placing your order.

\*2: The replacement charcoal filter is included only with models equipped with a carbon monoxide (CO) sensor module.

## Optional Items (sold separately)

| Item [Model]                                        | Description                                                                                                                                                                                                                                      |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dedicated AC adapter<br>[AD-101]                    | Used when charging the gas detector.<br>Cord length: Approx. 1 m                                                                                                                                                                                 |
| Log data collection software<br>[NXA-xL]            | A Dedicated PC software that allows you to acquire and delete the detector's log data, as well as change various detector settings.<br>* For operating environment details, please refer to the log data collection software instruction manual. |
| Leather case (heat resistant)<br>[C-41]             | Purchase this item when using the detector in high-temperature environments. Make sure to use it in combination with sensors other than a hydrogen sulfide (H <sub>2</sub> S) sensor.                                                            |
| Leather case (standard specifications)<br>[C-42]    | Use this to protect the product and keep it clean.                                                                                                                                                                                               |
| Attachment clip<br>[ST-26]                          | Used when attaching the product to a helmet or belt.                                                                                                                                                                                             |
| Arm belt<br>[ST-11]                                 | Used when attaching the product to your arm.                                                                                                                                                                                                     |
| Buckle for fall-arrest full-body harness<br>[ST-23] | Used when attaching the product to a safety harness.                                                                                                                                                                                             |

### **Replacement Parts or Standard Accessories (sold separately)**

| Item [Model]                                                          | Description                                             |
|-----------------------------------------------------------------------|---------------------------------------------------------|
| Alligator clip<br>[ST-25]                                             |                                                         |
| Replacement sensor filter (x 1 pc)<br>[FE-143]                        |                                                         |
| Replacement charcoal filter (x 2 pcs)<br>[FE-144]                     | For carbon monoxide (CO) sensor module.                 |
| Screen protector (x 2 pcs)<br>[SPF-4]                                 |                                                         |
| Oxygen sensor module<br>[CDS-300 (O <sub>2</sub> sensor)]             | This is a sensor module for oxygen detection.           |
| Carbon monoxide sensor module<br>[CDS-300 (CO sensor)]                | This is a sensor module for carbon monoxide detection.  |
| Hydrogen sulfide sensor module<br>[CDS-300 (H <sub>2</sub> S sensor)] | This is a sensor module for hydrogen sulfide detection. |

# 1. Introduction

Thank you for purchasing the New Cosmos NXA-D portable gas detector (“gas detector” or “product” hereafter). Prior to use, please read this instruction manual carefully to ensure safe and reliable operation.

This product detects up to two of the following gases: oxygen, carbon monoxide, and hydrogen sulfide, and displays their concentrations. When gas concentrations reach a preset level, the detector alerts the user via audible and visual alarms, thus, helping prevent incidents such as low oxygen, gas poisoning and explosion. This detector uses an intrinsically safe structure.

It is also equipped with a Bluetooth function, and by setting the device as “Rx” or “Tx,” an Rx gas detector will be able to receive Tx gas detector information (gas concentration and detector status).

Carefully read this manual, regardless of your experience with gas detectors. Do not use the detector for any purposes other than those intended or described in this manual.

This product can use the Android/iOS smartphone application GD-SCANNER. By connecting this product via Bluetooth, you can check detector information (gas concentration, temperature, humidity, and alarm status) in real time on the application screen and use the emergency email function that sends notification to a preset email address in the event of an alarm or error.



## **WARNING**

### Waterproof performance

Keep the gas detection ports dry.

In its brand-new condition, the detector features a waterproof structure that meets New Cosmos’s in-house testing standards\* in compliance with JIS C 0920-2003 protection grade IPx6 and IPx8. This design keeps water out of the interior of the detector to prevent malfunctions.

However, if the sensor filter in the gas detection port becomes wet with water or other liquids, normal gas detection will not be possible. Gaskets or sealing deteriorated by age, or adhesion of foreign materials will impair the waterproof function. Therefore, please avoid exposing the device to water as much as possible during use.

\* No ingress of water occurs that would cause harmful effects to a brand new detector under the following conditions

IPX6: Subject to powerful jets of water from nozzles from all directions

IPX8: Gently submerge into a tank of still tap water at room temperature with the lowest end of the detector at 2 m below the water surface and leave it for 90 minutes

## 1-1. Symbols used in this Manual

This manual uses Danger, Warning, Caution and Note symbols to draw attention to procedures, materials, methods, and processes, which require particular attention.

|                                                                                                  |                                                                                         |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  <b>DANGER</b>  | Indicates an imminently hazardous situation that can result in death or serious injury. |
|  <b>WARNING</b> | Indicates a potentially hazardous situation that may result in death or serious injury. |
|  <b>CAUTION</b> | Indicates a hazardous situation that may result in minor injury or property damage.     |
|  <b>NOTE</b>    | Provides information on product handling.                                               |

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## 1-2. Explosion-proof Requirements

Follow the conditions below to comply with the explosion-proof requirements.

Type of protection : ATEX :  II 1G Ex ia IIC T4 Ga (Electrochemical sensor)  
 II 1G Ex ia op is IIC T4 Ga (NDIR sensor)

IECEX : Ex ia IIC T4 Ga (Electrochemical sensor)

Ex ia op is IIC T4 Ga (NDIR sensor)

Standard : ATEX : EN 60079-11:2012 or EN IEC 60079-11:2024

EN IEC60079-0:2018

EN 60079-28:2015

IECEX : IEC 60079-11:2011 Edition 6.0 or IEC60079-11:2023 Edition 7.0

IEC 60079-0:2017 Edition 7.0

IEC 60079-28:2015 Edition 2.0

Rating: 3.7VDC

Ambient temp. :  $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

Certificate No. : ATEX : CML 25ATEX2439X

IECEX : IECEX CML 25.0114X

Special conditions of use :

- Do not open when an explosive atmosphere is present.
- Do not charge batteries in a hazardous area.

- The detector must only be charged in a non-hazardous area using a PELV, SELV or ES1 charger that provides  $U_m = 6.195 \text{ V}$ , in an ambient temperature range of  $0^\circ\text{C}$  to  $+45^\circ\text{C}$ .
- Use of the detector in an atmosphere with greater than 21% of oxygen will compromise the explosion-proof performance of this detector.

### 1-3. Safety Precautions

- To ensure safe operation, follow the precautions below.
- Only use this product in accordance with the applicable laws and regulations.



#### **DANGER**

- When a gas alarm is activated, immediately take the necessary measures to prevent gas-related accidents, such as gas explosions, oxygen deficiency, and poisoning.
- Do not disassemble or modify the detector or the AC adapter, or alter their structure or electrical circuits. Doing so may impair the explosion-proof performance of the product and cause fire or electric shock.
- Do not heat the detector or throw it into fire. Doing so may cause leakage, overheating, rupture, or ignition.
- Avoid subjecting the detector to strong physical impact. Do not pierce the detector with nails, strike it with a hammer, or step on it, as this may cause overheating, rupture, or ignition.
- Keep the detector away from microwave ovens or induction cookers. Accidental heating may lead to overheating, rupture, or ignition.
- Avoid charging, storing, or leaving the product in places exposed to high temperatures, such as near fire or heaters, or inside a vehicle under direct sunlight. Doing so may cause leakage, overheating, rupture, ignition, or deformation.
- Avoid inserting metal objects into the charging port to prevent electric shock or malfunction.
- Keep hands dry when plugging in or unplugging the AC adapter to prevent electric shock.
- Do not modify or damage the power cord of the AC adapter. Doing so may cause fire or electric shock.
- Discontinue use of the detector immediately if the casing has been damaged due to dropping



#### **WARNING**

- If you notice any abnormalities such as an unusual odor, leakage, overheating, discoloration, or deformation of the product, discontinue use immediately.
- Always turn ON the power in clean (normal) air. The detector automatically performs AIR adjustment (oxygen: 20.9 vol%) during power-up.
- Carry out routine checks before use to ensure the product functions as a safety device.



### WARNING

- Make sure that the gas detection port is not covered or blocked by clothing or other items when attaching the detector.
- Ensure the gas detection port is not submerged or blocked by liquids.
- Keep the sensor filter in the gas detection port clean and dry.
- Avoid exposing the product to organic solvents, strong acids, strong alkalis, or oil. The product is made of ABS resin, and such exposure may damage its explosion-proof performance.
- Do not remove or disassemble parts for any purpose other than those described in this manual.
- Do not block the speaker hole. If it is blocked, the buzzer and voice announcement will no longer be audible.
- Do not block the temperature and humidity sensor port.
- Replace the sensor module when the recommended replacement interval has passed. Follow the sensor replacement notifications shown on the detector display and in the voice announcement.



### CAUTION

- Avoid using the product outside the specified operating temperature, humidity, or pressure range. Also, avoid exposing the product to abrupt temperature, humidity, or pressure changes. Failure to do so may impair the performance of the product or may damage the product. The oxygen sensor relies on pressure to operate, so sudden pressure changes can trigger temporary changes in the indicated value.
- Do not use the product in a place or near a place where silicone sealant or vapor may be present. Doing so may compromise the performance of the product.
- Use the product away from equipment that emits radio waves, such as radio transmitters. Radio wave interference may cause gas alarms to trigger, malfunctions, or the power to turn OFF.
- Please note that it may be difficult to feel the vibration operation depending on where the detector is attached.
- Avoid strong mechanical shock, impact, or vibration to the detector by dropping or bumping. Failure to do so may impair the performance of the product.
- If the detector is dropped or bumped and the indicated value fluctuates, wait until it stabilizes before use, perform AIR adjustment in clean (normal) air, or restart the unit.
- If condensation is present on the detector, remove it and make sure the unit is completely dried and perform routine checks before use.
- The detector may detect gases or solvent gases that are not target gases. Take the usage environment into consideration.
- Detecting high concentration of sulfur dioxide or chlorine may shorten the sensor life or increase errors.
- Do not leave the product in high temperature/humidity conditions for a long period of time. Doing so may impair the performance of the product.
- If the product will not be used for an extended period, fully charge it once before storage. The rechargeable battery will lose charge over time due to self-discharge, even if the product is not used. Therefore, please charge it once every 90 days. If the battery is not charged, self-discharge may cause the voltage to drop below the rechargeable threshold, making it impossible to recharge.



**CAUTION**

- Leaving the unit fully charged can accelerate built-in lithium rechargeable battery deterioration. After charging is complete, remove the charging socket.
- If the product has not been used for a long time, the battery may be depleted, so please charge it before use.
- When used at low temperature, the battery life will be shorter than when used at room temperature due to the battery's characteristics.
- The Bluetooth communication used in the product may be affected if there are metal objects or other obstructions between the communicating devices, resulting in inability to transmit data or reduced communication range. In such cases, move to a different location or otherwise ensure that no obstructions are present between the communicating devices.

## 1-4. Bluetooth Function

Be sure to observe the following points when using the Bluetooth function (wireless function) of this product.

- This product incorporates certified radio equipment for low-power data communication systems, compliant with the Radio Law of Japan.ID: 005-103104 (ED2840)
- This device complies with the following radio laws.  
EU:Radio Equipment Directive  
JAPAN:Certification Number(R)005-103104
- This product is designed based on the Japanese Radio Act, and is approved according to Technical Standards Conformity Certification.Therefore, there is no need to obtain radio station authorization when using it.
- Do not modify this product. Doing so violates the Radio Act, invalidates the Technical Standards Conformity Certification, and is a violation of the law.
- This product is equipped with a Bluetooth function (2.4 GHz wireless band). It may affect, or be affected by, other wireless communication devices that use the 2.4 GHz band, so keep it away from such devices as necessary during use. Excluding cases where liability is recognized by law, New Cosmos shall bear no responsibility whatsoever for any damages arising due to use of Bluetooth communications (leaks of device measurement data or information, device interference with other radio equipment, etc.).
- When using the product in locations where medical electronic equipment is present, be careful of possible interference with such equipment.This product uses 2.4 GHz wireless communication.
- The Bluetooth function of this product is not guaranteed to work in all communication environments.



® 005-103104

Please note that factors such as the distance between communicating devices, obstructions such as metal, and radio interference can prevent data communication and transmission, require more time to communicate or transmit data, or interrupt communications temporarily during use.

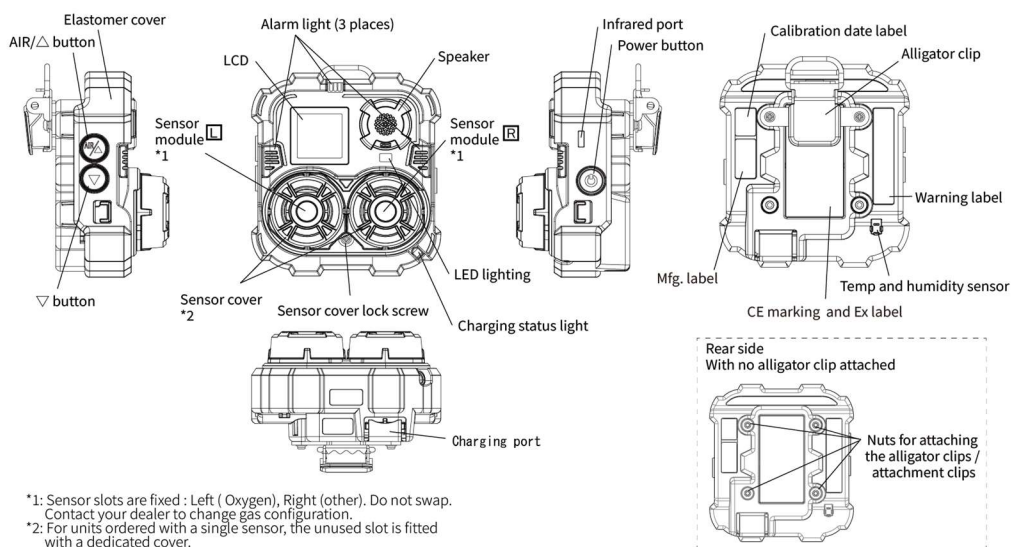
## 1-5. Glossary

|                                               |                                                                                                                                                                                                                                             |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIR adjustment:                               | Adjustment of the base value (20.9 vol% in the case of oxygen) in clean (normal) air*.<br>(* Clean air: Clean air free from miscellaneous gases)<br>(* Normal air: Standard atmosphere; The oxygen concentration in the dry state is 20.9%) |
| Explosion-proof structure:                    | A structure applied to electrical products to prevent them from becoming an ignition source and igniting the surrounding explosive atmosphere.                                                                                              |
| Intrinsically safe explosion-proof structure: | A structure that has been confirmed through ignition tests or other means to prevent explosive gas from being ignited by electrical sparks or high-temperature areas that may occur during normal operation or in the event of an accident. |
| Non-hazardous locations:                      | A location where, under both normal and abnormal conditions, the formation of an atmosphere in which explosive gas and air are mixed within the explosive limits is considered unlikely.                                                    |
| vol%:                                         | A value that expresses the concentration of gas as a percentage of its volume.                                                                                                                                                              |
| ppm:                                          | A value that expresses the concentration of gas as parts per one million parts of its volume.                                                                                                                                               |
| Upper-limit alarm:                            | An alarm is issued when a set threshold is exceeded.                                                                                                                                                                                        |
| Lower-limit alarm:                            | An alarm is issued when the concentration falls below a set threshold.                                                                                                                                                                      |
| NW ID (network ID):                           | The ID that determines the detector's monitoring range (group).                                                                                                                                                                             |
| Dev ID (device ID):                           | The ID used to identify each detector individually.                                                                                                                                                                                         |
| Heat index (WBGT):                            | Abbreviation of Wet Bulb Globe Temperature, an indicator for determining the level of danger of heat stroke.                                                                                                                                |
| Dedicated PC software:                        | Refers to log data collection software (sold separately) which can collect NXA Series detector log data and change detector settings.                                                                                                       |
| Smartphone application:                       | Refers to GD-SCANNER, the smartphone/tablet software which can acquire NXA Series detector Tx information.                                                                                                                                  |

(Some parts are cited from the Industrial Gas Detectors and Monitors Manufacturers Association, Gas Detector Alarm Terminology, Detector Tube Gas Measuring Instrument Terminology)

## 2. Unit and Components

### 2-1. Gas Detector



| Component and icon* |  | Function                                                                                                     |
|---------------------|--|--------------------------------------------------------------------------------------------------------------|
| Power button        |  | Operate the detector by pressing or pressing and holding the buttons, either individually or simultaneously. |
| AIR/Δ button        |  |                                                                                                              |
| ▽ button            |  |                                                                                                              |
| Alarm light         |  | Flashes <b>red</b> when an alarm is detected and <b>orange</b> when an error is detected.                    |
| LED lighting        |  | Activates the LED lighting.                                                                                  |
| LCD                 |  | Displays gas concentrations and various information.                                                         |

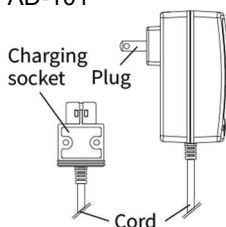
\* These icons are used only within this instruction manual. For the actual button labels on the product, please refer to the product image shown above.

## Unit and Components

| Component                                              | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Charging status light                                  | Displays the charging status when the dedicated AC adapter is connected.<br>Orange light ON: Charging<br><b>Green light ON</b> : Charging complete<br>Orange/Green light alternating: Charging error                                                                                                                                                                                                                                                                                                                                     |
| Charging port                                          | Connect the dedicated AC adapter to charge the product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Speaker                                                | It emits voice announcements, buzzer sounds, and button operation sounds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Sensor module                                          | A module equipped with a sensor for detecting the target gas. The sensor module mounting location is determined according to the type of gas.<br>Sensor module L: This sensor module is mounted on the left side sensor socket when viewed from the front of the housing. It is used to detect oxygen (O <sub>2</sub> ).<br>Sensor module R: This sensor module is mounted on the right side sensor socket when viewed from the front of the housing. It is used to detect carbon monoxide (CO) and hydrogen sulfide (H <sub>2</sub> S). |
| Sensor cover                                           | Protects the sensor module. If you only ordered one sensor type, a dedicated cover will be attached to the opposite side.                                                                                                                                                                                                                                                                                                                                                                                                                |
| Temperature and humidity sensor                        | Detects temperature and humidity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Infrared port                                          | This is the port for infrared communication. It is used to connect with the dedicated PC software.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CE marking and Ex label (Explosion-proof label)        | The explosion-proof structure and ratings are listed. Indicates the certification number obtained.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Industrial Safety and Health Act Type Approval sticker | Indicates the certification number obtained under the Industrial Safety and Health Act Type Approval.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Warning label                                          | A warning message is included.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Mfg. label (Manufacturing label)                       | The model number, serial number, etc. are displayed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Gas name label                                         | Indicates the target gas(es).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Calibration date label                                 | The calibration date is displayed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Elastomer cover                                        | Protects the device from external shock.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Alligator clip                                         | Used when attaching the product by clipping it onto work clothing or similar items.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 2-2. Dedicated AC Adapter (sold separately)

AD-101



**NOTE**

- The cord length is approximately 1 m.

## 2-3. LCD

The LCD display when using gas concentration monitoring mode is shown in the table below. You can use the buttons to switch the display and check the current values and Tx status.

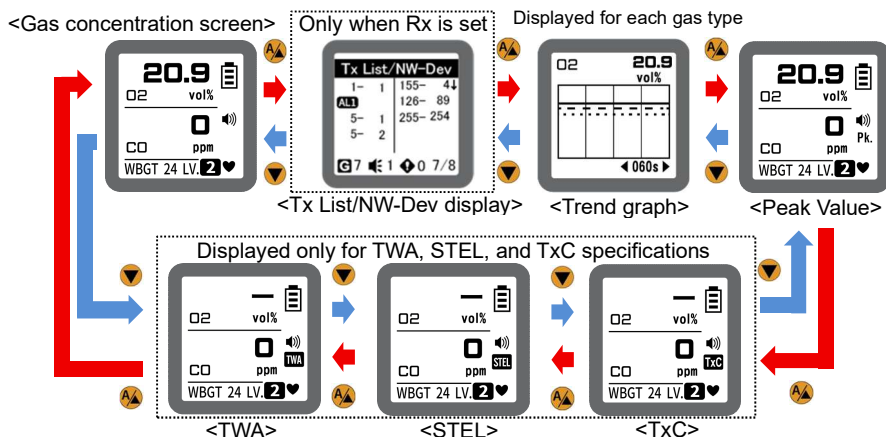
| Item                                 | Contents                                                                                                                                                                                                                                                                   | Reference page                |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Gas concentration screen             | Displays the current gas concentration                                                                                                                                                                                                                                     | Page 12, 19                   |
| TWA display <sup>*1</sup>            | Displays the TWA value from when the power was turned ON until the present time.                                                                                                                                                                                           | Page 20                       |
| STEL display <sup>*1</sup>           | Displays the STEL value for the past 15 minutes.                                                                                                                                                                                                                           | Page 21                       |
| TxC display <sup>*1</sup>            | Displays the TxC value from when the power was turned ON until the present time.<br>This index has been established by the Japan Industrial Safety and Health Association in the Chemical Substance Control Manual to prevent CO poisoning in the iron and steel industry. | Page 21                       |
| Peak value display                   | Displays the peak gas concentration value                                                                                                                                                                                                                                  | Page 22                       |
| Trend graph display                  | Displays the gas concentration in graph format.<br>If two gases are monitored, they are shown separately.                                                                                                                                                                  | Page 22                       |
| Tx List/NW-Dev display <sup>*2</sup> | A list of NWIDs and Dev IDs of connected Tx units.<br>When an alarm or error occurs on a Tx unit, an icon corresponding to the event is displayed in the applicable column.                                                                                                | Page 23<br>Page 27 to Page 29 |

\*1 Depending on the device specifications, TWA, STEL, and TxC settings are displayed if available.

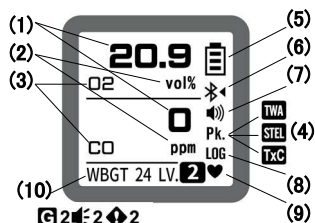
\*2 Displayed only when the Bluetooth function is ON and the device is set as Rx.

### NOTE

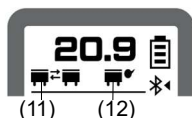
- When the screen transitions from the gas concentration screen to another screen, it will automatically return to the gas concentration screen after five minutes of no operation.
- On any screen, press and hold  +  simultaneously to return to the gas concentration screen, accompanied by a short “beep” sound.



## ◆ Gas Concentration Screen



<For 2-gas display>



<For 1-gas display>

| No.  | Component                            | Ref. page  |
|------|--------------------------------------|------------|
| (1)  | Gas concentration value              | P19        |
| (2)  | Units of measurement                 | P19        |
| (3)  | Gas type                             | P19        |
| (4)  | TWA/STEL/TxC/Pk. icon                | P20 to P22 |
| (5)  | Battery level                        | P15, 16    |
| (6)  | Bluetooth                            | P36        |
| (7)  | Alarm volume                         | P39        |
| (8)  | LOG (Logging in progress)            | P37, 38    |
| (9)  | Heartbeat icon                       | -          |
| (10) | Heat index (WBGT) estimated value    | P25, 26    |
|      | Warning level                        | P25, 26    |
| (11) | Tx status indicator*                 | P27 to P29 |
|      | Sensor replacement notification icon | P24, 25    |
| (12) | Sensor calibration notification icon | P24, 25    |

※ Displayed only when the Bluetooth function is ON and the device is set as Rx

### NOTE

- The heartbeat indicator can be used to confirm that the device is operating normally. Even when there is no change on the screen, such as in the gas concentrations, the heartbeat indicator flashes at five-second intervals.

## 2-4. Voice Announcements

This product has a function that provides status notifications through voice announcements.

Note, however, that voice announcements will not be played if the announcement volume is set to "0: MUTE" in Audio Volume (see P39)

| Condition for activation                 | Japanese                                                                   | English                                                                                                  | Chinese                                 |
|------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Sensor module changed                    | センサが変更されています。このまま使用しますか。<br>Yes なら AIR ボタンを押してください。<br>No なら電源 OFF してください。 | Sensor type changed.<br>Do you accept?<br>If yes, press the AIR button.<br>If no, turn off the detector. | 传感器已变更。<br>继续使用吗。<br>如果是请按气体键。如果否请关闭电源。 |
| Gas alarm<br>(Alert levels 1 to 3)       | 警報レベル X※1                                                                  | Gas alarm level X※1                                                                                      | 报警等级 X※1                                |
| TWA alarm                                | TWA 警報                                                                     | TWA alarm                                                                                                | TWA 报警                                  |
| STEL alarm                               | STEL 警報                                                                    | STEL alarm                                                                                               | STEL 报警                                 |
| TxC alarm                                | TxC 警報                                                                     | T by C alarm                                                                                             | T by C 报警                               |
| Detector error                           | 本体エラー                                                                      | Detector error                                                                                           | 主机故障                                    |
| Sensor error                             | センサエラー                                                                     | Sensor error                                                                                             | 传感器故障                                   |
| Incomplete warm-up /<br>Adjustment error | 調整エラー                                                                      | Adjustment error                                                                                         | 调整故障                                    |
| Zero / AIR adjustment<br>started         | エアー調整 開始                                                                   | Zero adjustment<br>began                                                                                 | 零位调整开始                                  |
| Zero / AIR adjustment<br>completed       | エアー調整 完了                                                                   | Zero adjustment<br>completed                                                                             | 零位调整完成                                  |
| Zero/AIR adjustment<br>failed            | エアー調整 失敗                                                                   | Zero adjustment<br>failed                                                                                | 零位调整失败                                  |
| Setting completed                        | 設定しました                                                                     | Setting completed                                                                                        | 已设定                                     |
| Logging starts <sup>*2</sup>             | ロギング開始                                                                     | Logging began                                                                                            | 记录开始                                    |
| Logging ends <sup>*2</sup>               | ロギング停止                                                                     | Logging stopped                                                                                          | 记录停止                                    |
| Low battery                              | 充電してください                                                                   | Charge the battery                                                                                       | 请充电                                     |

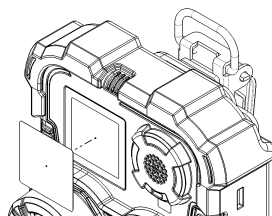
\*1 X indicates the numerical value.

\*2 Voice announcements when logging starts and ends are only played when the product is operated from the Dedicated PC software.

## 3. Operation

### 3-1. Screen Protector Installation

A screen protector protects the LCD from dirt and scratches. Wipe the LCD with a soft cloth, etc., to remove dust and stains. Peel off the protective backing from the film. While aligning the film with the LCD, apply it slowly and evenly from edge to edge. If air bubbles are formed, push them to the nearest edge using your fingers.



### 3-2. Gas Detector Attachment



#### WARNING

- Make sure that the gas detection port is not covered or blocked by clothing or other items when attaching the detector. If the detector is attached in such conditions, gas detection will not be possible.

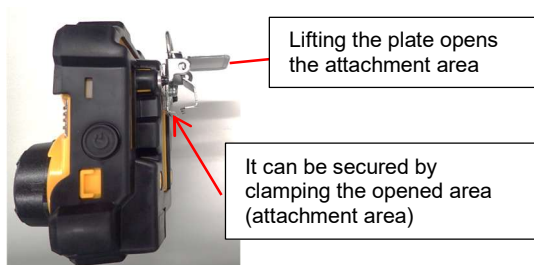


#### CAUTION

- To maintain the optimum wireless communication distance, install the unit vertically to the ground.

- When attaching with the alligator clip

Clamp the clothing at the chest or arm with the alligator clip attachment area to secure the unit. (See the photos below)



<How to open the attachment area>



<Example of attachment>



#### CAUTION

- After using the alligator clip on thick or stiff fabric, the clamping force on regular clothing may become weaker.
- The attachment location on clothing may be damaged. We appreciate your understanding in advance.

### 3-3. Before Use

#### ◆ Charging the Gas Detector



#### WARNING

- Make sure to use the charger specified by New Cosmos.
- When using an AC adapter specified by New Cosmos, make sure that the cord is not damaged, do not place any heavy objects on it, and do not place it near a high-temperature object. If the AC adapter is damaged, there is a risk of fire or electric shock.
- When using the detector, check the battery level periodically. When the battery is depleted, the detector will not be able to detect gas, issue an alarm, or send alarm information to other devices.



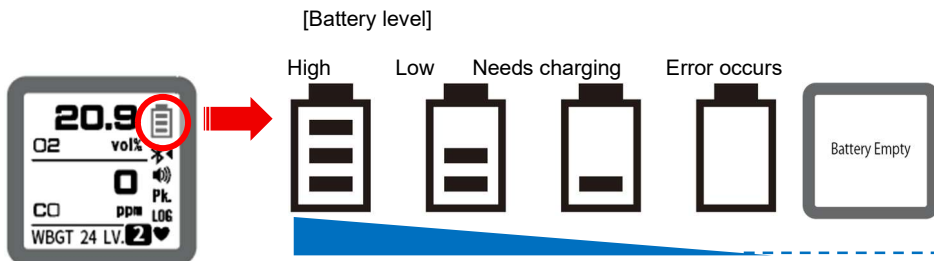
#### CAUTION

- Charge the battery at an ambient temperature between 0°C and 35°C.
- Avoid charging, using, leaving or storing the battery in extremely hot or cold places as this will accelerate battery deterioration.
- If there is dirt or water on the charging terminal or the charging socket of the AC adapter, charging will not be possible. In this case, please clean it by wiping it off.
- When plugging or unplugging the charging socket, do not pull on the cord.
- When not using the AC adapter, unplug it from the outlet.
- If the AC adapter easily comes loose from this detector, it may not charge properly. In such cases, please replace the AC adapter.

Check the remaining battery level, and if charging is necessary, charge the product using the specified AC adapter. Charge the battery every 90 days regardless of the remaining battery level. Disconnect the AC adapter once charging is complete.

#### ● Checking the battery level

The approximate remaining battery level is as shown in the diagram below. Fewer bars are displayed as the battery level drops. When there are no more bars, the detector emits a preliminary alarm, a “Charge the battery” voice announcement is played, and the buzzer sounds intermittently. When the battery becomes depleted, “Battery Empty” is displayed, the buzzer sounds intermittently, the alarm light (orange) flashes, and gas detection becomes impossible. (If the battery continues to drain further, the power will turn OFF and the LCD will be turned OFF completely.)



### NOTE

- Charge the battery when “ (Low)” is displayed to allow sufficient time.
- If the operation volume is set to “0: MUTE” in audio volume, the buzzer will not sound on a preliminary alarm. Also, when the announcement volume is set to “0: MUTE,” voice announcements will not be played on a preliminary alarm.



### CAUTION

- In low-temperature environments, usage time will be shorter than usual due to the battery's characteristics. If the remaining battery level is low, we recommend charging early before the battery becomes depleted.

### • How to charge

Charge the product using the specified AC adapter.

(1) Open the rubber cover of the charging port.



<Open the rubber cover of the charging port>

(2) Insert the AC adapter's charging socket straight into the back of the product.

(3) Holding the AC adapter body, insert the AC adapter plug straight into a power outlet. When charging begins, the charging status light will light up.



<Inserting the charging socket>

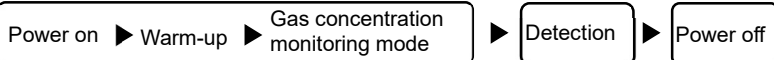
### NOTE

- Power ON is unavailable during charging.
- The device cannot be charged while it is operating. If charging is started during operation, the device will power OFF.
- Charging time is approximately 6 hours. (Charging time may vary depending on remaining battery level and ambient temperature.)
- The built-in battery will deteriorate with repeated use, shortening its usable time. When usage time becomes extremely short even after a full charge, the built-in battery has reached the end of its life, contact your dealer or New Cosmos for replacement.

## 3-4. Operating Procedure

**! WARNING** · Perform the “Routine Check” prior to use(see Page51).

### Procedure



① Power ON -> Warm-up -> Gas concentration monitoring mode  
(display <Gas concentration screen>)

**! WARNING**

- Always turn ON the power in clean (normal) air. During power-up, automatic AIR adjustment is performed (for oxygen, adjusted to 20.9 vol%). Thus, if the power is turned ON in a gas-containing atmosphere, the correct concentration may not be displayed.
- Keep the gas detection port sensor filter clean and dry before use. If the sensor filter is dirty or has moisture on it, normal detection will not be possible.

Press and hold the  button until the countdown finishes.



After a long “beep” sound, information (detector settings and specifications) is displayed. The following items are displayed in order: <Model/Serial No.>, <Target gas, full scale, alarm setpoint>, <STEL, TWA, TxC (when equipped with a CO sensor)>, <Till Next Sensor Repl Due and Till Next Cal Due>, <Log information/time>, and <NW ID/Dev ID, Rx/Tx settings, Tx data sending interval>.

### ◆ Information Screen

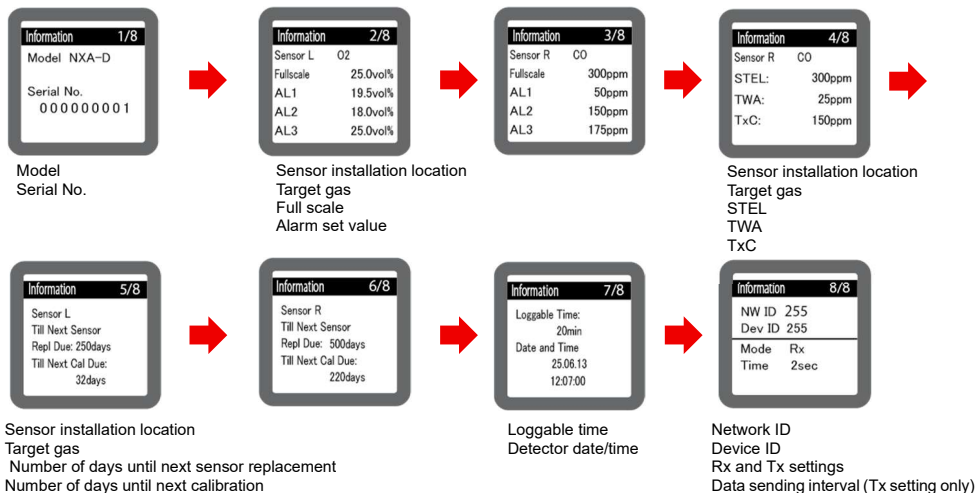
The information screen is displayed when you turn the power ON or press the  button on the <Gas concentration screen>.

Forward: Press  button

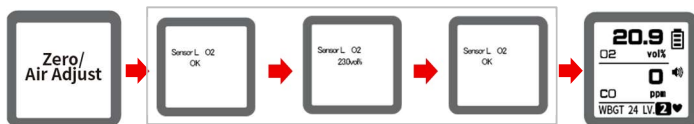
Reverse: Press  button

Exit: Press  buttons

## Operation



After that, the product automatically begins <Warm-up/AIR adjustment>. After the warm-up and AIR adjustment are completed, a “beep-beep-beep” sound will be heard, the <Gas concentration screen> will be displayed, and the detector will switch to gas concentration monitoring mode. Note that the oxygen sensor calibration screen will not appear if an oxygen sensor module is not installed.



### NOTE

- If an abnormality occurs during warm-up operation, an error will be displayed. In such cases, refer to the “7. Error Messages” (Pages 48) to take appropriate action.
- The warm-up operation typically takes about 30 seconds, up to a maximum of about 2 minutes
- If AIR adjustment is not completed on start-up, turn the detector OFF and restart it.

## ② Detection

When the <Gas concentration screen> is displayed, detection is possible.

- > See “LCD Display” on Page 11
- > See “Gas Alarm Operation” on Page 30



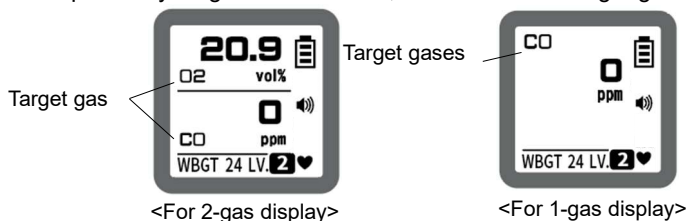
### WARNING

- If a reading exceeds the full scale value, move the detector to clean air area immediately. If not moved to clean air and continued to be used, improper gas detection will result, or it may take time for the reading to return to the zero point.

## ◆ HOME Screen (Gas Concentration Screen)

The LCD displays either two types or one type of gas concentration depending on the model specifications.

(In the explanatory diagrams that follow, the case of two target gases is shown.)



## ◆ Over Range Display Function

When this product detects a high-concentration gas that exceeds the display range (service range), “Over Range” is displayed. High concentrations of gas may have a negative effect on the sensor, so place it in clean air as soon as possible. After the gas concentration decreases and you have confirmed that the gas has cleared, turn OFF the power.

| Specifications  | 1-gas display                          | 2-gas display                     |
|-----------------|----------------------------------------|-----------------------------------|
| Screen contents | <p>Displayed in concentration area</p> | <p>Alternating screen display</p> |

## ◆ AIR adjustment

This adjusts the value if the baseline (20.9 vol% for oxygen) is shifted.



### WARNING

• AIR adjustment should always be performed in clean (normal) air. AIR adjustment is not available during an alarm.



### CAUTION

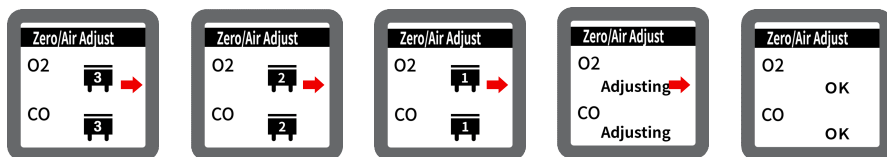
• In the following cases, the baseline (20.9 vol% for oxygen) may shift, so please perform “AIR adjustment” again in clean (normal) air:

- AIR adjustment was performed in a gas-containing atmosphere.
- The working environment (temperature, humidity, etc.) changed significantly.
- High-concentration gas was detected.
- The product was started within 15 minutes after attaching or detaching the oxygen sensor module.

## [How to operate]

In the normal running state, press and hold the  button. Press and hold until the buzzer beeps “beep, beep, beep” and the countdown displayed on the LCD finishes. “Adjusting” appears for about three seconds, and then the AIR adjustment (baseline adjustment, 20.9% adjustment in the case of oxygen) is completed.

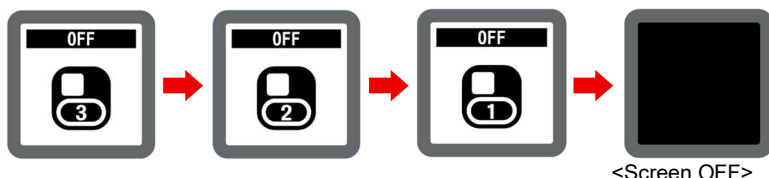
## Operation



### ③ Power OFF

Press and hold the  button until the screen turns OFF.

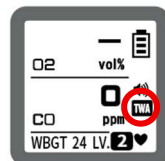
-> A short “beep” sounds, “OFF” and the countdown “3,” “2,” “1” are displayed, then “beep-beep-beep” sounds and the LCD turns OFF, shutting down the power.



## 3-5. Other Screen Displays in the Normal Running State

### ◆ TWA Display

Displays the TWA value from when the power was turned ON until the present time. The TWA value is obtained by dividing the total average concentration value acquired each minute after the power is turned ON by 480. The TWA function makes it easy to determine if the concentration exceeds the time weighted average exposure limit value\*.



$$\text{TWA value} = \frac{\text{Integrated 1-minute average concentrations since Power ON}}{480}$$

To switch to the TWA display screen, press the  button once on the gas concentration screen. TWA will appear on the LCD screen and while it is displayed, the TWA value will be shown.

The TWA alarm will be issued if the TWA value exceeds the TWA alarm setpoint (see “Sensor Module Specifications” on Page 57). To reset the TWA function's integrated value, you must restart the detector.

### NOTE

- Once a TWA alarm is issued, it cannot be cleared until the power is turned OFF.
- TWA is not available for the oxygen (O<sub>2</sub>) sensor.

\* The time-weighted average exposure limit value is a time-weighted average concentration of a chemical substance at which people can be repeatedly exposed during an average of 8 hours per day or 40 hours per week without experiencing adverse health effects.

## ◆ STEL Display

Displays the STEL value for the past 15 minutes. The STEL value is obtained by dividing the total average concentration value acquired each minute for the past 15 minutes by 15. The STEL function allows you to easily check if the short-term exposure limit value\* has been exceeded.



$$\text{STEL value} = \frac{\text{Total of 1- minute average concentrations for the past 15 minutes}}{15}$$

To switch to the STEL display screen, press the  button twice on the gas concentration screen. STEL will appear on the LCD screen and while it is displayed, the STEL value will be shown.

The STEL alarm will be issued if the STEL value exceeds the STEL alarm setpoint (see "Sensor Module Specifications" on Page 57).

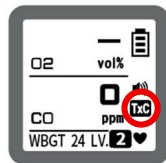
### NOTE

- The STEL alarm cannot be cleared until the average value falls below the alarm setpoint or the power is turned OFF.
- STEL is not available for the oxygen (O<sub>2</sub>) sensor.

\* The concentration of a chemical substance to which a worker can be continuously exposed for 15 minutes without adverse health effects if the daily exposure is the time weighted average exposure limit value or below.

## ◆ TxC Display (Carbon Monoxide Sensor Only)

Displays the TxC value from when the power was turned ON until the present time. The TxC value is obtained by dividing the total average concentration value acquired each minute after the power is turned ON by 60.



$$\text{TxC value} = \frac{\text{Total of 1- minute average concentrations since Power ON}}{60}$$

To switch to the TxC display screen, press the  button three times on the gas concentration screen. TxC will appear on the LCD screen and while it is displayed, the TxC value will be shown.

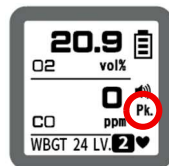
The TxC alarm will be issued if the TxC value exceeds the TxC alarm setpoint (see "Sensor Module Specifications" on Page 57). To reset the TxC function's integrated value, you must restart the detector.

### NOTE

- Once a TxC alarm is issued, it cannot be cleared until the power is turned OFF.

### ◆ Peak Display

Displays the detected gas concentration peak value once the detector is turned ON.



To switch to the peak display screen, press the  button three times (four times when equipped with a CO sensor) on the gas concentration screen.

Pk. will appear on the LCD screen and while it is displayed, the peak value will be shown.

To reset the peak value, you must restart the detector.

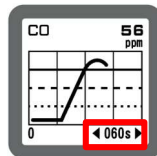
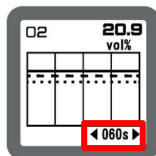
#### NOTE

- In the peak display screen, the product updates and stores the detected peak value. For toxic gases, it stores and displays the maximum concentration, and for oxygen, it stores and displays the minimum concentration.

### ◆ Trend Graph Display

This allows you to check recent gas concentration trends in a graph.

To switch to the trend graph display screen, press the  button once on the gas concentration screen. (If Tx List/NW-Dev appears, press the button once more.)



If two gases are monitored, the two graphs are displayed in sequence. If you press the  button, the scale of the horizontal axis changes as follows: 60 seconds -> 120 seconds -> 180 seconds -> 240 seconds -> 300 seconds.

## ◆ Tx List/NW-Dev Display

On this screen, you can monitor nearby NXA-D units set as Tx.

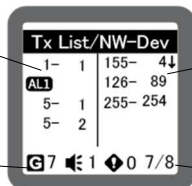
It allows you to check the gas concentration of each Tx sensor and the unit status shown in the list. If an alarm or error is occurring, the gas concentration and an icon are displayed alternately.

To switch to the Tx List/NW-Dev display screen, press the  button once from the gas concentration screen.

• Tx NW ID-Dev ID

Displayed alternately with the corresponding icon during an alarm or error

Tx status display  
Refer to Page 28



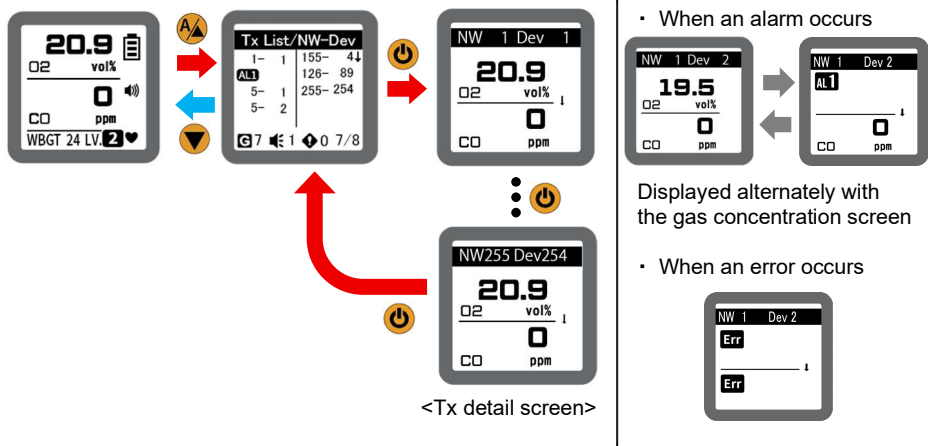
| Tx List/NW-Dev |   |      |     |
|----------------|---|------|-----|
| 1-             | 1 | 155- | 4↓  |
| AL1            |   | 126- | 89  |
| 5-             | 1 | 255- | 254 |
| 5-             | 2 |      |     |
| G7 7 1 0 7/8   |   |      |     |

“↓” is displayed when data is being received from the Tx

Number of connected Tx units / 8

<Tx List/NW-Dev screen>

On this screen, press the  button to check the gas concentration and alarm/error status of the listed Tx units. If an alarm is occurring, the gas concentration and an icon are displayed alternately. Only the icon is displayed when an error is occurring. These items are displayed in order from the top left of the Tx list. Once the bottom of the list is reached, the Tx list screen will reappear.



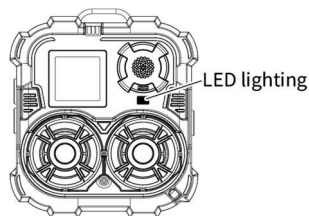
### NOTE

- This screen is displayed only when the product is set as an “Rx” unit in the Bluetooth Mode settings (Page 46).
- On the Tx gas concentration and alarm/error status confirmation screen, the gas concentration screen and icon are displayed alternately during an alarm test.

## 3-6. Other Functions

### ◆ LED Lighting Function

Turns the LED lighting installed on the product ON/OFF.



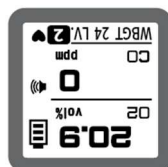
#### [How to operate]

Press the  and  buttons simultaneously on the gas concentration screen to turn the LED lighting ON. A short beep will sound.

Press the  and  buttons simultaneously again to turn the LED lighting OFF.

### ◆ LCD Screen Upside-down (Flip) Function

By flipping the LCD screen vertically, the text becomes easier to read when the unit is worn on the chest.



#### [How to operate]

Press the  and  buttons simultaneously on the gas concentration screen to flip the display. A short beep will sound.

Press the  and  buttons simultaneously again to return the screen to normal.

This function is only available on the gas concentration screen.

#### NOTE

- When the LCD screen is flipped, the button operations for cursor movement are also reversed.

Example: An operation that normally requires the  button will require the  button when the screen is flipped.

### ◆ Logging Function

Refer to the Setup Menu on Page 37.

### ◆ Alarm History Function

Refer to the Setup Menu on Page 34.

### ◆ Sensor Replacement Notification/Sensor Calibration Notification

The remaining number of days until the calibration and sensor replacement dates recommended by New Cosmos are displayed on the detector's information screen. When the recommended period has expired, an icon is displayed on the gas concentration screen.



#### WARNING

- Replace the sensor module at the specified intervals to ensure normal gas detection. For recommended replacement intervals, refer to the "Sensor Module Specifications" table (page 57).
- The recommended replacement interval is a guideline only and is not guaranteed. It assumes the detector is used with proper maintenance and without exposure to high-concentration or toxic gases.

## Operation

### ▪ Checking the information screen

Use the information screen to check the product status and setting details. Press the  button when the <Gas concentration screen> is displayed to switch to the information screen.



Navigation: Press the  button (forward) or  button (reverse) to switch the display.

Exit: Press the  +  buttons to return to the <Gas concentration screen>.

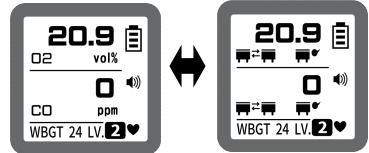
### NOTE

- The display also returns to the <Gas concentration screen> automatically if no operation is performed for 5 minutes.
- The display will not transition to the information screen while a gas alarm or Tx unit alarm (gas alarm or error) is occurring on the Rx unit.

### ▪ Icon display when the recommended period has expired.

The gas name and concentration unit display section are displayed alternately with the following icons.

Sensor replacement:  
Sensor calibration:

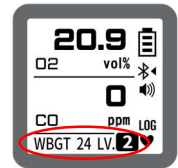


## ◆ Heat Index (WBGT) Estimated Value and Warning Level Display

This product displays a numerical value based on the estimated heat index values (WBGT). It also indicates the heatstroke warning level in five stages—Almost Safe, Caution, Warning, Severe Warning, and Danger—according to that value.

| Type                                      | Icon     | Description                                                               |
|-------------------------------------------|----------|---------------------------------------------------------------------------|
| Heat index (WBGT) estimated value display | WBGT X · | Displays the estimated WBGT value.                                        |
|                                           | LV. Y ·  | According to the estimated WBGT value, the level is shown in five stages. |

\* X and Y are numerical values.



### ! WARNING

- This product is not designed to prevent heatstroke or for high-precision measurement of WBGT values. Use the estimated values only as a reference. New Cosmos Electric is not liable for any accidents or damages resulting from measurement errors.
- The estimated WBGT value may be affected by body temperature or sweating depending on where the product is worn.
- The WBGT value is calculated using the built-in sensor. Discrepancies may occur between the ambient air and the conditions inside the product, particularly when using a leather case.
- Accurate values may not be displayed if the sensor port is blocked, or if the product is wet (until it is completely dry).
- If a sudden change in temperature or humidity occurs, it may take time for the reading to stabilize.

## Operation

Please refer to the table below for the relationship between temperature/humidity and the WBGT estimated values, as well as the notification details.

Warning level display and WBGT estimated value of the product

| Gas detector warning level display |                | WBGT estimated value |
|------------------------------------|----------------|----------------------|
| LV.5                               | Danger         | $\geq 31$            |
| LV.4                               | Severe Warning | $\geq 28, < 31$      |
| LV.3                               | Warning        | $\geq 25, < 28$      |
| LV.2                               | Caution        | $\geq 21, < 25$      |
| LV.1                               | Almost Safe    | $< 21$               |

\* Source: Heat Illness Prevention Information, Ministry of the Environment:

<https://www.wbgt.env.go.jp/en/>

Japan Sport Association (JSPO):

<https://www.japan-sports.or.jp/medicine/heatstroke/tabid1437.html#01>

Relationship between temperature/humidity and WBGT estimated values (color coding corresponds to the product settings)

|                  |    | Relative Humidity (%) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|------------------|----|-----------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
|                  |    | 20                    | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| Temperature (°C) | 40 | 29                    | 30 | 31 | 32 | 33 | 34 | 35 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44  |
|                  | 39 | 28                    | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43  |
|                  | 38 | 28                    | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42  |
|                  | 37 | 27                    | 28 | 29 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 35 | 36 | 37 | 38 | 39 | 40 | 41  |
|                  | 36 | 26                    | 27 | 28 | 29 | 29 | 30 | 31 | 32 | 33 | 34 | 34 | 35 | 36 | 37 | 38 | 39 | 39  |
|                  | 35 | 25                    | 26 | 27 | 28 | 29 | 29 | 30 | 31 | 32 | 33 | 33 | 34 | 35 | 36 | 37 | 38 | 38  |
|                  | 34 | 25                    | 25 | 26 | 27 | 28 | 29 | 29 | 30 | 31 | 32 | 33 | 33 | 34 | 35 | 36 | 37 | 37  |
|                  | 33 | 24                    | 25 | 25 | 26 | 27 | 28 | 28 | 29 | 30 | 31 | 32 | 32 | 33 | 34 | 35 | 35 | 36  |
|                  | 32 | 23                    | 24 | 25 | 25 | 26 | 27 | 28 | 28 | 29 | 30 | 31 | 31 | 32 | 33 | 34 | 34 | 35  |
|                  | 31 | 22                    | 23 | 24 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 30 | 30 | 31 | 32 | 33 | 33 | 34  |
|                  | 30 | 21                    | 22 | 23 | 24 | 24 | 25 | 26 | 27 | 27 | 28 | 29 | 29 | 30 | 31 | 32 | 32 | 33  |
|                  | 29 | 21                    | 21 | 22 | 23 | 24 | 24 | 25 | 26 | 26 | 27 | 28 | 29 | 29 | 30 | 31 | 31 | 32  |
|                  | 28 | 20                    | 21 | 21 | 22 | 23 | 23 | 24 | 25 | 25 | 26 | 27 | 28 | 28 | 29 | 30 | 30 | 31  |
|                  | 27 | 19                    | 20 | 21 | 21 | 22 | 23 | 23 | 24 | 25 | 25 | 26 | 27 | 27 | 28 | 29 | 29 | 30  |
|                  | 26 | 18                    | 19 | 20 | 20 | 21 | 22 | 22 | 23 | 24 | 24 | 25 | 26 | 26 | 27 | 28 | 28 | 29  |
|                  | 25 | 18                    | 18 | 19 | 20 | 20 | 21 | 22 | 22 | 23 | 23 | 24 | 25 | 25 | 26 | 27 | 27 | 28  |
|                  | 24 | 17                    | 18 | 18 | 19 | 19 | 20 | 21 | 21 | 22 | 22 | 23 | 24 | 24 | 25 | 26 | 26 | 27  |
|                  | 23 | 16                    | 17 | 17 | 18 | 19 | 19 | 20 | 20 | 21 | 22 | 22 | 23 | 23 | 24 | 25 | 25 | 26  |
|                  | 22 | 15                    | 16 | 17 | 17 | 18 | 18 | 19 | 19 | 20 | 21 | 21 | 22 | 22 | 23 | 24 | 24 | 25  |
|                  | 21 | 15                    | 15 | 16 | 16 | 17 | 17 | 18 | 19 | 19 | 20 | 20 | 21 | 21 | 22 | 23 | 23 | 24  |

\* Source: "Everyday Heatstroke Prevention Guidelines" Ver. 1, April 2008, Japanese Society of Biometeorology

## ◆ Monitoring Function

The monitoring function enables the Rx unit (Central) to monitor gas concentrations and alarm/error statuses from Tx units (Peripheral).

This function is available only when Bluetooth is set to ON for each detector. By configuring each unit as either Rx or Tx, the Rx unit can detect and display the data transmitted from the Tx units. For details on how the Rx unit displays this information, refer to "Tx List/NW-Dev Screen" on Page 23.

The monitoring function is configured in the detector's Setup Menu > Admin Setup > Bluetooth Mode. The specifications for each ID are as shown in the table. (Settings operation pages: Page 42 and Page 43)

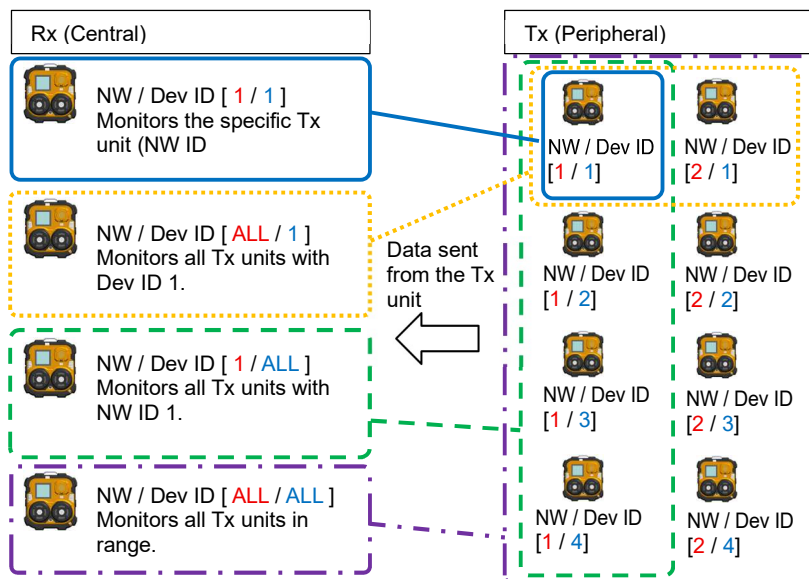
| Role                 | ID name | Configurable information | Description                                                                          |
|----------------------|---------|--------------------------|--------------------------------------------------------------------------------------|
| Rx<br>( Central )    | NW ID   | 000–255, ALL             | Defines the monitoring range.<br>Setting to "ALL" allows monitoring of multiple IDs. |
|                      | Dev ID  | 000–255, ALL             |                                                                                      |
| Tx<br>( Peripheral ) | NW ID   | 000–255                  | Assigned as unique identifiers for the unit.                                         |
|                      | Dev ID  | 000–255                  |                                                                                      |

### NOTE

- When setting the Tx NW ID/Dev ID, use unique IDs that are different from other Tx units. If multiple Tx units are set with the same NW ID and Dev ID, the Rx unit will differentiate between them internally; however, they will be displayed as the same ID number on the screen, making them difficult to identify.
- Up to eight Tx units can communicate with a single Rx unit.

## ● Rx and Tx setting examples

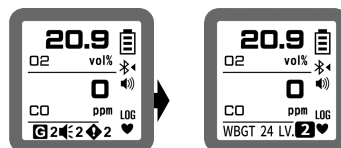
When the Rx unit is configured as follows, the corresponding Tx units can be monitored.



## Operation

If Tx alarm or error information is received on the Rx unit, the user is notified via a buzzer sound, alarm light, LCD display, and vibration. Voice announcements are not provided for this function.

| Icon                                                                              | Description                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------|
|  | Displays the number of Tx units currently being received. |
|  | Displays the number of Tx units in alarm status.          |
|  | Displays the number of Tx units in error status.          |



Heat index (WBGT) estimated value display and alternating display

### •Operation on the Rx unit when a Tx alarm is occurring

The Rx unit operates as follows:

|                      |                                                                                                                               |                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Output specification | Alarm 1 (AL1)<br>Alarm 2 (AL2)<br>Alarm 3 (AL3)<br>TWA alarm<br>STEL alarm<br>TxC alarm<br>Alarm test (excluding error tests) | Error<br>Alarm test (error tests only)                                            |
| Tx status icon       |                                              |  |
| Buzzer sound         | Slow intermittent beeping                                                                                                     | Very slow intermittent beeping                                                    |
| Alarm light          | 0.5-second cycle flashing<br>(Red)                                                                                            | 0.5-second cycle flashing<br>(Orange)                                             |
| Vibration            | Slow-cycle vibration                                                                                                          | Slow-cycle vibration                                                              |

### •Operation and Behavior during Notifications

#### • Muting the Buzzer

Pressing the  button during a Tx status notification stops the buzzer only. The alarm light, vibration, and LCD display remain in the alarm state. If a new alarm occurs while the buzzer is stopped, the buzzer will sound again.

The buzzer will not sound if the alarm volume is set to "0 (MUTE)".

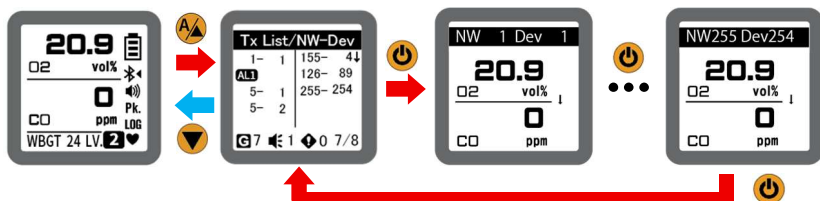
#### • Automatic Screen Transition

Upon receiving a status notification from a Tx unit, the Rx unit will automatically switch to the <Gas concentration screen> regardless of the current display mode.

## Operation

### • Checking Tx Unit Data on the Rx Unit

Data received from Tx units (gas concentrations and alarm history) can be displayed on the LCD screen of the Rx unit. Refer to Page 23 for details.



### ◆ External Acquisition of Detector Info (Tx)

In addition to the monitoring function which displays Tx information on the Rx unit, the product supports data communication with the following software applications. These applications can be utilized concurrently with the detector's monitoring function, although some functional limitations may apply.

#### • Log data collection software (Dedicated PC software, sold separately)

Enables acquisition and management of detector log data, as well as configuration of settings such as logging intervals. Communication is performed via Bluetooth or infrared (IR) communication.

#### • GD-SCANNER (smartphone application)

Acquire detector information using smartphone/tablet

When using these applications via Bluetooth, the detector must be set as a Tx unit. Communication and data display are not possible if the detector is set as an Rx unit.

The software utilizes a pairing function to secure a one-to-one communication link with the detector. Note that while a detector is actively communicating with a paired device, it may not be visible to or accessible by other devices.

For details on the software, refer to the Instruction Manual for each.

# 4. Gas Alarm Operation



## ! DANGER

- If a gas alarm occurs, immediately take all necessary measures to prevent accidents such as oxygen deficiency or gas poisoning.
- If the alarm volume is set to "0: MUTE" on the setup screen, the buzzer will not sound during a gas alarm ("X" will appear on the gas concentration screen). This may make it difficult to notice a gas alarm, so make sure to check the volume settings before using the detector.
- If the announcement volume is set to "0: MUTE" on the setup screen, voice announcements will not be played during a gas alarm. This disables audio gas alarms, so make sure to check the volume settings before using the detector.

When the gas concentration exceeds the gas alarm set value, the unit will start beeping, the alarm light will start flashing, and the gas concentration and an icon will appear on the LCD. Regardless of the current display mode, the detector will automatically switch to the <Gas concentration screen> when an alarm occurs. The alarm reset method may be either auto resetting or manual resetting, depending on the device settings.

## LCD

| Specifications  | 1-gas screen                             | 2-gas screen                      |
|-----------------|------------------------------------------|-----------------------------------|
| Screen contents | <p>Displayed below the concentration</p> | <p>Alternating screen display</p> |

## Alarm light

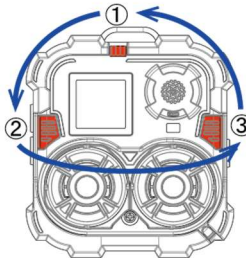


Red

3 alarm LEDs flash in sequence.

## ● Light operations

- AL1: 0.5-sec cycle flash
- AL2: 0.25-sec cycle flash
- AL3: 0.125-sec cycle flash
- TWA, STEL, TxC: 0.5-sec cycle flash



## Buzzer operation three times



## Vibration



## ◆ Various Gas Alarm Operations

When a gas alarm is triggered, the product operates as follows:

| Output specification | LCD icon    | Buzzer sound                    | Voice announcement | Alarm light                       | Vibration                 |
|----------------------|-------------|---------------------------------|--------------------|-----------------------------------|---------------------------|
| Alarm 1 (AL1)        | <b>AL1</b>  | Slow intermittent beeping       | Alarm level 1      | 0.5-second cycle flashing (Red)   | Slow-cycle vibration      |
| Alarm 2 (AL2)        | <b>AL2</b>  | Rapid intermittent beeping      | Alarm level 2      | 0.25-second cycle flashing (Red)  | Fast-cycle vibration      |
| Alarm 3 (AL3)        | <b>AL3</b>  | Very rapid intermittent beeping | Alarm level 3      | 0.125-second cycle flashing (Red) | Very-fast-cycle vibration |
| TWA alarm            | <b>TWA</b>  | Slow intermittent beeping       | TWA alarm          | 0.5-second cycle flashing (Red)   | Slow-cycle vibration      |
| STEL alarm           | <b>STEL</b> | Slow intermittent beeping       | STEL alarm         | 0.5-second cycle flashing (Red)   | Slow-cycle vibration      |
| TxC alarm            | <b>TxC</b>  | Slow intermittent beeping       | TxC alarm          | 0.5-second cycle flashing (Red)   | Slow-cycle vibration      |

### ● Operation and Behavior during a Gas Alarm

- Muting the Buzzer

Press the  button for a short time to silence the beeping during an active alarm. The alarm light, vibration, and LCD will remain in the alarm state. If a new alarm arises, the unit will start beeping again.

- Alarm Reset Method

The default alarm reset method is Auto Resetting. When the gas concentration falls below the gas alarm set value, the gas alarm will automatically deactivate. The reset method can be changed to Manual Resetting in the Setup Menu (Refer to Page 44).

| Method                           | Alarm reset method                                                                                                                                                                                                                                                                                                |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auto Resetting (default setting) | The alarm state is automatically cleared once the gas concentration falls below the alarm set value.                                                                                                                                                                                                              |
| Manual Resetting                 | The alarm state is maintained even if the gas concentration falls below the alarm set value. To reset the alarm, press the  button. (Note: The alarm cannot be cleared while the gas concentration is within the alarm range.) |

### NOTE

- Tx Unit Alarm Reset:

If a Tx unit is configured for Manual Resetting, it will continue to transmit alarm notifications to the Rx unit until the alarm is reset on the Tx unit. Once the Tx unit alarm is cleared, the corresponding notification on the Rx unit will be reset, regardless of the Rx unit's own reset method.

## 5. Setup Menu

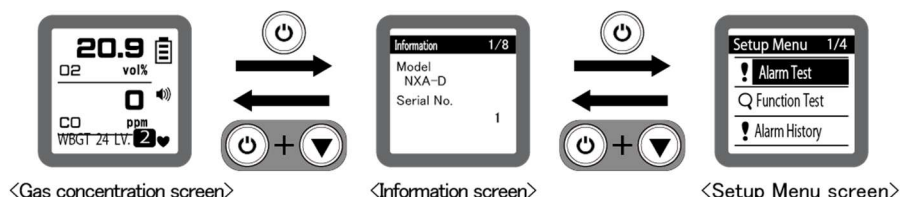
From the Setup Menu, you can configure the settings and perform operations for the items listed below. Status can be monitored via icons on the <Gas concentration screen> (Page 19), while detailed setting values are verified on the information screen (Page 17 & 18). Additionally, certain settings can be managed via the Dedicated PC software (refer to the software's instruction manual for details).

Items in the Setup Menu are categorized as follows (listed in order of display):

| Category             | Item             | Contents                                                                              | Reference page |
|----------------------|------------------|---------------------------------------------------------------------------------------|----------------|
| Testing & History    | Alarm Test       | Simulates alarms (AL1, 2, 3, TWA, STEL, TxC or ERROR) to verify operation.            | Page 33        |
|                      | Function Test    | Tests the buzzer sound, alarm light, and vibration                                    | Page 33        |
|                      | Alarm History    | Displays the history of past alarm events.                                            | Page 34        |
| Communication & Logs | Bluetooth ON/OFF | Enables or disables Bluetooth communication. (Default: OFF)                           | Page 36        |
|                      | IR Comm          | Connects the detector to the log data collection software via infrared communication. | Page 36        |
|                      | Logging ON/OFF   | Starts/Stops data logging.                                                            | Page 37        |
|                      | Clear Log        | Deletes all log data from the detector.                                               | Page 38        |
| System Settings      | Audio Volume     | Sets the volume levels for various alerts. (5 levels: 4(MAX) to 0(MUTE))              | Page 39        |
|                      | Language         | Selects the language for the display and voice announcements.                         | Page 40        |
|                      | Clock Adjustment | Set the date and time in YYYY/MM/DD/hh/mm/ss format.                                  | Page 40        |
|                      | Admin Setup      | Opens the Admin Menu for administrators.                                              | Page 41        |

### • Accessing the Setup Menu

To enter the Setup Menu, press the  button twice while the <Gas concentration screen> is displayed. The screen transitions as follows:



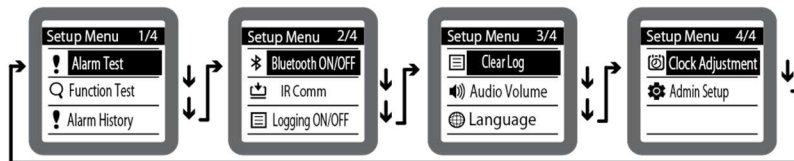
**Transition Restrictions for Rx Units:** The display will not transition to the Setup Menu if a gas alarm or a Tx unit alarm (gas alarm or error) is occurring on the Rx unit.

### • Setup Menu Items

The Setup Menu consists of four screens. Press the  button to scroll forward or the  button to scroll backward through the screens.

## Setup Menu

Press the  button



<Setup Menu screen>

The display color is inverted for the item currently selected with the cursor. Refer to the table on Page 32 for the category and functional details of each item.

Once in the Setup Menu, use the following button operations to navigate and configure settings:

| Item                               | Button operation                                                                                                                                                                                                 |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select (move the cursor)           | Press the  /  buttons.                         |
| Set                                | Press the  button.                                                                                                              |
| Undo                               | Press the  +  buttons simultaneously.          |
| Return to gas concentration screen | Press and hold the  +  buttons simultaneously. |

## 5-1. Alarm Test

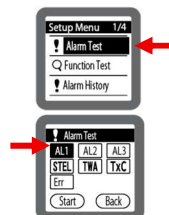
The Alarm Test is used to verify the operation of the buzzer, voice announcements, flashing patterns of the alarm light, and the vibration. This test can also be performed via the Dedicated PC software.

Performing an alarm test on a detector configured as a Tx unit will trigger a simulated alarm notification on the Rx unit.

While the Rx unit displays this as an active alarm status on the <Gas concentration screen> and Tx List screen, it can be identified as a test by checking the Tx detail screen. On this screen, the [TEST] icon is displayed alongside the alarm level icon.

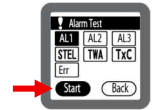
(1) In the Setup Menu, select  /  [Alarm Test] and press the  button to confirm.

(2) Select  /  the alarm type and press the  button to confirm.  
Selectable items: [AL1], [AL2], [AL3], [STEL], [TWA], [TxC], or [Err] (sensor error).

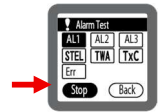


## Setup Menu

(3) Select   [Start] and press the  button to confirm. The unit will start the simulated alarm operation. To return to the Setup Menu without starting the test, select [Back] and confirm.



(4) To terminate the test, select   [Stop] and press the  button to confirm.



## 5-2. Function Test

The Function Test is used to verify the physical operation of the buzzer, alarm lights, and vibration.

(1) In the Setup Menu, select   [Function Test] and press the  button to confirm.



(2) Select   [Start] and press the  button to confirm to begin the test.



(3) Check the operation: The buzzer sounds, the unit vibrates, and all three alarm lights flash simultaneously, changing color in the following order: **Green** -> **Red** -> **Orange**

(4) To end the test, select   [Stop] and  confirm. To return to the Setup Menu, select   [Back] and  confirm.



## 5-3. Alarm History / Event History

If the product triggers a gas alarm, the alarm data is automatically saved. Up to 50 items can be stored on the unit; when the limit is reached, the oldest data is overwritten. Alarm History shows information for each series of alarm events from when the alarm is triggered until it is reset. Also, when the alarm status is reset, the alarm peak information is recorded. Note that alarm resets are not recorded.



Display example (AL1 -> AL2 -> alarm reset)

Peak information recorded during a series of alarm events are displayed, including the peak date and time, gas type, and peak concentration.

Alarm information is displayed including the time, gas type, and alarm type when the alarm setpoint is reached.

### Setup Menu

| History items | Contents                                                                        |
|---------------|---------------------------------------------------------------------------------|
| AL1 START     | AL1 alarm starts.                                                               |
| AL2 START     | AL2 alarm starts.                                                               |
| AL3 START     | AL3 alarm starts.                                                               |
| STEL START    | STEL alarm starts.                                                              |
| Peak          | Reset the alarm.<br>Displays the peak gas concentration during the alarm.       |
| ST Peak       | Reset STEL alarm.<br>Displays the peak gas concentration during the STEL alarm. |

This information can be checked on the unit itself, or in more detail via the "GD-SCANNER" smartphone app. Please note that alarm information from the Tx unit is not saved in the Rx unit's Alarm History, and if the alarm level drops (e.g., from AL2 to AL1), the lower level event is not recorded.

- (1) In the Setup Menu (see P32), select   [Alarm History] and press the Power button to  confirm.
- (2) Use the   buttons to scroll through the pages and check the alarm history.
- (3) To exit and return to the Setup Menu, press the   buttons simultaneously.



## 5-4. Bluetooth ON/OFF

Bluetooth communication allows the unit to connect to another detector, or to a device (PC or smartphone) with the dedicated application installed.

- (1) In the Setup Menu (See Page 32), select  /  [Bluetooth ON/OFF] and press the  button to confirm.
- (2) Select [ON] to use communication or [OFF] to disable it, and press the  button to confirm. [Save] and [Cancel] will appear.
- (3) To apply the change, select [Save] and press the  button to confirm. After a long beep, the screen will return to the Setup Menu.

When Bluetooth is set to ON, the Bluetooth icon appears on the gas concentration screen.

| Bluetooth icon                                                                    | Rx unit settings                                                                  | Tx unit settings                                                                  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |

For details on the Rx/Tx unit network settings, See "Admin Settings" (Page 42) in this manual. These settings cannot be configured via the smartphone application.



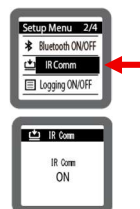
## 5-5. IR Comm

By connecting to the PC on which the Dedicated PC software is installed using an infrared communication device, you can change various main unit settings and view or delete log data. For details, refer to the Instruction Manual of the Dedicated PC software.

- (1) In the Setup Menu (See Page 32), select  /  [IR Comm] and press the  button to confirm.
- (2) A long beep will sound, and IR communication will be enabled while the "IR Comm ON" screen is displayed.

If there is no communication for 10 minutes, the function will turn OFF automatically and the display will return to the Setup Menu.

To exit and return to the Setup Menu, press the  +  buttons simultaneously.



## 5-6. Logging

By turning ON the logging function, this product can internally save status information such as gas concentrations and alarms at the set time intervals. The saved data can be checked using the separately sold Dedicated PC software.

### ◆ Logging ON/OFF

By enabling the logging function, the unit can save status information, such as gas concentrations and alarms, at set time intervals. The saved data can be viewed using the dedicated PC software.

The unit can store a maximum of 18,000 data points or up to 100 individual files. Logging will stop if either of these limits is reached, as shown in the table below:

|           | Number of data points per file | Number of files | Total number of data points | Saving available                 |
|-----------|--------------------------------|-----------------|-----------------------------|----------------------------------|
| Example 1 | 18,000                         | 1               | 18,000                      | Yes                              |
| Example 2 | 180                            | 100             | 18,000                      | Yes                              |
| Example 3 | 200                            | 91              | 18,200                      | No<br>(Data capacity exceeded)   |
| Example 4 | 90                             | 101             | 9090                        | No<br>(Number of files exceeded) |

#### • Execution and File Management

When the logging function is ON, the unit creates a new log file and starts recording every time the power is turned ON. When the power is turned OFF, the current log file is closed and stored in the unit.

#### • Logging Interval

Data is recorded at set time intervals. These intervals can be changed via "Admin Settings" (Page 42) or through the dedicated PC software.

#### • Automatic Stop Conditions

Recording will automatically stop if the log capacity reaches 100% (either 18,000 data points or 100 files are stored) or if an error occurs.

#### • Setting Retention

The Logging ON/OFF setting is stored in the unit and remains active even after the power is turned OFF or the battery is replaced. This allows the unit to resume logging automatically the next time it is turned back ON.

(1) In the Setup Menu (See Page 32), select   [Logging ON/OFF] and press the  button to confirm.



(2) Select [ON] to start logging or [OFF] to stop it, and press the  button to confirm. [Save] and [Cancel] will appear.



## Setup Menu

- (3) To apply the change, select   [Save] and press the  button to confirm. After a long beep, the screen will return to the Setup Menu.

When logging is ON, the **LOG** icon is displayed on the gas concentration screen. If the maximum number of files or data points has been reached, the **LOG** icon is displayed, but logging will not begin.



## ◆ Clear Log

You can delete all log data saved on the unit. Use this feature to clear unnecessary data or when the log capacity is full.

### NOTE

- This function cannot be operated while logging is in progress. You must stop logging (See Page 38) before clearing the log data.
- Individual log data can only be deleted via the PC application.
- Once deleted, the data cannot be recovered. If you need to keep the data, ensure it is saved to an external device using the PC application before proceeding.

- (1) In the Setup Menu (See Page 32), select   [Clear Log] and press the  button to confirm.



- (2) Select   [Clear] and press the  button to confirm. A confirmation screen "[Clear]?" will appear.



- (3) Select   [Clear] again and press the  button to confirm to delete all log data. A long beep will sound, and the screen will return to the Setup Menu.

To cancel the operation, select   [Cancel] and  confirm.



## 5-7. Audio Volume

You can individually adjust the volume levels for "Announcement," "Operation," and "Alarm." These settings can also be changed via the dedicated PC software.

- Volume Levels: The volume can be set to 5 levels.

4 (MAX) > 3 > 2 > 1 (Low) > 0 (MUTE)

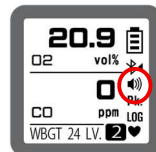
- Volume Check:

Announcement / Operation: Can be checked only on the [Audio Volume] setting screen.

Alarm: The current setting is displayed as a volume icon on the gas concentration screen.

Volume level

4 (MAX) > 3 > 2 > 1 (Low) > 0 (MUTE)



- (1) In the Setup Menu (See Page 32), select [Audio Volume] and press the button to confirm.



- (2) Select the item ("Announcement," "Operation," or "Alarm") and press the button to confirm.



- (3) Operate the buttons to adjust the volume level, and then press the button. The volume levels can be set as follows: 4 (MAX) > 3 > 2 > 1 (Low) > 0 (MUTE)



- (4) To apply the change, select [Save] and press the button to confirm. A long beep will sound, and the screen will return to the Setup Menu.



### NOTE

- The voice announcement volume during an alarm depends on alarm volume settings. However, if the announcement volume is set to "0: MUTE," voice announcements will not be played during an alarm.

## 5-8. Language

The display language and voice announcements can be changed. These settings can also be modified using the dedicated PC software.

The following languages are available:

English

日本語 (Japanese)

中文 (繁体) (Traditional Chinese)

中文 (简体) (Simplified Chinese)

(1) In the Setup Menu (See Page 32), select  /  [Language] and press the  button to confirm.

(2) Select  /  the language and press the  button to confirm. [Save] and [Cancel] will appear.

(3) To apply the change, select  /  [Save] and press the  button to confirm. After a long beep, the screen will return to the Setup Menu.



## 5-9. Clock Adjustment

The date and time set in the detector can be changed. These settings can also be changed via the dedicated PC software.



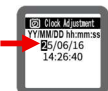
### CAUTION

- If the battery is completely discharged, the clock may be reset. If "Battery Empty" occurs, ensure the time is reset after charging.
- If the date and time are not set correctly, the following information will not be recorded or displayed correctly:
  - Scheduled gas sensor replacement and calibration dates
  - Logging data timestamps
  - Alarm history dates and times

(1) In the Setup Menu (See Page 32), select  /  [Clock Adjustment] and press the  button to confirm.



(2) Use the  /  buttons to change the value, and press the  button to move to the next item. Make the settings in the order of Year / Month / Day / Hour / Minute / Second.



To go back one digit, press the  +  buttons simultaneously.

## Setup Menu

- (3) After entering the "Second" value, press the  button to confirm. [Save] and [Cancel] will appear.

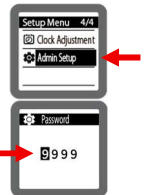


- (4) To apply the change, select  /  [Save] and press the  button to confirm. After a long beep, the screen will return to the Setup Menu.

## 5-10. Admin Setup

This menu is intended for administrators or managers. These settings should be reviewed and changed only by authorized personnel.

- (1) In the Setup Menu (See Page 32), select  /  [Admin Setup] and press the  button to confirm.



- (2) When the password input screen appears, enter the password. Use the  /  buttons to change the number, and press the  button to move to the next digit.

To go back one digit, press the  +  buttons simultaneously.

### NOTE

- The default password is "9999."
- If the password is incorrect, the screen will not change.

- (3) After entering the last digit, press the  button to confirm. If the password is correct, the [Admin Menu] will appear.



## 6. Administrator Settings (Admin Setup)

On the Admin Setup screen, you can set the items given in the table below.

| Item              | Contents                                             | Reference page |
|-------------------|------------------------------------------------------|----------------|
| NW/Dev ID         | Sets the product NWID and device ID                  | Page 42        |
| Alarm Set Value   | Changes the alarm setpoints                          | Page 43        |
| Alarm Reset       | Sets the alarm reset method                          | Page 44        |
| Logging Interval  | Sets the logging interval                            | Page 44        |
| Wireless Interval | Sets the interval for sending data during Tx setting | Page 45        |
| Bluetooth Mode    | Rx/Tx settings                                       | Page 45, 46    |
| Password          | Sets the Admin password                              | Page 47        |

### 6-1. NW ID/Dev ID

These settings are required for units configured as a Tx (Peripheral) to use the monitoring function. Since a single Rx unit can monitor up to eight Tx units, these IDs are used to select and monitor specific units within a network. The NW ID and Dev ID can also be changed via the Dedicated PC software.

|                       |                                                                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| NW ID<br>(Network ID) | Required for Tx units (0–255). Sets the ID for wireless grouping. By matching the NW ID, the Rx unit can select the specific group to monitor. |
| Dev ID<br>(Device ID) | Required for Tx units (0–255). Sets a unique identification number. This allows the Rx unit to identify and monitor specific individual units. |

\* By default, the optional value other than 0 set by the manufacturer is entered.

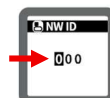
- (1) In the Admin Setup screen (See Page 32), select [NW/Dev ID] and press the  button to confirm.



- (2) Select  /  the item (NW ID or Dev ID) and press the  button to confirm.



- (3) Use the  /  buttons to change the value (0 to 255) and press the  button to move to the next digit. To go back one digit, press the  +  buttons simultaneously.



- (4) After entering the last digit, press the  button to confirm. [Save] and [Cancel] will appear.



- (5) To apply the change, select  /  [Save] and press the  button to confirm.

## 6-2. Alarm Set Value

The alarm concentration of the gas sensor loaded on this product can be changed. These settings can also be changed from the Dedicated PC software.



### WARNING

- Settings must be changed by a safety manager or authorized personnel. After changing, confirm that all setpoints are correct.
- Settings are retained even if the unit is turned OFF.
- Alarm setpoints cannot be changed while logging is in progress.

Alarm setpoints can only be set if they meet the following conditions:

- Except Oxygen:  $AL1 < AL2 < AL3$
- Oxygen:  $AL2 < AL1 < AL3$

The range of alarm setpoints that can be set for each gas type is as described below. Set the alarm values for the product within the concentration ranges given in the table below.

| Gas type            | Configurable concentration | Increment |
|---------------------|----------------------------|-----------|
| Oxygen (Alarm 3)    | 22.0 to 25.0 vol%          | 0.1 vol%  |
| Oxygen (Alarm 1, 2) | 5.0 to 20.0 vol%           | 0.1 vol%  |
| Carbon monoxide     | 10 to 250 ppm              | 1 ppm     |
| Hydrogen sulfide    | 5.0 to 30.0 ppm            | 0.1 ppm   |

(1) In the Admin Setup screen (See Page 32), select [Alarm Set Value] and confirm.

(2) Select the sensor and confirm.

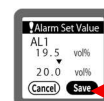
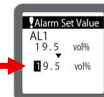
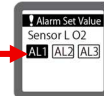
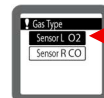
(3) Select the alarm level (AL1, AL2, or AL3) and confirm.

(4) Use the buttons to change the value, and press the button to move to the next digit.

To go back one digit, press the buttons simultaneously.

(5) After entering the last digit, press the button to confirm. [Save] and [Cancel] will appear.

(6) To apply the change, select [Save] and press the button to confirm.



## 6-3. Alarm Reset

Set the alarm reset method for the unit. You can choose between Auto Resetting (default) and Manual Resetting. These settings can also be changed via the Dedicated PC software.

For details on each reset method, See "4. Gas Alarm Operation" (Page 31).

**Auto Resetting (Default):** The alarm clears automatically when the gas concentration drops below the setpoint.

**Manual Resetting:** The alarm remains active even if the gas concentration drops below the setpoint. To clear the alarm, a manual reset (pressing the Power button) is required.

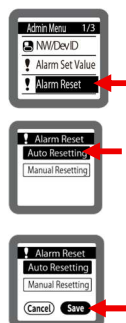
### NOTE

- Manual Resetting is recommended if you need to ensure that an operator confirms the site safety after every alarm event.

(1) In the Admin Setup screen (See Page 32), select   [Alarm Reset] and  confirm.

(2) Select   the reset method (Auto Resetting or Manual Resetting) and  confirm. [Save] and [Cancel] will appear.

(3) To apply the change, select   [Save] and  confirm.



## 6-4. Logging Interval

The logging interval can be set within the following range. These settings can also be changed via the dedicated PC software.

[Available Settings]

Seconds: 0.5, 1 to 10 (in 1-sec steps), 20, 30, 40, 50

Minutes: 1 to 10 (in 1-min steps), 20, 30, 40, 50, 60

Default Setting: 5 minutes

See the following table for information on logging interval time settings and maximum log storage time.

| Logging interval settings | Maximum storage time (estimate) |      |
|---------------------------|---------------------------------|------|
|                           | Hours                           | Days |
| 0.5 seconds               | 2.5                             | 0.1  |
| 5 minutes                 | 1,500                           | 62.5 |
| 10 minutes                | 3,000                           | 125  |
| 60 minutes                | 18,000                          | 750  |

## Administrator Settings (Admin Setup)

- (1) In the Admin Setup screen (See Page 32), select  /  [Logging Interval] and  confirm.
- (2) Use the  /  buttons to select the interval and  confirm. [Save] and [Cancel] will appear.
- (3) To apply the change, select  /  [Save] and  confirm.



### 6-5. Wireless Interval (Detector Info Notification Interval)

This function defines the interval of the wireless beacon transmission when the detector is operated as a Tx unit. It determines the frequency at which data, such as status and gas concentrations, are transmitted from the Tx side. Configuration is also possible through the dedicated PC software.

Settable Range: 2 to 9 seconds.

Increments: 1 second.

- (1) In the Admin Setup screen, use the  /  buttons to place the cursor on [Wireless Interval], and then press the  button to confirm.
- (2) Press the  /  buttons to select the desired interval (between 2 and 9 seconds), and then press the  button
- (3) Use the  /  buttons to place the cursor on [Save], and press the  button again. A long beep will sound, and the screen will return to the Admin Setup menu.



## 6-6. Bluetooth Mode

This function defines the wireless role of the detector within the monitoring system. Each unit must be configured as either a Tx unit (Peripheral) or an Rx unit (Central) to enable data transmission and monitoring via Bluetooth. Configuration is also possible through the dedicated PC software.

### Description of setting items

| Item | Description                                                                                                        |
|------|--------------------------------------------------------------------------------------------------------------------|
| Tx   | Sends the data of the main unit. Does not receive data.                                                            |
| Rx   | Receives the data from the Tx unit and performs a notification. Does not send the data of the main unit.           |
| ALL  | Receives all Tx unit data within range, regardless of the ID                                                       |
| ID   | Receives only the Tx unit data that matches the set NW ID and Dev ID. A number between 000 and 255 can be entered. |

(1) In the Admin Setup screen, use the   buttons to place the cursor on [Bluetooth Mode], and then press the  button to confirm.

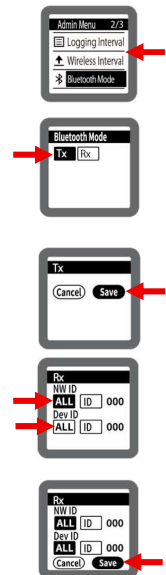
(2) Use the   buttons to select either [Tx] or [Rx], and press the  button

(3) After selecting [Tx], place the cursor on [Save] and press the  button

(4) If [Rx] is selected, you must configure the NW ID and Dev ID: Select Type: Use the   buttons to choose [ALL] or [ID] for each item. Set ID Number: If [ID] is selected, set a 3-digit number from 000 to 255.

- Change values: Use the   buttons.
- Move to the next digit: Press the  button.

(5) After completing the input, place the cursor on [Save] and press the  button to confirm. A long beep will sound, and the screen will return to the Admin Setup menu.



## 6-7. Password

This function allows you to change the password required for entering the Admin Menu. Setting a unique password prevents unauthorized changes to critical detector configurations.

- (1) In the Admin Setup screen, use the  /  buttons to place the cursor on [Password], and then press the  button to confirm.



- (2) Enter the new 4-digit password:

Change values: Use the  /  buttons to select a number for each digit.

Move to the next digit: Press the  button.



- (3) When input is complete for the rightmost digit, press the  button. Then, place the cursor on [Save] and press the  button again to confirm. A long beep will sound, and the screen will return to the Admin Setup menu.



## 7. Error Messages

If an error occurs in the detector, the corresponding error message will be displayed on the LCD, the unit will beep, and the alarm light will flash. (The unit will give two beeps instead of beeping constantly if an error occurs while the audio level is set to MUTE.)

The table below lists the major error messages. If an error occurs, check the cause of the error and take necessary actions. When no error message is displayed but the button or display does not function correctly, turn the power OFF and then ON again; if the unit still does not respond, press and hold the Power button for at least 10 seconds to force the unit to shut down, then turn the power ON again. If the unit does not reset to normal after these actions, contact New Cosmos or your New Cosmos representative for repair.

\* When the announcement volume is set to "0: MUTE," voice announcements will not be played. When the alarm volume is set to "0: MUTE," voice announcements will not be played, and the buzzer will not sound.

| Error message example                                                               | Error description | Cause                                                                                                                                                  | Procedure                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Sensor error      | E-Sx1, E-Sx2: The sensor has been disconnected (x is either L (Left) or R (Right))                                                                     | Either restart the unit, or remove and reinstall the sensor module.<br>If the problem persists even after trying the above, please request repairs.                                                                                                                 |
|    | Adjustment error  | E-Ax1: There is an error in the base adjustment results (x is either L (Left) or R (Right))                                                            | Restart the unit in clean air.<br>If the problem persists even after trying the above, please request repairs.                                                                                                                                                      |
|   | Battery Empty     | The battery level is low.                                                                                                                              | Gas detection is not possible.<br>Charge the battery.<br>If the problem persists even after trying the above, please request repairs.                                                                                                                               |
|  | Detector error    | E-D1 to E-D5, E-D8 to E-D10:<br>Detector internal communication error<br><br>E-D6, E-D7:<br>Communication error between the detector and sensor module | Restart the unit. For E-D6 or E-D7, reattach the sensor module. When doing so, ensure the oxygen sensor is attached to the left side and other sensors are attached to the right side. If the problem persists even after trying the above, please request repairs. |

## 8. Consumables Replacement

### ◆ Sensor Module and Sensor Filter Replacement

First of all, press and hold the  button to turn off the product.

#### (1) Removing the sensor covers

Remove the screw securing the sensor covers (No. 1 Phillips screwdriver) . Secure the unit with one hand, grab the sensor covers with the other hand and turn them approx. 45° in the direction of the arrows to be able to pull them out.



<Remove the screw>



<Turn the covers>



<Remove the covers>

#### (2) Replacing the sensor filter

Remove the sensor module from the unit. Hook a nail in the gap at the portion indicated by the arrow, and then pull up and remove the sensor filter.

\* If you are using a tool, take care that the filter does not get scratched.



<Gap for removing>



<Pull up the filter>



<Remove the filter>

For carbon monoxide (CO) sensors only, attach a charcoal filter dedicated to the carbon monoxide sensor module to the back of the new sensor filter.



#### WARNING

- Do not install the charcoal filter on anything other than the carbon monoxide sensor module. Installing it on other sensor modules may cause the sensitivity to decline.

#### NOTE

- The charcoal filter is fragile and may easily fall apart, so handle it carefully. Pressing it with a finger or something similar may cause it to crack.

Install the new sensor filter on the sensor module. Push both ends of the sensor filter into the sensor module with your fingers until they snap into place.

## Consumables Replacement



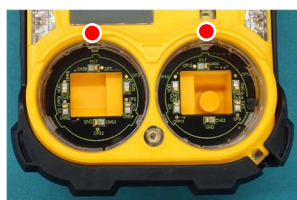
<Replace with a new filter>



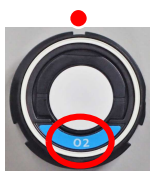
<Push in and fit it>

### (3) Returning the sensor module to the unit

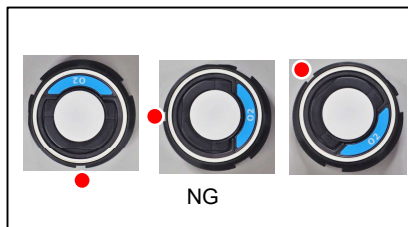
When replacing the sensor module, fit the new sensor module into the unit. (If the position of the area indicated by the red circle in the figure below (unit side: protrusion, sensor module side: slit) is not aligned correctly, the sensor module will not fit into the unit. Insert the sensor module facing the front of the unit in a direction that allows the correct reading of the letters on the sensor label.)



<Front of the unit>



OK



NG



#### CAUTION

- Make sure to return the sensor module to its original or the proper location. The location is determined according to the gas type. (L side: Oxygen (O<sub>2</sub>), R side: Other gases)

### (4) Returning the sensor covers to their original position

Return the sensor covers to their original position and tighten the screw (Screw tightening torque:  $20 \pm 5$  N·cm) . If the sensor module has been replaced, an announcement (voice and screen) indicating that the sensor has been replaced will appear when the unit is started thereafter.



#### CAUTION

- If the oxygen sensor module is removed, wait at least 15 minutes after installing the sensor module before starting the power supply of the unit. Starting up the product within 15 minutes may cause the base value (20.9 vol%) to deviate. In such a case, perform AIR adjustment.
- Correctly install the sensor filter. If the sensor filter is misaligned during installation, the waterproofing will not be satisfied.
- Do not press or poke the sensor filter with your finger or something similar. It may be damaged or lose its filtering performance.
- Be sure to remove water and dust before opening the sensor cover. Water and dust entering inside the unit may cause it to fail.
- If dust or other foreign matter gets deposited on the seal of the sensor cover, be sure to remove it. If even a small amount of dust gets caught, water can enter inside the unit.
- If water reaches the inside of the gas detector, please request a repair. Correct detection will not be possible.

## 9. Maintenance

This product is a precision instrument. Please perform the periodical checks and inspections below to maintain the detector's performance and ensure safety. In the event of a failure to follow the safety precautions (pages 5 to 7), such as impact shock from dropping or water ingress inside the detector, or use in conditions outside the specifications (page 56), such as usage in temperature/humidity exceeding the specified range, please contact New Cosmos or your New Cosmos representative for inspection (fees may apply).

### 9-1. Routine Check

| Inspection items   | Inspection contents                                                                                                                                                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCD display        | Check that all segments (all letters and icons) are displayed on the LCD.                                                                                                                                                                                                                              |
| Gas detection port | Check that the gas detection port is not blocked and that the sensor filter is not clogged with dirt or other contaminants. Clean or replace the sensor filter as necessary to ensure adequate gas ventilation.                                                                                        |
| Product operation  | From "Alarm Test" and "Function Test," check that the alarm light, buzzer, and vibration operation of the unit are functioning properly. -> See P33<br>If not functioning properly, please request an inspection (subject to a fee) from the store where you purchased the product or from New Cosmos. |
| Alarm performance  | Check the alarm operation by exposing the gas detection port to an alarm level gas for 30 seconds or more. If no alarm was triggered, please request an inspection (subject to a fee) from the store where you purchased the product or from New Cosmos.                                               |
| Battery level      | Please check the remaining battery power. -> See P15<br>If the battery level is low, please charge the unit. -> See P16<br><div><b>NOTE</b> • In low temperatures, the battery depletes more quickly, so we recommend charging it early.</div>                                                         |

### 9-2. Sensor Replacement Notification/Sensor Calibration Notification

This product is a safety device and requires sensor replacement and calibration. This function indicates the sensor calibration and replacement timing recommended by New Cosmos. For details, see P24, 25, and 50.

### 9-3. Annual Inspection

Contact New Cosmos or your New Cosmos representative to perform a periodic inspection including sensor calibration and filter replacement at least once a year to maintain the product accuracy.



#### **WARNING**

- If the recommended replacement period of the sensor module has passed, normal detection may not be possible. Please replace the sensor module within the specified number of years. For the recommended replacement period, see “Sensor Module Specifications.”
- The replacement period of the sensor is a guide for cases where there is no contact with high concentration gas or toxic gas and appropriate maintenance is performed, and it is not guaranteed.
- The sensor replacement period differs depending on the usage conditions and environmental conditions, etc. In particular, when the unit has been subjected to shocks such as drops, usage in extreme environments subject to water leaks, high temperatures and high humidity, or when in contact with high concentration gas or toxic gas, etc., make sure to conduct maintenance and inspection to confirm that there are no abnormalities before use.

### ◆ Main Parts for Inspection and Replacement as Necessary

| Name [Model]                                                          | Remarks                                                                                                                                                                                             |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Replacement sensor filter (x 1 pc)<br>[FE-143]                        | Replace the filter if it becomes dirty or wet. Additionally, replace the filter once a year, regardless of the condition. The replacement charcoal filter is for carbon monoxide (CO) sensors only. |
| Replacement charcoal filter (x 2 pcs)<br>[FE-144]                     |                                                                                                                                                                                                     |
| Oxygen sensor module<br>[CDS-300 (O <sub>2</sub> sensor)]             | This is a sensor module for oxygen detection.                                                                                                                                                       |
| Carbon monoxide sensor module<br>[CDS-300 (CO sensor)]                | This is a sensor module for carbon monoxide detection.                                                                                                                                              |
| Hydrogen sulfide sensor module<br>[CDS-300 (H <sub>2</sub> S sensor)] | This is a sensor module for hydrogen sulfide detection.                                                                                                                                             |
| Screen protector (x 2 pcs)<br>[SPF-4]                                 | Protects the LCD from dirt and scratches.                                                                                                                                                           |
| Elastomer cover                                                       | Replace if it is damaged or has deteriorated.                                                                                                                                                       |

Please request a replacement rechargeable battery from the store where you purchased the product or from New Cosmos. The warranty period of consumable parts is one year from the date of purchase. The warranty conditions are the same as for the product.

### 9-4. Cleaning

If the detector is dirty, wipe it off with a soft dry cloth, or a cloth fully wrung out of water (dry enough not to leave the product surface wet). Do not use any alcohol or detergent.

## 9-5. Storage



### CAUTION

- Do not leave the product in high temperature/humidity conditions or extremely dry locations for a long period of time.
- Do not store in the following places:
  - Where exhaust gases from combustion equipment, such as automobile exhaust, are present.
  - Where smoke, such as from cigarettes, is present.
  - Where silicone compound gas is present.  
(Generated from silicon putty and hair sprays)

If the product will not be used for an extended period, please fully charge it before storing. Also, charge it once every 90 days. When storing, remove the charging socket.

## 10. Troubleshooting

Before contacting us for service repair, perform basic troubleshooting using the table below.

\* If the product becomes unresponsive, turn OFF the power once, then turn it back ON and check if it operates normally.

| Symptom                                                 | Cause                                                                                                     | Action                                                                                                           | Reference page |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------|
| Pressing the power button does not turn ON the power    | Battery is depleted.                                                                                      | Charge the unit.                                                                                                 | Page 16 ,17    |
|                                                         | The protection function may be triggered by strong radio waves, automatically turning the power OFF.      | Connect the AC adapter for around 30 seconds, and then restart the product.                                      |                |
| Charging indicator does not light up.                   | Poor connection or failure of the dedicated AC adapter                                                    | The AC adapter may not be properly connected, so please check the connection.                                    | Page 16        |
| Error message appears                                   | Refer to "7. Error Messages."                                                                             |                                                                                                                  | Page 49        |
| "0" or "0.0" blinks for gas concentration               | AIR adjustment was performed in a gas-containing atmosphere, or a high concentration of gas was detected. | Perform AIR adjustment in clean (normal) air.                                                                    | Page 19        |
| No sound (buzzer or voice prompts) .                    | The audio volume is set to "0: MUTE."                                                                     | Check the audio volume setting.                                                                                  | Page 39        |
| Heartbeat display is not flashing.                      | Operation may have stopped.                                                                               | Press and hold the Power button for at least 10 seconds, and after the LCD display turns OFF, restart the power. | Page 12        |
| The date/time is incorrect ( reset to January 1, 2000). | The time information has been reset due to a depleted battery.                                            | Set the current date and time.                                                                                   | Page 40        |

## 11. Warranty

The warranty period is one (1) year from the date of purchase.

You are entitled to the limited warranty, if the product malfunctions due to a manufacturing defect during normal use in accordance with the instruction manual, specifications and labels.

### Warranty Scope

If the product fails or is found to be damaged due to a manufacturing defect during the warranty period, and used in accordance with the instruction manual and specifications, we will provide a free replacement and repair service. This warranty covers the New Cosmos product/parts only and not third party product/parts.

### Warranty Exclusions

The following will be repaired at the cost of customer even during the warranty period.

- (1) Failures and damages incurred by incorrect use, deliberate acts or negligence of the user.
- (2) Failures and damages caused by disaster, earthquake, storm and flood, lightning, extreme climate, abnormal power supply voltage, excessive electromagnetic interferences, or other acts of God.
- (3) Failures and damages resulting from repair and/or modification by non-New Cosmos certified technicians.
- (4) Consumables and failures and damages resulting from improper consumable replacement.
- (5) Other failures and damages not attributable to the manufacturer.

## 12. Specifications

### ◆ Product Specifications

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model                          | NXA-D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Gas sampling method            | Diffusion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Gas alarm method               | Voice, buzzer, alarm light (red) flashing and LCD display, vibration operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Error notification method      | Voice, buzzer, alarm light (orange) flashing and LCD display, vibration operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Power source used              | Dedicated lithium-ion rechargeable battery (built into the product)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Continuous operating time*1    | When equipped with an oxygen sensor: approx. 2,000 hours<br>When not equipped with an oxygen sensor: approx. 4,000 hours                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Operating temperature/humidity | -20 to 50°C 15 to 85% RH or less (continuous)<br>* There should be no condensation or sudden changes in temperature or humidity.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Charging temperature range     | 0 to 35°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Operating pressure range       | Atmospheric pressure (800 to 1100 hPa) * There should be no sudden pressure fluctuations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Explosion-proof structure      | Ex ia IIC T4 Ga                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Protection level               | IP66, IP68 equivalent (no immersion in water for 90 minutes at 2 m) <sup>*2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Sound pressure <sup>*3</sup>   | 95 dB or more / 30 cm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Wireless communication         | Bluetooth Low Energy 5.0 <sup>*4</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Key functions                  | Peak hold function, stop buzzer function, alarm manual resetting function, LCD backlight, voice announcements, volume settings (buzzer, voice), Bluetooth communication function, infrared communication function, LED lighting function, heat index (WBGT) estimated value display function, time, alarm test, function test, alarm history, monitoring function (Bluetooth), self-diagnosis (sensor abnormality, product abnormality), data logging function, battery level notification, sensor calibration notification, sensor replacement notification |
| Dimension                      | Approx. W78 x H85 x D46 mm (alligator clip not included)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Mass                           | Approx. 155 g (alligator clip not included)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

Note that the above specifications are subject to change without notice.

\*1 At 25°C, no alarm, with backlight, data logging, and Bluetooth OFF.

This will vary depending on environmental conditions, usage conditions, storage period, etc.

\*2 In its brand-new condition, the product features a dustproof and waterproof structure that meets New Cosmos's in-house testing standards in compliance with JIS C 60529:2026 protection grade IP66/68. However, this protection grade IP66/68 does not guarantee gas detection performance. IP66/68 refers to a structure that, in a dust test conducted under a reduced pressure of up to 2 kPa, prevents any accumulation of dust inside the tested product (IP6X), and in a water test, withstands powerful jet water spray from nozzles in all directions (IPX6), and is gently submerged into a tank of still tap water at room temperature with the lowest end of the product at 2 m below the water surface for 90 minutes, without any water ingress that could cause harmful effects (IPX8).

\*3 This is the alarm volume when the maximum audio volume is set.

\*4 This product is intended for use in Japan only.

## ◆ Sensor Module Specifications

|                                                     |      |                                       |                                                        |                                     |
|-----------------------------------------------------|------|---------------------------------------|--------------------------------------------------------|-------------------------------------|
| Model                                               |      | CDS-300                               |                                                        |                                     |
| Target gas                                          |      | Oxygen (O <sub>2</sub> )              | Carbon monoxide (CO)                                   | Hydrogen sulfide (H <sub>2</sub> S) |
| Detection principle                                 |      | Constant potential electrolysis       |                                                        |                                     |
| Detection range (Service range*1)                   |      | 0 to 25.0 vol%<br>(25.1 to 50.0 vol%) | 0 to 300 ppm<br>(301 to 2000 ppm)                      | 0 to 30.0 ppm<br>(30.1 to 150 ppm)  |
| Indication accuracy*2 (Excluding the service range) |      | ±0.5 vol%                             | 0 to 150 ppm:<br>±15 ppm<br>151 to 300 ppm:<br>±30 ppm | ±1.5 ppm                            |
| Display resolution (Within the service range)       |      | 0.1 vol%<br>(0.1 vol%)                | 1 ppm<br>(10 ppm)                                      | 0.1 ppm<br>(1.0 ppm)                |
| Alarm set value                                     | AL1  | 19.5 vol%*3                           | 50 ppm                                                 | 10.0 ppm                            |
|                                                     | AL2  | 18.0 vol%*3                           | 150 ppm                                                | 15.0 ppm                            |
|                                                     | AL3  | 25.0 vol%*3                           | 175 ppm                                                | 20.0 ppm                            |
|                                                     | TWA  | -                                     | 25 ppm                                                 | 10.0 ppm                            |
|                                                     | STEL | -                                     | 300 ppm                                                | 15.0 ppm                            |
|                                                     | TxC  | -                                     | 150 ppm·h                                              | -                                   |
| Response time (T90)*4                               |      | Within 20 seconds                     | Within 30 seconds                                      | Within 30 seconds                   |
| Recommended replacement cycle                       |      | 3 years                               |                                                        |                                     |

\*1 A range outside the detection range that indicates reference values for guidance purposes only.

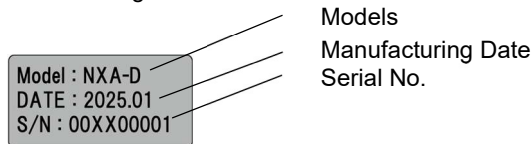
\*2 Under the same measurement conditions.

\*3 AL1 and AL2 are lower-limit alarms, AL3 is upper-limit alarm.

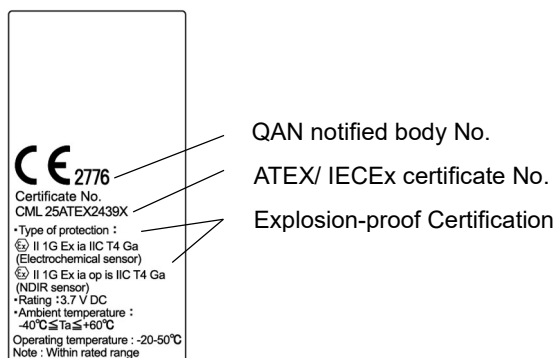
\*4 Time for 90% response. (Ambient temperature: 20 ± 2°C)

## 12-1. External Markings for Explosion-proof Models

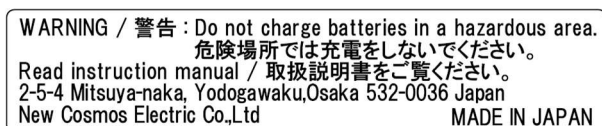
### 1. Manufacturing label



### 2. CE marking and Explosion-proof label



### 3. Warning label



Harmonised/Designated standards:

ATEX : EN 60079-11:2012 or EN IEC 60079-11:2024

EN IEC60079-0:2018

EN 60079-28:2015

IECEx : IEC 60079-11:2011 Edition 6.0 or IEC60079-11:2023 Edition 7.0

IEC 60079-0:2017 Edition 7.0

IEC 60079-28:2015 Edition 2.0

## 13. Disposal

Dispose of a used gas detector, sensor and/or battery as industrial waste in accordance with the applicable local laws and regulations.

### Battery disposal

Used batteries must be disposed of in accordance with the applicable laws and regulations.

The Waste Electrical and Electronic Equipment (WEEE) directive (2012/19/EU) is intended to promote recycling of electrical and electronic equipment and their components at end of life. This symbol (crossed-out wheeled bin) indicates separate collection of waste electrical and electronic equipment in the EU countries. This product uses batteries. Batteries must be recycled or disposed of properly. At the end of its life, batteries must undergo separate collection and recycling from general or household waste. Please use the return and collection system available in your country for the disposal of the batteries.



## 14. Detection Principle

- Constant potential electrolysis

This is a method in which a potentiostat circuit consisting of three electrodes and an electrolyte solution performs electrolytic oxidation while keeping the working electrode at a constant potential with respect to the reference electrode. The gas concentration can be obtained by measuring the current that occurs at that time.

An explanation of the carbon monoxide (CO) electrolytic reaction is shown below.

Working electrode:  $\text{CO} + \text{H}_2\text{O} \rightarrow \text{CO}_2 + 2\text{H}^+ + 2\text{e}^-$

Antipode:  $1/2\text{O}_2 + 2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2\text{O}$

- The contents of this instruction manual may be changed without notice due to improvements, etc.

Authorized representative:

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