

- XP-702ⅢS-B
- XP-702ⅢS-A
- XP-702ⅢS-F

Gas Leak Detector

Instruction Manual

This instruction manual covers the three models listed to the left.

- Keep this manual for easy reference.
- Carefully read this manual prior to use.



NEW COSMOS ELECTRIC CO., LTD.

XP-702ⅢIS-ABFET(00)

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Package Contents

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

Item	Qty.
Gas leak detector, with leather case	1
Drain filter set (DF-116)	1
Replacement filter element (FE-2)	1
Short probe (AT-2G)	1
Dust filter (FE-106)	1
Hand strap	1
Panasonic alkaline AA battery (LR6)	2
Instruction manual (this document)	1
Quick start guide	1
Inspection certificate	1

Optional gas collector sets (sold separately)

Model	Contents *
ATS-1	Gas collectors (AT-5 and AT-6), annealed copper tube (AT-11), and sampling tube (SH-4-05)
ATS-2	Gas collectors (AT-5 and AT-7A) and expansive probe (RP-4)
ATS-3	Expansive probe (RP-1), flexible adaptor (AT-12), and sampling tube (SH-4-1)
ATS-6	Gas collector (AT-5), annealed copper tube (AT-11), sampling tube (SH-4-05), and short probe (AT-2G)

* Refer to pages 22 and 23 for details.

1. Introduction

Thank you for purchasing the New Cosmos gas leak detector XP-702IIIS series. Prior to use, please read this manual to ensure safe and reliable operation, and to prevent gas leak related accidents.

XP-702IIIS-A/F can detect two gases, one at a time. The target gas can be switched when powering-on. Gases include methane, isobutane, refrigerant, etc.

XP-702IIIS-B can detect a single gas. Gases include methane, isobutane, refrigerant, etc.

Prior to use, check the target gas(es) by referring to the gas name label on the unit.

If gas concentrations reach a preset level, the unit will produce audio-visual alarms, thus helping prevent a gas leak incident.

Carefully read this manual regardless of your experience with gas detectors. Do not use the product for other than the intended purpose or in a manner not described in this manual.

Explosion proof Requirements

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

Explosion proof: USA/CANADA: Class I, Zone 0, AEx ia IIB T3 Ga
Class I, Zone 0, Ex ia IIB T3 Ga
USA: Class I, Division 1, Groups C and D, T3

Power source: 3.0 VDC (1.5 V battery x 2pcs)

Battery Requirements

Panasonic alkaline AA battery (LR6) x 2pcs Varta alkaline AA battery (4106) x 2pcs
Duracell alkaline AA battery (MN1500) x 2pcs Energizer alkaline AA battery (E91) x 2pcs




Precautions for use

- Do not replace batteries when an explosive atmosphere is present.
Ne pas remplacer les accumulateurs si une atmosphère explosive peut être présente.
- Potential Electrostatic Charging Hazard: Do not remove leather case in a hazardous location. This equipment must be installed in the dedicated leather case with closed zipper, before entering hazardous locations.
Risque potentiel de charge électrostatique-Ne pas retirez l'étui en cuir avant d'accéder à un endroit à risques Cette équipement doit être installé dans son étui en cuir dédié avec fermeture éclair, complètement fermé, avant d'entrer dans des zones à risques.
- Do not carry loose batteries when an explosive atmosphere is present.
- Only use the detector while installed in its dedicated leather case.
- Avoid strong mechanical shock, impact, or vibration to the detector, especially its cap. Dropping or bumping the detector may cause the cap to become a source of ignition or fire.
- Before opening any parts of the gas detector, ensure no explosive atmosphere is present.
- To prevent accidents from electrostatic charges, wear anti-static clothing, conductive footwear (antistatic work shoes), and have a conductive work floor (resistance: 10M Ohm or less).

1. Introduction

☐ 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.

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

☐ Safety Precautions

Carefully read this manual prior to use.

Follow the precautions below to ensure safe operation.



DANGER

- When a gas alarm activates, immediately take all the necessary measures to prevent accidents including a gas explosion.
- High concentration combustible gas may be discharged from the gas outlet. Do not place the gas outlet near an ignition source.



WARNING

- Zero adjustment (zeroing) starts automatically when the detector is turned on. Make sure to turn on the detector in clean air to prevent incorrect zero adjustment. Incorrect zero adjustment will cause inaccurate detection.
- Do not block any gas inlet and outlet. If blocked, accurate detection is not possible.
- Avoid water intake. Water entering the gas sampling tube or gas detector prevents proper gas detection.
- Keep the filter element at the drain filter set clean and dry. If the filter element is dirty or wet, proper gas detection is not possible.
- Keep the dust filter clean. If the filter is dirty, proper gas detection is not possible.
- Do not block the audio opening. If blocked, the audible alarm will be muffled.



WARNING

- Use only the following batteries:
Panasonic alkaline AA battery(LR6) x 2pcs
Varta alkaline AA battery(4106) x 2pcs
Duracell alkaline AA battery (MN1500) x 2pcs
Energizer alkaline AA battery(E91) x 2pcs

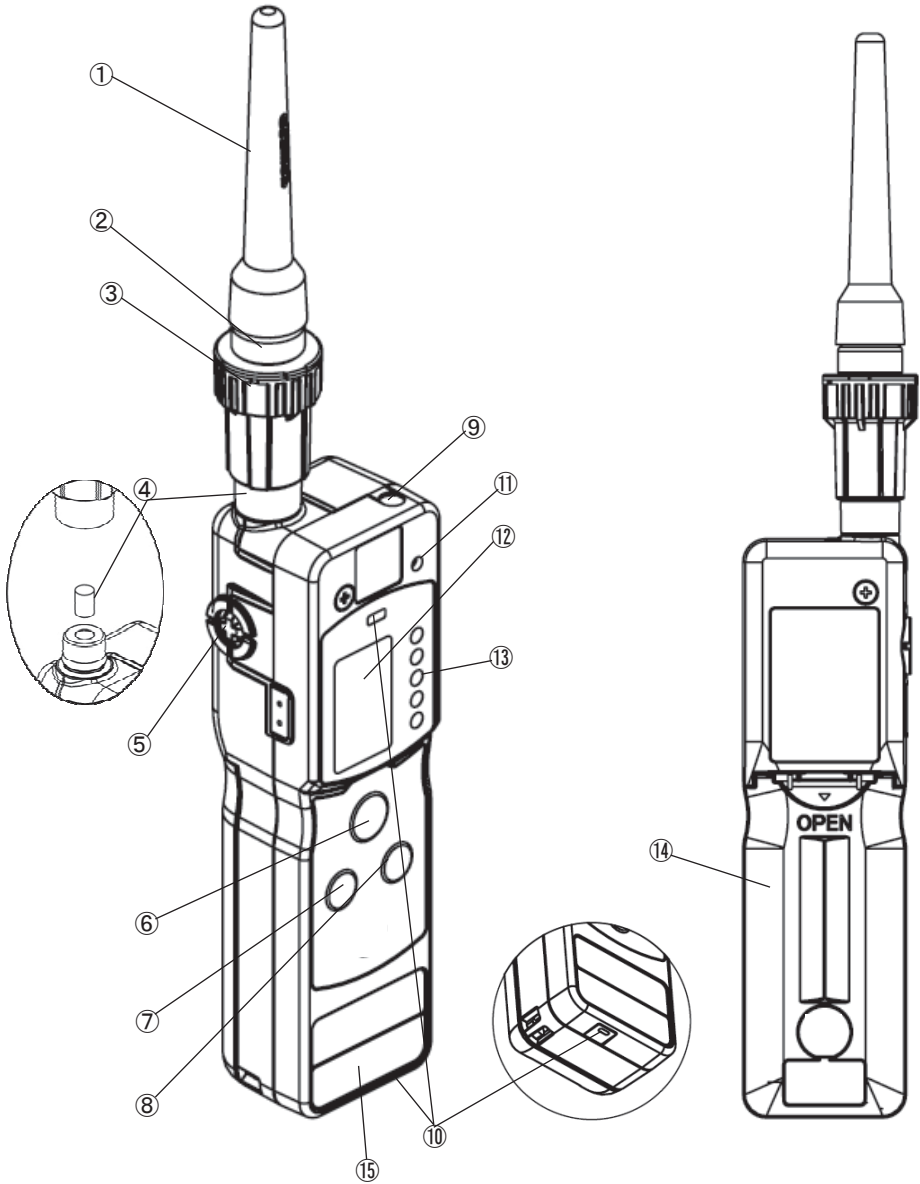
1. Introduction



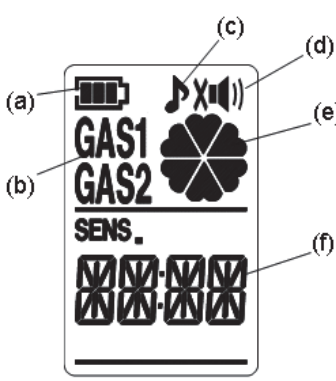





CAUTION

- If this product is to be unused for an extended period of time, remove the batteries from the unit. Failure to do so may cause them to leak or discharge, leading to product failure.
- If this product is to be unused for an extended period of time, turn on the product every 6 months to check for normal pump operation. Failure to do so may impair the pump performance.
- This product is explosion proof equipment. Do not disassemble, modify, or alter the structure of this unit or its electrical circuits. Doing so may impair the performance of the explosion proof characteristics.
- 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.
- Avoid using the product outside the specified operating temperature/humidity range or exposing the product to abrupt temperature/humidity changes. Failure to do so may impair the performance of the product.
- Avoid rapid changes in pressure. Failure to do so may impair the product performance or damage the sensors.
- Avoid strong mechanical shock, impact or vibration to the product. E.g. dropping or bumping. Failure to do so may impair the performance of the product.
- If condensation is present on the product, remove it and make sure the unit is completely dry and checked for abnormalities before use.
- This detector may detect gases or solvent vapors that are not target gases. Take the usage environment into consideration.
- Do not use the product in a place or near a place where silicone sealant/vapor may be present. Doing so may impair the performance of the product.
- Detecting high concentrations of sulfur dioxide or chlorine, etc. may shorten the sensor life or increase errors.
- Only use specified batteries. Failure to do so may impair the explosion proof performance of the product.

2. Unit Dimensions and Components

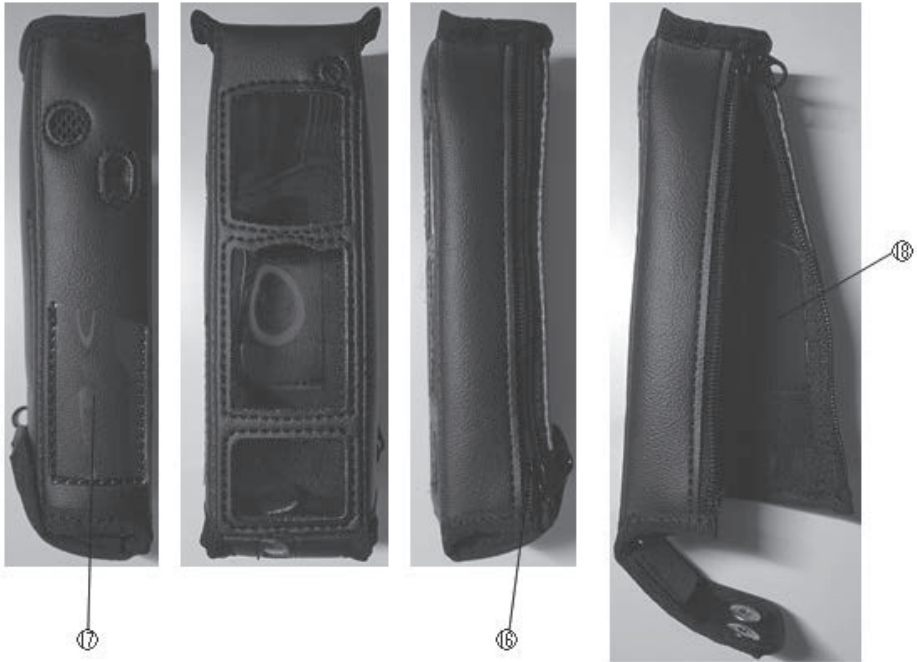


2. Unit Dimensions and Components

Item	Component name	Description/Function
①	Short probe (AT-2G)	Gas suction inlet.
②	Cap	Connection point for a short probe.
③	Filter case	Houses a filter element which prevents water and dust from entering the unit. Combination of ② and ③ is called "drain filter set"
④	Dust filter (FE-106)	Prevents dust and sand from entering the unit.
⑤	Exhaust outlet	Discharges sampled gas.
⑥	POWER/SENS. button	Press to turn on/off the detector or to set the gas sensitivity level.
⑦	BUZZER button	Press to mute/unmute the gas alarms or operating sounds. Used for switching the target gas when your unit is a two-gas detector.
⑧	RESTART PUMP/BACKLIGHT button	Press to restore the pump operation when a pump error occurs, to turn on LCD backlight, or to display the target gas name on LCD.
⑨	Flashlight	LED flashlight to illuminate a target spot.
⑩	Alarm/error light, red (2 places)	These lights flash or light up when a gas leak is detected. As the concentration of the leaked gas increases, the lights flash faster, and finally become steadily lit. They also flash in the event of a pump or sensor error.
⑪	Audio opening	Opening for audio.
⑫	LCD 	Displays gas sensitivity level, message, etc. (a) Battery level High  Low  (b) Currently selected target gas, "GAS1" or "GAS2", is displayed. Check the gas name label for gas name. For a single-gas detector, neither "GAS1" nor "GAS2" is displayed. (c) Musical note icon  is present when the operating sounds are enabled. (d) Speaker icon  /  is present when the gas alarm audio is enabled/disabled. (e) Pump icon rotates during normal pump operation. (f) Gas sensitivity, target gas name, or error code.
⑬	Gas sensitivity LEDs, green (5 places)	Indicates 5 levels of gas sensitivity, 0, 1/5, 1, 2, and 3.
⑭	Battery cover	Cover for battery compartment.
⑮	Gas name label	Indicates target gas(es).

2. Unit Dimensions and Components

Leather case



Item	Component	Description/Function
①6	Side zipper	Access for battery replacement.
①7	Side pocket	Stores a quick start guide.
①8	Inner pocket	Stores replacement filters/filter elements.

3. Operation

Procedure



WARNING

- Perform routine check prior to use. (Page 21)

Steps

1. Install batteries

2. Power on

Warm-up

Gas sensitivity displayed

3. Detect gas leak

4. Power off

1. Install batteries

Units are shipped without batteries installed. Install the provided batteries. ("Battery replacement" on page 20.)

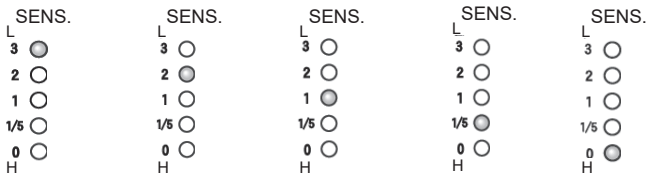
2. Power on ► Warm-up ► Gas sensitivity displayed



WARNING

- Zero adjustment (zeroing) starts automatically when the detector is turned on. Make sure to turn on the detector in clean air to prevent incorrect zero adjustment. Incorrect zero adjustment will cause inaccurate detection.

- (1) Press and hold the POWER button for one second. The detector beeps once when tuning on.
- (2) The warm-up starts. The sensor's status is indicated using the five green gas sensitivity LEDs. As the sensor becomes more stable, the light in these five LEDs moves from top to bottom (from Level 3 to 0), then finally the LED for "0" keeps flashing until the warm-up is completed. Warm-up takes up to 3 minutes.



→ Sensor is stable

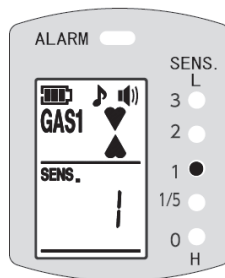
NOTE

- The gas sensitivity LEDs may not flash individually depending on the sensor stability status. E.g. when the sensor stabilizes very quickly. However, if the detector has been unused for a long period of time, the warm-up may take longer or the error code "E-S" (sensor error) may be displayed on the LCD. Power cycle the detector, if "E-S" is displayed. (Refer to the error code table on page 17.)

3. Operation

- (3) When the warm-up is completed, the detector beeps once and the corresponding green gas sensitivity LED lights up. The gas sensitivity level is also displayed numerically on the LCD.

The default gas sensitivity level is “1” when the detector is turned on for the first time. The next time the detector is turned on, the gas sensitivity will be set at the same level before it was turned off.



CAUTION

Check the target gas of the detector prior to use.

- XP-702IIIS-B single-gas detector: Check the gas name with the gas name label on the unit.
- XP-702IIIS-A/F two-gas detector: Either “GAS1” or “GAS2” is displayed on the LCD. Check its corresponding gas name with the gas name label on the unit.
- Double press the RESTART PUMP button to display the target gas name on the LCD. (Page 14)

3. Operation

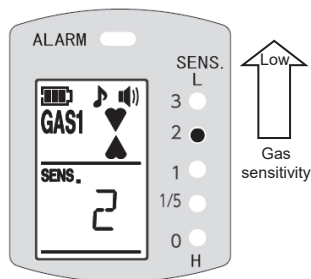
- (4) The gas sensitivity level can be selected from Levels “0”, “1/5”, “1”, “2”, and “3”. Level “0” is the highest. Change the gas sensitivity level as necessary.

NOTE

- Detectable gas concentration for Levels “0” and “1/5” are as follows.
Level “0” : 10 ppm or less (detectable leak rate: 3.3×10^{-6} Pa·m³/s)
Level “1/5”: Approx. 30 ppm
- For refrigerant leak detection, the sensitivity level is fixed at Level “1/5” and cannot be changed.

- To decrease the gas sensitivity level

Each press of the POWER button decreases the gas sensitivity level by one level, being followed by one beep. The light in the five LEDs moves up one step and the level is numerically displayed on the LCD. Pressing the POWER button when the gas level is Level “3” returns the level back to “0”.

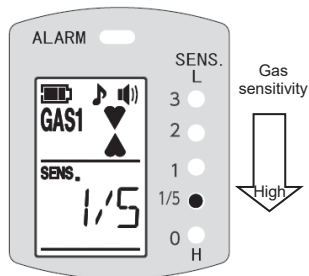
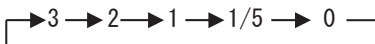


NOTE

- When the POWER button is pressed and held for three seconds or longer, the detector will turn off.

- To increase the gas sensitivity level

Double press of the POWER button increases the gas sensitivity level by one level, being followed by two beeps. The light in the five LEDs moves down one step and the level is numerically displayed on the LCD. Double pressing the POWER button when the gas level is Level “0” returns the level back to “3”.




3. Operation

3. Detect gas leak



DANGER

- If the gas alarm sounds and the red alarm lights flash or light up, take the appropriate action. Evacuate to a safe place if needed. Check that the gas concentration is at safe level before returning to the site of the alarm.
- When the empty battery icon  is displayed (lit steady) on the LCD, the battery is almost empty. Prepare replacement batteries. If the error code “E-B” (empty battery on page 17) is displayed on the LCD, the unit starts beeping and the detector will soon become inoperable. Replace batteries before this happens. Replace batteries in a non-hazardous area (clean air). (“Battery replacement” on page 20)

Put the suction inlet close to the suspected leak point. When a gas leak is detected, the red alarm lights start flashing and the detector starts beeping.

The higher the gas concentration is, the faster the detector beeps (similarly, the closer the detector comes to the leak point, the faster it beeps), and finally the beep sounds become a steady tone. As synchronized with the alarm sound, the red flashing alarm lights become steadily lit.

NOTE

- The audio part of the gas alarm can be muted as necessary. (“Mute/unmute gas alarm audio” on page 16.)

4. Power off



CAUTION

- Before turning off the detector, ensure that an audio alarm is not active. Turning off the detector during an active audio alarm may cause a sensor error when the detector is turned on again. (“E-S” code on page 17.)
- When refrigerant gas is detected, turn off the detector after flushing with clean air. Failure to do so may cause a sensor error when the detector is turned on again. (“E-S” code on page 17.)
- When high concentration gas is detected, turn off the detector after flushing with clean air. Failure to do so may impair the product performance. (“Intake of high concentration gas” on next page.)

After gas detection is completed, press and hold the POWER button for three seconds. The detector turns off with three beeps (beep pattern: short-short-long).

3. Operation

- **Automatic gas exhaust mode**

If gas remains inside the detector, the detector enters the automatic gas exhaust mode once turned off.

Once the automatic gas exhaust mode starts, one short beep is heard and the number "60" is displayed on the LCD, indicating a countdown is started. When the detector reaches zero, it will turn off automatically. However, the detector will turn off earlier if all gas in the detector is removed. During the automatic gas exhaust mode, the detector cannot be operated except to turn it off.

- **Intake of high concentration gas**

After the detector detects a high concentration of any gas in the table, place the detector in clean air for a prescribed period of time before turning it off. Not doing so may impair the product's performance, or cause a sensor error code to be shown on the LCD when the detector is turned on again.

Time required to flush the detector in clean air assuming that the detector has taken in 1,000 ppm gas

Gas name	Time required to place the detector in clean air
Ammonia (NH ₃)	10 minutes
Ethylene oxide (EO)	
Pentane (C ₅ H ₁₂)	
Butadiene (C ₄ H ₆)	
Gasoline	30 minutes
Propylene oxide (PO)	
Benzene (C ₆ H ₆)	
Cyclopentane	
Dichloroethane (EDC)	
Isopropyl alcohol (IPA)	

3. Operation

NOTE

- On-screen target gas names for each model are as follows.

Model	Target gas		On screen gas name	
	GAS1	GAS2	GAS1	GAS2
XP-702IIIS-B	Methane		CH4	
	Isobutane		I-B	
	Other than Methane/Isobutane		ETC	
XP-702IIIS-A	Isobutane	Methane	I-B	CH4
	Other than Isobutane*	Other than Methane*	ETC	ETC
XP-702IIIS-F	Isobutane	Refrigerant	I-B	RFG
	Methane	Refrigerant	CH4	RFG
	Other than Isobutane/Methane	Refrigerant	ETC	RFG

* For any combination other than isobutane (GAS1) + methane (GAS2), "ETC" will be displayed as gas name.


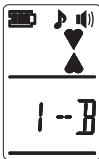


E.g. Combination of propane (GAS1) + methane (GAS2), Combination of methane (GAS1) + isobutane (GAS2).

3. Operation

□ Display target gas name

Double press the RESTART PUMP button to display the target gas name on the LCD. To go back to the gas sensitivity display, double press the RESTART PUMP button.

Pressing the POWER button while the target gas name being displayed will change the sensitivity level and the level will be numerically displayed on the LCD.

Target gas	On screen gas name
Methane	
Isobutane	
Refrigerant	
Other gas	

3. Operation

Switching target gas (for two-gas detector, XP-702IIIS-A/F)

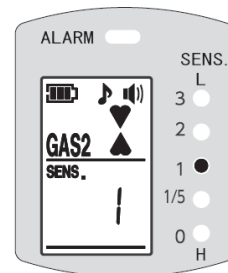
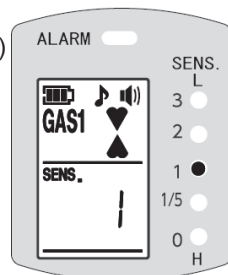
The detector can detect one target gas at a time. The target gas can be changed during power up.

To switch the target gas, first turn off the unit, then turn it on by simultaneously pressing the POWER and BUZZER buttons. The on-screen indication will change from GAS1 to GAS2 or vice versa.

Once the unit is turned on, the target gas cannot be changed.

NOTE

- Double press the RESTART PUMP button to display the target gas name on the LCD. (Page 14)
- XP-702IIIS-B single-gas detector does not display "GAS1" or "GAS2" on its LCD, and cannot switch the target gas.





Silent mode (all operating sounds/gas alarm muted)



CAUTION

- While in Silent mode, the detector is completely silent except for a device malfunction alert or empty battery notification. Because of this, it is not possible to monitor operation via audio. It is recommended not to use Silent mode unless necessary, and to ensure Silent mode is exited after use.

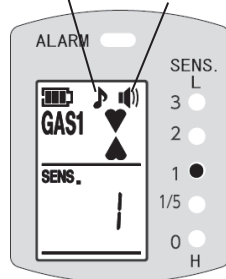
To enter Silent mode, press and hold the BUZZER button for three seconds while the detector is on. The speaker icon  appears and the musical note icon  disappears. While in Silent mode, the detector is completely silent except for a device malfunction alert or empty battery notification.

To exit Silent mode, press and hold the BUZZER button for three seconds. The gas alarm audio cannot be turned on/off while the unit is in Silent mode. (Refer to next page to mute/unmute gas alarm audio.)

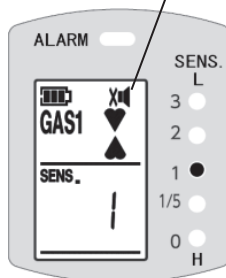
NOTE

- Silent mode will remain active even after the detector is turned off. Press and hold the BUZZER button for three seconds or perform a battery replacement, to exit Silent mode.

Musical note icon (unmute) Speaker icon (unmute)





Speaker icon (mute)



3. Operation

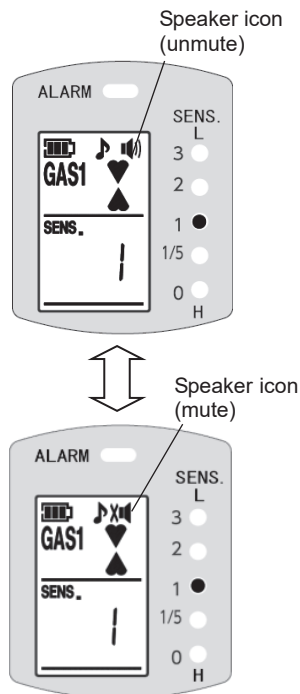
Mute/unmute gas alarm audio

The audio part of a gas alarm can be turned on/off. Press the BUZZER button while the detector is on. The detector beeps once and the audio part of a gas alarm will be turned on/off.

The speaker icon will be changed to  or .

NOTE

- The next time the detector is turned on, the gas alarm audio will remain in the same position before it was turned off. However, it will be always set to the “on” position after battery replacement.
- Audio part of a gas alarm cannot be turned on/off during Silent mode.



Turn backlight on


The LCD's backlight lights up for five seconds by pressing the RESTART PUMP button. In addition, the backlight lights up automatically for 15 seconds when an error occurs.

Turn flashlight on

The flashlight lights up by pressing and holding the RESTART PUMP button for 1.5 seconds. It will continue to be lit while the button is being held down.

To turn off the flashlight, release the RESTART PUMP button. It will stay lit for approx. one minute, then turn off.





NOTE

- The backlight and flashlight are designed not to light up when the battery level reaches too low ( is displayed) to conserve the battery life.
- The backlight lights up when the flashlight is in use.

4. Error Codes (error alarms)

In case of a device error, the red error lights (two places) start flashing, and the corresponding error code is displayed on the LCD. At the same time, the detector starts beeping. The major error codes to be displayed are given in the table below. Take the necessary action according to the displayed error code.

Error code table

Item	Error code	Cause	Action
Sensor error	Error lights flash. 	Gas may have been present when the detector was turned on.	Turn off the detector, then turn it on in clean air. If the error code is still present after turning off and on a few times, the sensor may be broken. In this case, contact us for repair.
Pump error	Error lights flash. 	Possible water intake or suction inlet may be blocked.	Remove water. (Refer to "Filter element replacement" on page 18 for removal method.) Press the RESTART PUMP button. If the error code is still present, the pump may be broken or water has entered inside the detector's main unit. In this case, contact us for repair.
Empty battery	Error lights flash. 	Battery voltage is too low, and the detector is inoperable.	Replace the batteries with new ones. (Refer to "Battery replacement" on page 20.)
Main unit error	Error lights flash. 	Main unit failure	Remove the batteries and install them again after a few minutes. Turn on the detector. If the error code is still present, contact us for repair.

5. Consumable Replacement

Filter element replacement

If the filter element is dirty or wet, or water is present inside the drain filter set, clean the inside of the drain filter set, and replace the filter element with a new one.

CAUTION

- Do not replace the filter element while the detector is on. Doing so may cause foreign matter such as dust to enter inside the unit.
- Ensure that the filter element is aligned and installed correctly. Incorrect installation may impair the waterproof and dustproof functions which will then lead to incorrect detection.
- Ensure that the filter case is installed firmly. If installed loosely, water may enter inside the unit.
- If water enters inside the detector through the filter element, proper gas detection is not possible. Please contact us for repair.

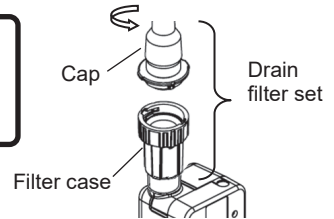
NOTE

- Do not push or poke the filter element into place (e.g. with finger, pen). Doing so may cause deformation or breakage of the filter element which will then impair the waterproof and dustproof functions.

(1) Turn the cap counterclockwise to remove it from the filter case.

CAUTION

- When water or dust has accumulated inside, take care so that the accumulated water or dust will not spill inside the filter case.

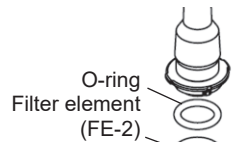


(2) Remove the O-ring from the filter case.

(3) Replace the filter element with a new one.

NOTE

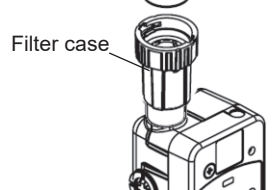
- Clean the cap and inside of the filter case as necessary with a dry cloth. Wipe them dry completely before replacing the filter element.



CAUTION

- Always install a filter element (FE-2) between the cap and the filter case.

(4) Attach the O-ring back onto the case, and attach the cap to the filter case.



5. Consumable Replacement

Dust filter replacement



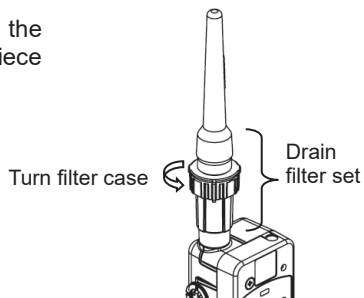
CAUTION

- Always use the detector with the dust filter (FE-106).
- Water ingress cannot be prevented without use of a filter element. Ensure that the filter element (FE-2) is installed in the drain filter set.
- Do not replace the dust filter while the detector is in operation.
- While the dust filter is being removed for replacement, etc., take care so that foreign matter such as dust or sand will not enter inside the unit.

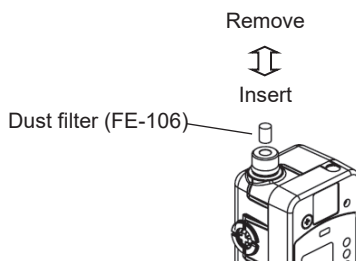
The dust filter (FE-106) prevents fine dust and sand from entering the built-in pump. Do not remove it.

Replace it with a new one (sold separately), if dirty.

- (1) Turn the filter case counterclockwise to remove the drain filter set with the short probe as a single piece from the unit.



- (2) Replace the dust filter with a new one.



- (3) Attach the drain filter set back onto the unit.

5. Consumable Replacement

Battery replacement



WARNING

- Only use specified batteries. Failure to do so may impair the explosion proof performance of the product.
- Do not replace batteries or carry loose batteries in a hazardous area.

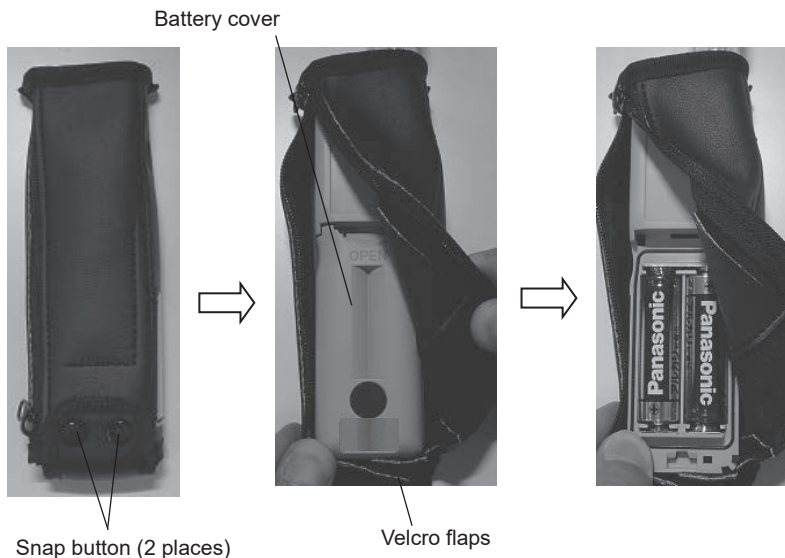
When  is displayed on the LCD, the battery level is very low.

If the battery is empty, the LCD shows the error code “E-B” (empty battery) notifying that battery is empty and the detector will become inoperable soon. Replace the batteries with new ones.

NOTE

- Always use two new batteries of the same type.
- Replace both batteries at the same time.
- When used at low temperature, the battery life will be shorter than when used at room temperature due to battery's characteristics.


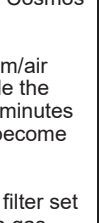
- (1) Unfasten the two snap buttons, unzip the side of the leather case, and unfasten the Velcro flaps on the bottom.
- (2) Remove the battery cover from the main unit. Remove the old batteries from the battery compartment. Install new batteries in the correct orientation by referring to the marking inside the compartment.
- (3) Attach the battery cover. Make sure that the cover is firmly secured.
- (4) Zip up the side of the leather case and fasten the Velcro flaps. Fasten the snap buttons.



6. 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 (1. "Introduction"), such as impact shock from dropping or water ingress inside the detector, or use in the conditions outside the specifications (9. "Specifications"), such as usage in temperature/humidity exceeding the specified range, please contact New Cosmos or your New Cosmos representative for inspection (fees may apply).

Routine check

Check item	Description
Short probe	Check that the probe is free of wear or damage that may interfere with operation. Replace it with a new one, if worn or damaged.
Filter element	Check that the filter element inside the drain filter set is clean and dry. Replace the filter element with a new one if dirty or wet. Check that water is not present inside the drain filter set. If present, remove it and make sure that the filter case and cap are completely dried and cleaned. ("Filter element replacement" on page 18)
Battery level	If the battery level is very low, replace the batteries with new ones. ("Battery replacement" on page 20)
Airtightness	Turn on the detector. Cover the probe tip with finger. Check that the error code "E-P" (pump error) is displayed on the LCD. If this code is displayed, then operation is normal. Press the RESTART PUMP button to resume the operation. If the error code is not displayed, the drain filter set may not be firmly installed. Firmly install and try it again. If the error code is still not displayed, the drain filter set may be damaged, or the diaphragm may not be sealed properly. Replace them or contact us for repair.
Alarm test using calibration gas	<p>Prepare calibration gas (e.g. CH₄/55ppm/air balance commercially prepared gas cylinder, if your unit is used to detect methane gas leak). Turn on the unit and set the sensitivity level to "1/5". Let the detector sample calibration gas. Check that the red alarm lights flash and audio alarm starts. If the red alarm lights do not flash or the audio alarm does not sound even though  (speaker icon) is displayed, contact New Cosmos or your New Cosmos representative for inspection.</p> <ul style="list-style-type: none"> When using a commercially prepared calibration gas (CH₄/55ppm/air balance), fill a urethane gasbag with gas. Let the detector sample the gas. If the alarm fails to sound, leave the gasbag for approx. 30 minutes to allow the temperature/humidity/pressure of the gas inside to become closer the ones of the ambient air before use. When using optional easy-use calibration gas, remove the drain filter set and dust filter before test. Let the detector sample the calibration gas. <p>Note: The easy-use calibration gas is adsorbed on the dust filter. Remove the dust filter for proper alarm test. Note: Caution is required to prevent dust and sand from entering inside the pump while sampling gas. After test, turn off the detector, and install the dust filter back in place.</p> <div style="text-align: right;">  </div>

6. Maintenance

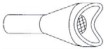

Annual inspection

Contact New Cosmos or your New Cosmos representative to perform a periodic inspection and adjustment at least once a year to maintain the product accuracy.




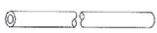

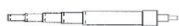
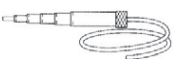
Consumable parts

Part Name	Model	Part No.	Description
Filter element (x 10 pcs)	FE-2	59160022	
Drain filter set	DF-116	59073007	
Dust filter (x 5 pcs)	FE-106	59160335	
Short probe	AT-2G	20524843	Attachment to check the surface of pipe/fittings for gas leaks.
Instruction manual		20593546	

Optional items

Part Name	Model	Part No.	Description
CH4 55ppm/air balance 1000mL gas cylinder		10708064	Calibration gas for routine check. (7000mL)
Urethane gasbag (1L) dia. 8mm		59240000	For routine check. With tube and pinchcock
Urethane gasbag (2L) dia. 8mm		59240001	
Urethane gasbag (5L) dia. 8mm		59240002	
Gas collector	AT-5 	20524430	Optional attachment to check the surface of pipe/fitting for gas leaks.
Gas collector	AT-6 	20524441	Optional attachment to check pipes behind walls or underground for gas leaks.

6. Maintenance

Part Name	Model	Part No.	Description
Gas collector	AT-7A 	20524432	Optional attachment to be used with RP-4.
Sampling tube (1 m)	SH-4-1 	20524429	Optional attachment to be used with AT-11 and RP-1.
Sampling tube (50 cm)	SH-4-05 	20524531	Optional attachment to be used with AT-11.
Annealed copper tube (60 cm)	AT-11 	20524431 w/tube 59060000	Optional attachment to extend detection range for less accessible pipes or tools.
Flexible inlet adaptor	AT-12 	59050101	Optional attachment to be used with RP-1. Shape-memory tube.
Probe extension	RP-1 	20524428	Optional attachment to extend detection range for less accessible pipes or tools.
Probe extension	RP-4 	20524433	Optional attachment to check underground pipes and road surface for gas leaks.
Easy-use calibration gas	EG-10L (for isobutane) EG-10 (for other than isobutane)	59150100 59150200	Concentration level high enough to trigger an alarm. Note: This gas is adsorbed by the dust filter. A proper test is not possible if the dust filter remains installed. Remove the drain filter set and dust filter from the unit when this calibration gas is used.

7. Troubleshooting

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

If the detector locks up (cannot be turned off), remove all batteries. After a few minutes, put the batteries back in and turn on the detector.

Symptom	Cause	Action	Reference
Pressing POWER button does not turn on the power.	Battery orientation incorrect.	Remove batteries and reinsert them in the correct orientation.	Battery replacement (Page 20)
	Battery depleted.	Replace batteries.	
Error code is displayed.	Refer to the error codes table.		Error codes (Page 17)
No audio sounds.	Silent mode is on.	Cancel Silent mode.	Silent mode (Page 15)
	Gas alarm audio is muted.	Unmute the gas alarm audio.	Mute/unmute gas alarm audio (Page 16)

8. Warranty

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.

Maintenance

This product is a precision instrument. Perform routine checks, and contact us for an annual inspection at least once a year to ensure safe operation and proper performance of the product.

If you have any questions about routine checks, please feel free to contact us. Annual inspections will be carried out according to the maintenance service contract. For repair service, please contact us (shipping charge will apply).

9. Specifications

■ Product specifications

Model	XP-702IIIS-B	XP-702IIIS-A	XP-702IIIS-F
Target gases *1	Single-gas	Two-gas Switchable	Two-gas switchable
	One combustible gas E.g. methane or isobutane etc.	Two combustible gases E.g. methane and isobutane	One combustible gas and refrigerant E.g. methane and refrigerant (R-407C or R-410A etc.)
Detection principle	Hot-wire semiconductor sensor		
Gas sampling method	Automatic pump type		
Detectable leak rate	Combustible gas: 3.3×10^{-6} Pa·m ³ /s Refrigerant (R-407C): 12.4g/year Refrigerant (R-410A): 11.2g/year		
Lowest detectable concentration	Combustible gas (e.g. methane, isobutane): 10 ppm Refrigerant: 30 ppm		
Response time	Less than 5 seconds except refrigerant		
Power	Panasonic alkaline AA battery (LR6) x 2pcs Duracell alkaline AA battery (MN1500) x 2pcs Varta alkaline AA battery (4106) x 2pcs Energizer alkaline AA battery (E91) x 2pcs		
Operating time *2	Approx. 12 hours (AA alkaline batteries at 25°C)		
Protection class *3	IP22 or equivalent *4		
Operating temperature and humidity	-20 to +50°C, 85%RH or less (no condensation)		
Dimensions	Approx. W38 × H135 × D32 mm (excluding protruding parts)		
Weight	Approx. 190 g (including batteries and leather case)		

*1. Please contact New Cosmos or its authorized representative for the target gases.

*2. The operating time (battery life) may vary depending on environment and conditions of use, storage period, manufacturer etc.

*3. When stored in the leather case.

*4. "IP22 or equivalent" refers to a structure to prevent access to hazardous parts inside the device with fingers (IP2X) and a structure to protect against dripping water when the device is tilted up to 15 degrees vertically, at 4 different positions, 2.5 min each position (10 min in total) (IPX2).

9. Specifications

■ Explosion proof specifications

Model	XP-702IIIS
Approvals*	USA/CANADA UL Certificate No. E108302, Class I, Division 1, Groups C and D, T3 Class I, Zone 0, AEx ia II B T3 Ga
Markings	USA/CANADA: Class I, Zone 0, AEx ia IIB T3 Ga Class I, Zone 0, Ex ia IIB T3 Ga USA: Class I, Division 1, Groups C and D, T3 (Intrinsically safe)
Standards	[UL Division] UL 913, 8th Edition [UL Zone] UL 60079-0, 6th Edition UL 60079-11, 6th Edition [CSA (cUL) Zone] CSA C22.2 No 60079-0 CSA C22.2 No 60079-11
Protection class*	IP20
Power (rated)	Power source: 3.0 VDC (1.5V battery x 2 pcs) Panasonic alkaline AA battery (LR6) x 2pcs Duracell alkaline AA battery (MN1500) x 2pcs Varta alkaline AA battery (4106) x 2pcs Energizer alkaline AA battery (E91) x 2pcs Ambient temperature: -20 to +50°C

* When stored in the leather case.

10. Detection Principle

Hot-wire Semiconductor Sensor

A small amount of metal oxide semiconductor is deposited on a platinum coil, then the platinum coil is heated to a high temperature. When reducing (electron donating) gases react with the surface of the metal oxide, electrons will be donated to the semiconductor in the course of the reaction. Consequentially, the resistance of the semiconductor decreases as more charge carriers (electrons) are available. The sensor element (semiconductor on the platinum coil) can be understood as two resistances in parallel, being part of a bridge circuit. The resistance change of the semiconductor is read as differential voltage using a bridge circuit. This type of sensor is very sensitive and can detect combustible or toxic gases at a low ppm or even a ppb level.

11. Glossary

Term	Definition
Clean air or normal air	Standard atmosphere which contains 20.9 to 21.0% oxygen in dry condition or atmosphere without target gas or interference gases.
Target gas	Specific gas to be detected and used to trigger alarms.
Hazardous area	An area in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of electrical apparatus.
Non-hazardous area	An area in which an explosive atmosphere is not expected to be present in quantities such as to require special precautions for the construction, installation and use of electrical apparatus.
Explosive atmosphere	Mixture of air and flammable substances in the form of dust or vapor which are within their explosive limits.
Flameproof enclosure (explosion proof enclosure)	Enclosure in which the parts which can ignite an explosive atmosphere are placed. This enclosure can withstand the pressure created during an internal explosion of an explosive mixture, and prevent the ignition of an explosive atmosphere outside the enclosure.
Intrinsically safe (IS) structure	Structure tested (e.g. spark test) to not become an ignition source in a flammable atmosphere due to an electrical spark or hot surface during normal operation and fault conditions.

Additional copies of this instruction manual may be purchased.
Contact New Cosmos or its authorized representative for ordering.

Authorized representative:

Manufacturer:

NEW COSMOS ELECTRIC CO., LTD.
2-5-4 Mitsuya-naka, Yodogawa-ku,
Osaka 532-0036, Japan
URL: <http://www.new-cosmos.co.jp/>



NEW COSMOS ELECTRIC CO., LTD.