RKI INSTRUMENTS, INC.
INSTRUCTION MANUAL

For
Model CO-500
Riken Indoor Carbon Monoxide Gas Monitor

The accompanying instrument is sold and serviced in USA by RKI Instruments Inc. Please contact RKI Instruments for any follow up service needs, including questions, warranty issues, repairs, and spare parts and sensors. Thank you for selecting this fine instrument for your use. With proper care and maintenance, it will provide you with many years of reliable service.

Thank you for purchasing Riken carbon monoxide (CO) monitor, Model CO-500.

The instrument is to notify the concentration of carbon monoxide ascent by alarm lamp or buzzer to prevent CO poisoning by any chance.

To operate the instrument correctly, make sure to understand the manual before operating.

To assure safe and effective operation, the following outlines are used in this manual:

⚠️ Danger

This mark means that it may occur serious damage on the human's life or instruments if the instrument is used in improper way.

⚠️ Warning

If the instrument is not operated following the manual, it causes a serious damage on the human bodies or objects.

⚠️ Caution

If the instrument is not operated following the manual, it causes some damage on the human bodies or objects.

✽ Note

Advice on usage

═══ Important Instruction for the Safety ═══

⚠ Danger

* Gas sensitivity adjustment should be done periodically. Please contact our sales office or service agent for gas sensitivity adjustment.
* Make sure to install the instrument in the air.   Otherwise, it cannot be measured correctly and there is a possibility to lead CO poisoning.

⚠ Danger

* The CO-500 should not be wired parallel to the wires which include power source, high hertz , high voltage and any other instruments' wires.
* The intersect wiring should be done when the CO-500 is to intersect with high hertz, high voltage and wires.
* During wiring work, do not put any stresses such as to pull, tighten or twist on cable.
* Installation is necessary in the place where has much noise.
* The instrument should not be modified.

⚠ Caution

* Do not poke the opening of sensor or buzzer with a sharply pointed thing, which may cause failure or breakage of the instrument. Also it may not be able to measure correctly.
* Do not pour water on the instrument, which may cause failure.
* Do not shock or vibrate strongly since it is the precision instrument.

⚠ Caution

* Install the instrument in the place where it doesn't get wet since the instrument is not water-proof nor for water use.
* Do not touch parts if you open it.
* Install the instrument without placing   excessive power or power/signal cable.
* Do not close airway of the sensor.

⚠ Caution

* The instrument should be used in the room.
* The instrument should be used in a range of temperature and humidity (0-40°C RH90% below). Otherwise, it will not get a correct detection rate.
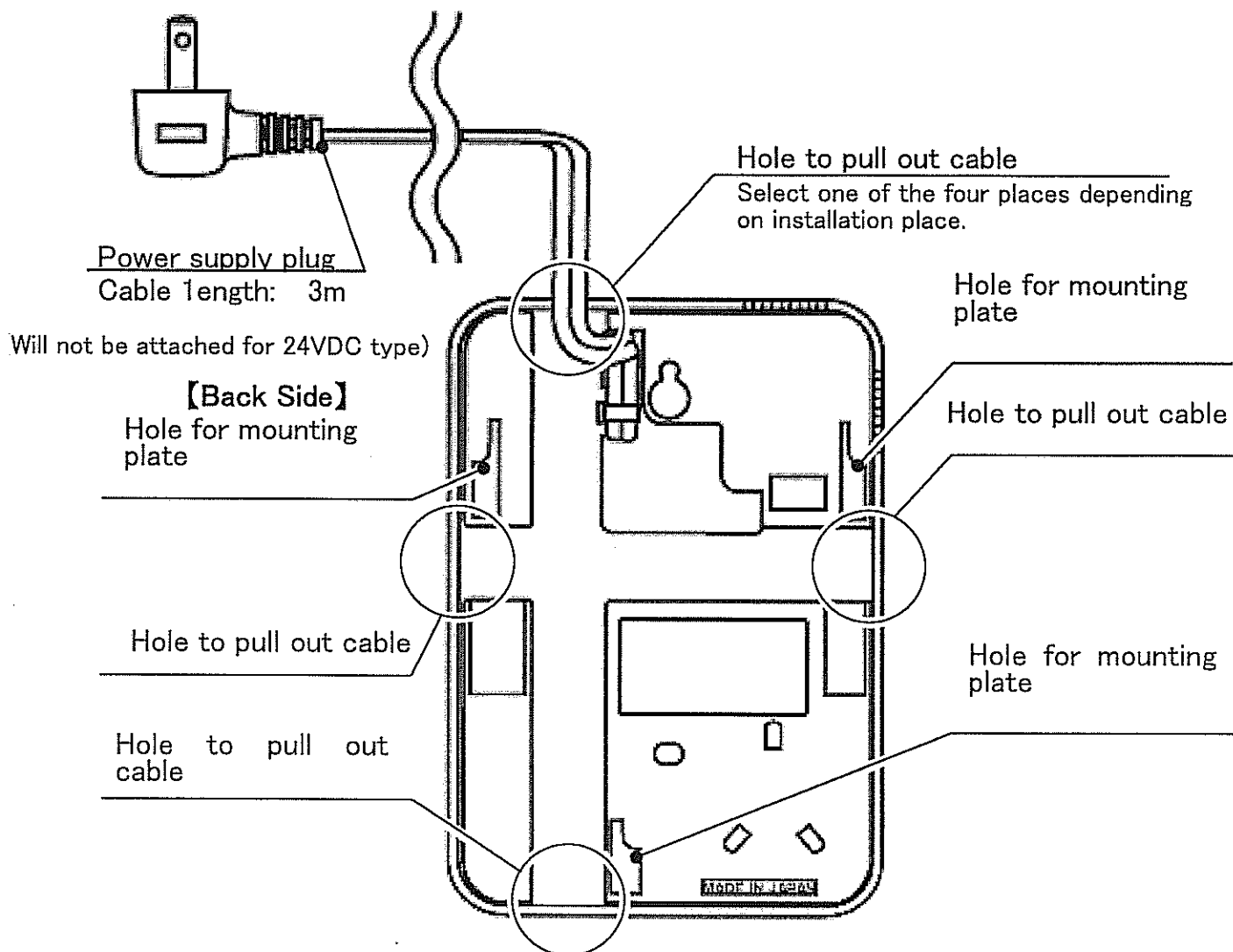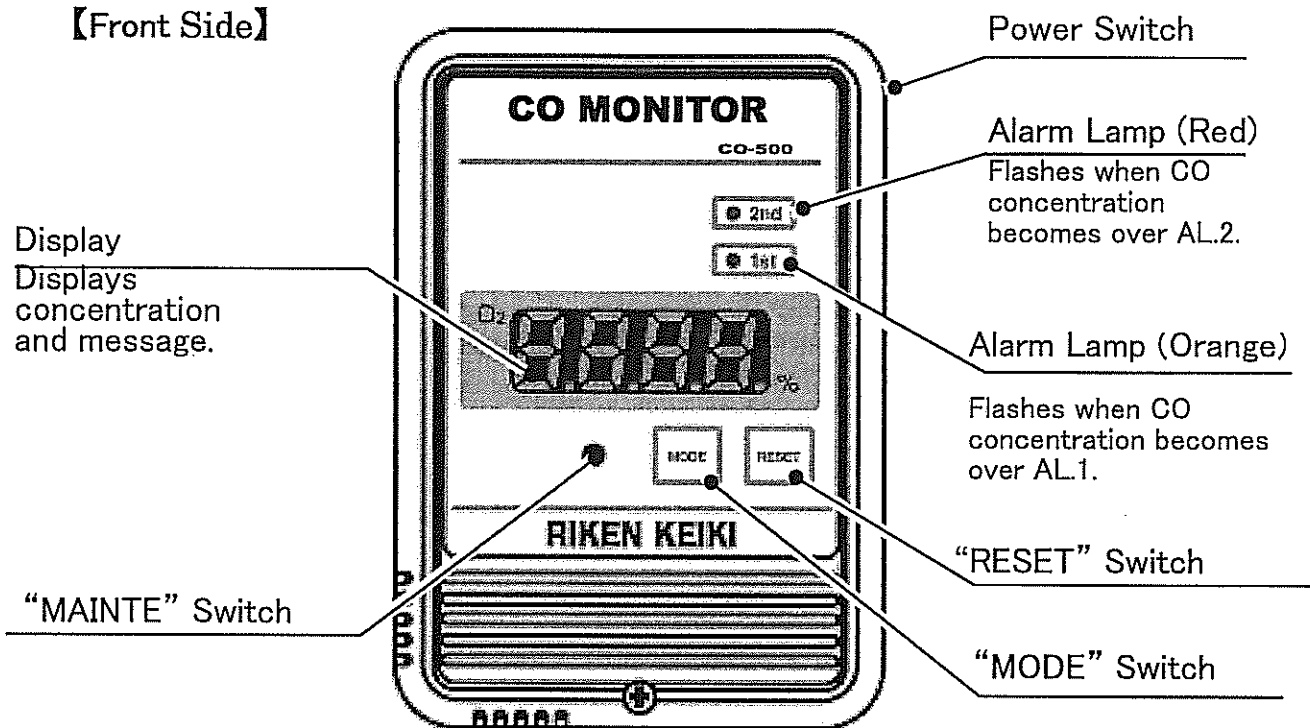
Table of Contents

1. Name of Each Part and Function

【Front Side】

Power Switch

CO MONITOR
CO-500

● 2nd
● 1st

Display
Displays concentration and message.

Alarm Lamp (Red)
Flashes when CO concentration becomes over AL.2.

Alarm Lamp (Orange)
Flashes when CO concentration becomes over AL.1.

MODE   RESET

RIKEN KEIKI

"MAINTE" Switch

"RESET" Switch

"MODE" Switch

Power supply plug
Cable length:　3m

(Will not be attached for 24VDC type)

Hole to pull out cable
Select one of the four places depending on installation place.

Hole for mounting plate

Hole to pull out cable

【Back Side】
Hole for mounting plate

Hole to pull out cable

Hole for mounting plate

Hole to pull out cable

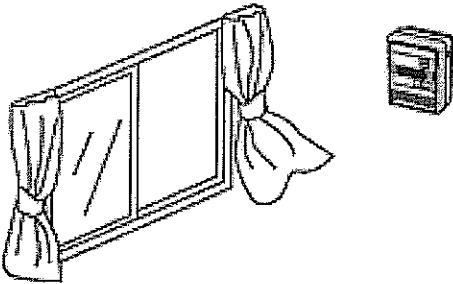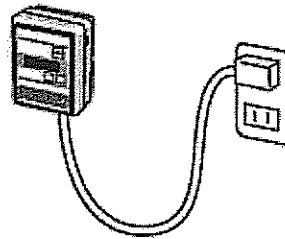MADE IN JAPAN

Cautions for usage

1. Open the window and ventilate the air in the room.

2. Plug in the power plug into the outlet and turn on the power source.

All lamps will be on and sign, 「- - - -」will be shown for about 3 minutes. After that it will be able to measure.

★When CO concentration rises from 0ppm and exceeds more than 50ppm【standard setting】, the alarm lamp (orange) will start to flash and the buzzer will start beeping.
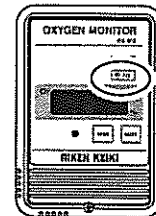
★ When CO concentration still rises and exceeds more than 100ppm【standard setting】, the alarm lamp (orange, red) will start to flash and the buzzer will start beeping.
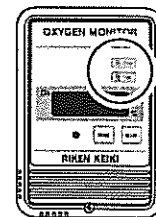
3-1 How to Install

> ⚠ **Warning**
>
> Make sure the power is off when you install the instrument. Otherwise, you will get an electrical shock.

3-1-1 When Using Attached Mounting Panel

①Fix attached panel to wall surface with attached screws.(pan head screw or screw spike.　Make sure the panel is not inclined. Basically it should be fixed with two places.　Other two screw holes can be used if it's necessary.

＊Note
When you install, an Arrow mark, ↑ should be upper direction.
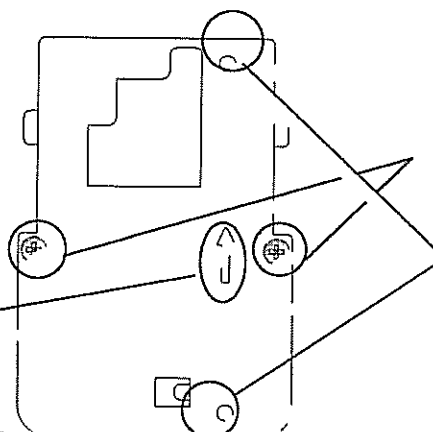
Fix with screws

Use a screw if it's necessary.

> ⚠ **Warning**
>
> Fix the panel to the wall, which is strong enough and doesn't vibrate.

②Press the body of the instrument so that the projections (3 places) of the attached panel can get into the hole to plug attached panel of the back side of bottom case and slide body of the instrument to a lower direction with the attached panel close to the bottom case.

Projection

[Back side of bottom case]

Hole for mounting plate panel

CO MONITOR
OXYGEN MONITOR

RIKEN KEIKI
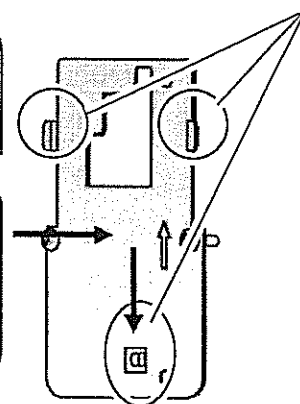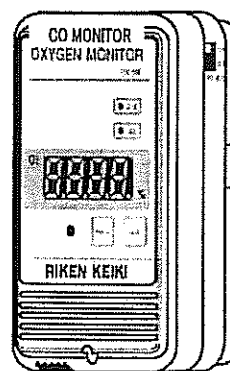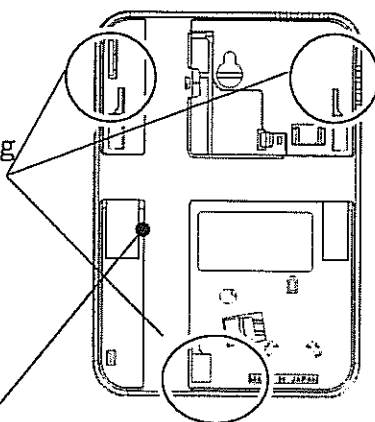
Depending on the installation place, the power supply plug should be pulled out along with a hole to pull out cable (trench).

③Confirm whether the back of the bottom case is attached closely to the attached panel.
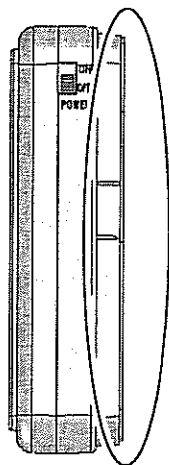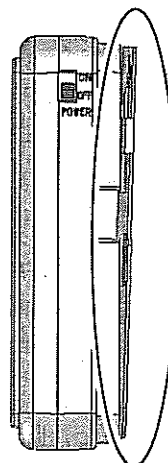
◎Good example   ✕Bad example

> ## ⚠ Warning
>
> When you install, be careful not to pinch the cable between the body of the instrument and the attached panel.

④It is able to measure 3 minutes and 30 seconds later after plugged and turn on the power source.

ON
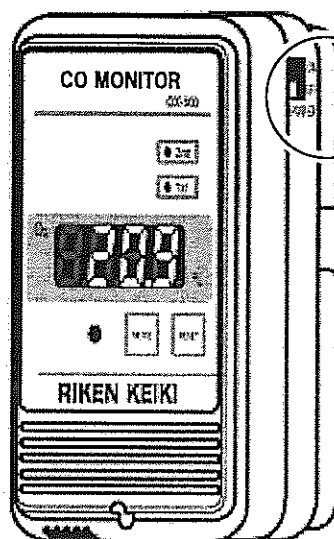
OFF   Power source switch

3-1-2 When Not Using Attached Mounting Panel

①Loosen the screw of the lower part of the front body of the instrument and open the upper case.
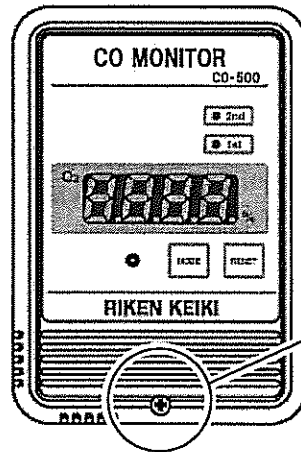
Loosen the screw

②Open the upper case and take off the connector which is connected to the bottom case.
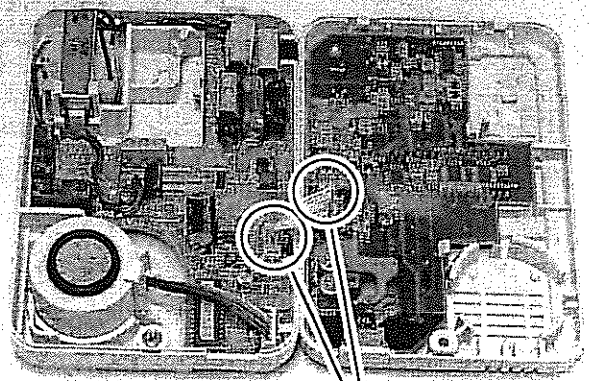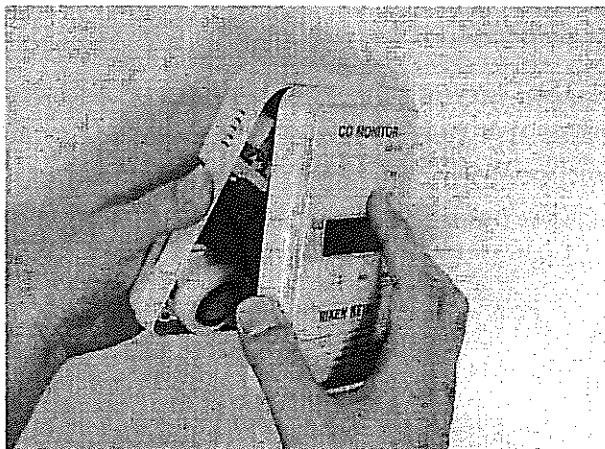
Connector

⚠ **Warning**

・ Open the case without breaking the wire and connector since each case is connected by the connector.

・ Make sure not to pull the connector when you pull out the wire.

③Fix on two places at bottom case with attached two screws (pan head small screw or screw spike.) At this time, confirm whether the instrument is not inclined.

83.5mm (matched to switch box)

Fix to wall surface by screw
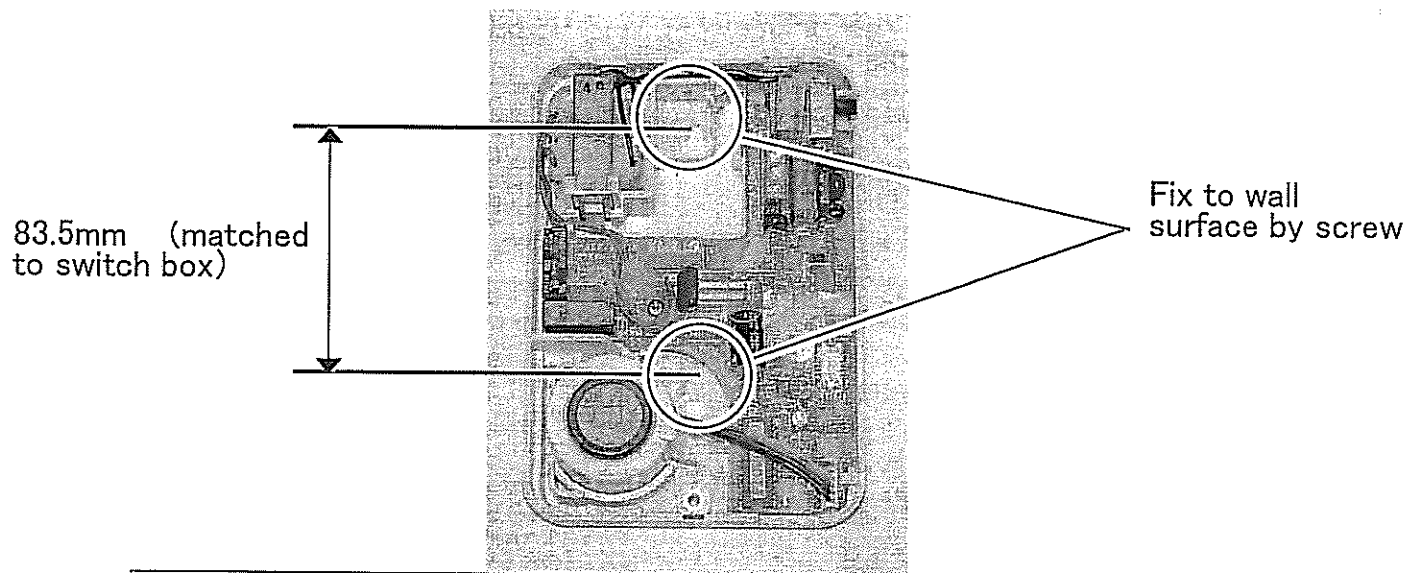
⚠ Caution

- Fix the panel to the wall, which is strong enough and doesn't vibrate.
- When you install, be careful not to pinch the cable between the instrument and the wall.

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④Connect the upper and bottom cases with the connector and close the case. At this time, confirm whether the two clicks of the case are snapped on the bottom case (the upper and bottom case should be attached closely) and the cable is not stick out from the case. Screw the lower part of the front body of the instrument.

⑤Turn on the power source.

⚠ Warning

- Install the connector correctly.　Otherwise, the gas cannot be detected properly.
- When you install the connector, install 凸 (convex) part at the left side.

⚠ Warning

The instrument should be placed at the upper direction.

(Please refer to P. 7)

3-2 Take in Power Source Directly

> ## ⚠ Warning
>
> Make sure the instrument is unplugged when you install. Otherwise, you might get an electrical shock.

3-2-1 How to Connect AC Cable

①Loosen screws of lower part of the front case of the instrument, and open the upper case.

②Cut the cable clamp which prevent the AC code to pull out, and take out the AC code from the terminal block.
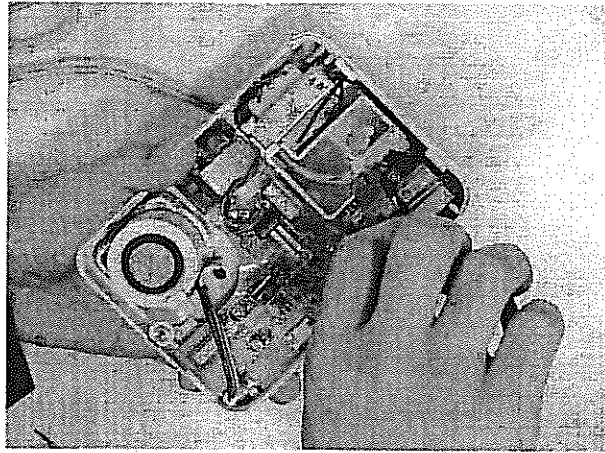
③Let cable clamp through the upper part of the hole to pull out cable and fasten the cable clamp halfway.
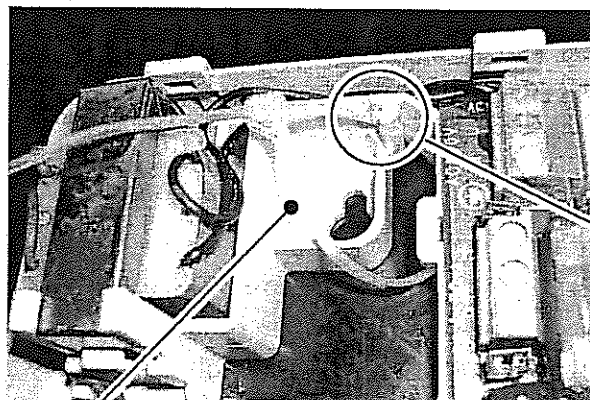
Hole to pull out cable

Cable Clamp

> ## *Note
>
> Let the cable clamp through the back of the case.

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④Fix the power source cable with the cable clamp

$60 \pm {}^{3}_{0}$ mm from leading edge

Cut from the base
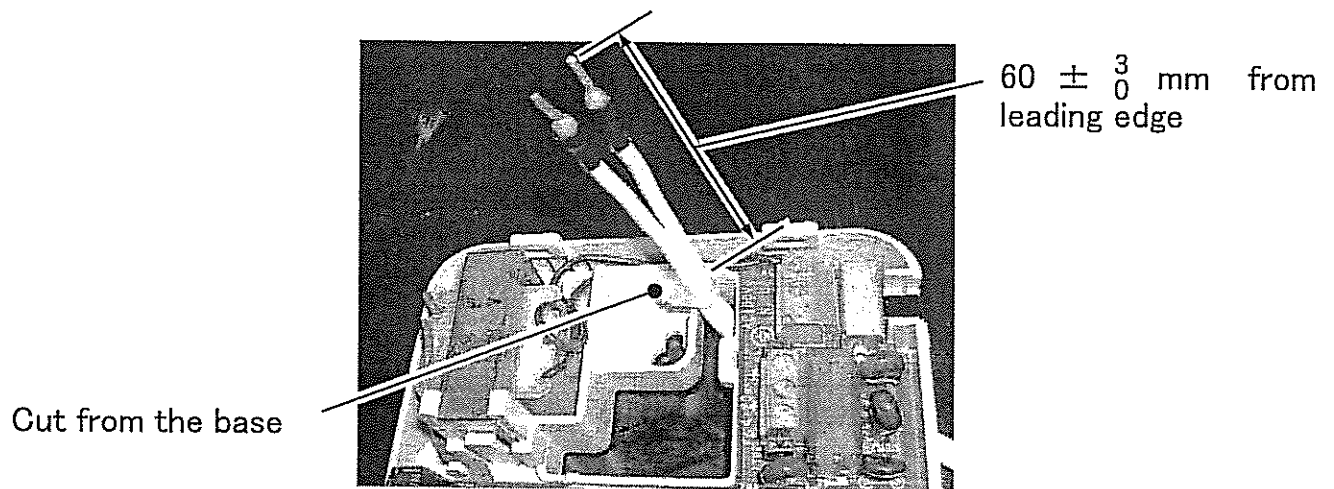
【Back of the case】

Surface

AC cable
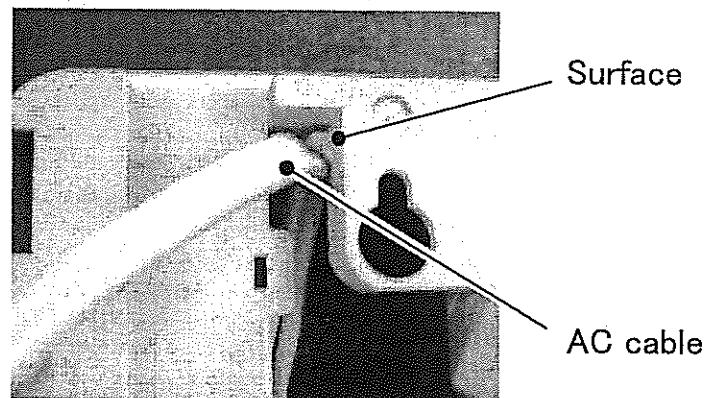
＊Note

- The position to fasten the cable clamp is $60\pm{}^{3}_{0}$ mm from the leading edge of the cable.
- Fix the power source cable to contact to the surface of the installation position.
- After fixing the power source cable, cut the remaining of the cable from the base.

⑤Let the cable clamp through the hole to pull out the cable, and fix the power source cable.

Cable clamp

Hole to pull out cable
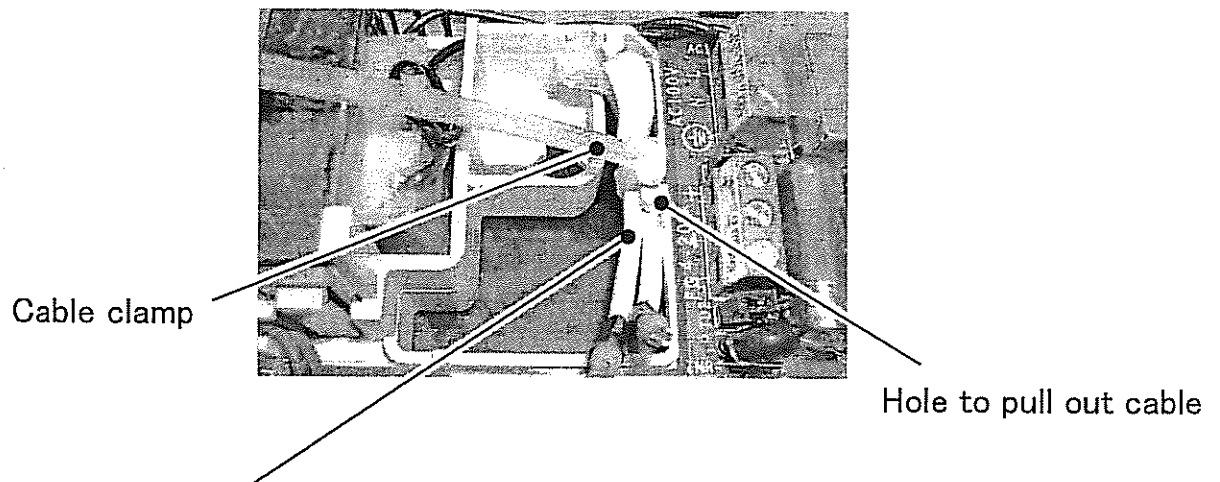
Power source cable (Let the cable clamp through beneath of the hole to pull out cable)

✳ Note

- Let the cable clamp through the back of the case.
- Put the power source cable beneath of the hole to pull out cable and fix it to contact with the surface of the installation position.
- After fixing the power source cable, cut the remaining of the cable clamp from the base.

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⑥Connect the cable terminal to the terminal block

Terminal block
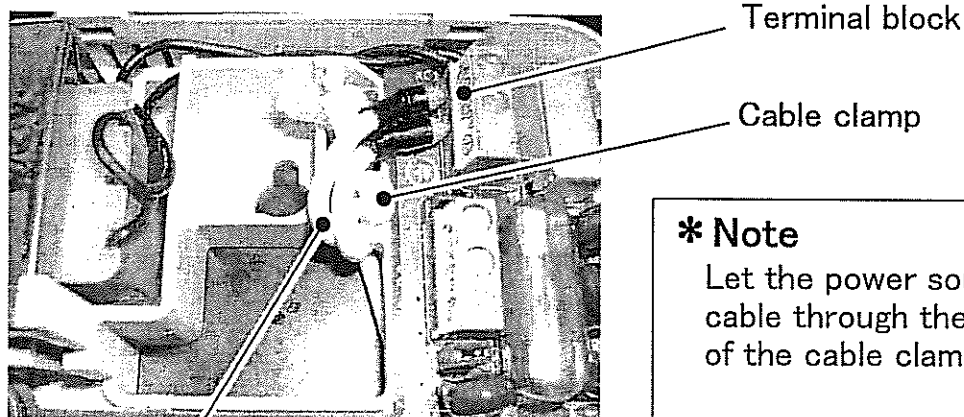
Cable clamp

✳ Note

Let the power source cable through the left side of the cable clamp.

AC cable (Let the power source cable through the left side of the cable clamp.)

⚠ Warning

The cable clamp should be 4mm in width and within 1.5mm thickness.
Please refer to 3-2-2 for adjustment cable.

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⑦Close the case

⑧Turn on the power source

⚠ Warning

- Cables, except for AC cable, should be basically wired into the wall via switch box. In case the cable will be wired outside of the wall, fix the cable where the unnatural power will be placed since there is no cable through cramp.
- Do not pull the cable when you pull out the connector which connects each case.　If you do, it may cause a loose connection.

⚠ Warning

The power source code should be cramped to the case of the body so that the terminal connecting part (terminal block) should not take any overloading caused by pulling out the cable.

3-2-2 Cable to Use

①Connectable Cable:

Single wire　　　　　　:0.14mm^2~1.5mm^2

Twisted wire　　　　　　:0.14mm^2~1.5mm^2

Length of bare wire　:6mm

Cable finished dimension is not over　ϕ 7.0mm
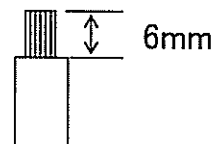
②Specification of Terminal Block

Voltage Rating:AC250V

Current Rating:13A

Torque to tighten up screw:5~8kg

Compatible driver:Minus driver, width of leading edge:Below 3mm

Compatible stick terminal:Model AI series　(Phoenix)

Compatible clamping tool:CRIMPFOX　UD　6　(Phoenix)

4. How to Use

4-1 Operational Flow after Power Source is On

4-1-1 Self Diagnosis

Confirm the setting status of the indicator after the power source is on.

```
[ -  -  -  - ]  Green
```

4-20mA output: 2.5mA fixation

4-1-2 Initial Clear

Initial clear is the warm up time before sensor output becomes stable.

The time for the initial clear is 3 minutes and 30 seconds including the self diagnosis time.

```
[ -  -  -  - ]  Green
```
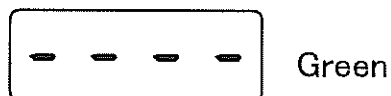
4-20mA output: 2.5mA fixed

4-2 Basic Function

4-2-1 Indication for Concentration

Gas concentration will be displayed in "Green".
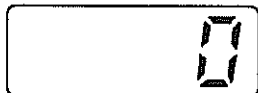
```
┌─────────────┐
│          ⊓  │   Green
│          ⊔  │
└─────────────┘
```

Indication range: 0～150
4-20mA output: 4～20mA (Depending on gas concentration)

4-2-2 Gas Alarm

The alarm will start flashing and buzzer will beep when the gas concentration rate exceeds more than the alarm setting rate.
The Mode CO-500 has two step alarm function (H／HH).
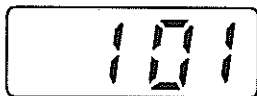
```
┌─────────────┐
│  ┃ ⊓ ┃      │   Orange or Red
│  ┃ ⊔ ┃      │
└─────────────┘
```

※ The standard of alarm operation is the automatic return after self-maintenance reset.
The indication of the concentration will flash when alarm beeps and will be lighted after reset. (1st time "orange", 2nd time "red")
The alarm lamp will flash when alarm beeps and the lights will be on after it is reset.
The lights will be off when concentration rate becomes below the alarm point. The alarm contact point will be on when it surpasses certain alarm point, and will be released after alarm is reset.
4-20mA Output: 4～20mA (Depending on gas concentration)

4-2-3 Scale Over

During the measurement, it will be displayed when the instrument detects the gas which exceeds full scale

```
┌─────────────┐
│             │   Red
│  ⊓ ⊓.⊓      │
└─────────────┘
```

4-20mA Output: 20～22mA

4-2-4 Indication When Trouble Occurs

There are two kinds of troubles, i.e. memory error and breaking of wire error.
The error notice will be displayed and buzzer will beep when error occurs.

① Memory Error

Turn off the power is the only way to release the memory error.

$$E - 00$$ Red(Flashing) Memory error: Will be happened by the result of self diagnosis when power is on.

4-20mA Output: 0.5mA

②Breaking of Wire Error

The sounds of buzzer will be OFF by pressing "RESET" button.
Display of the breaking of wire error will be released by fixing the condition of breaking the sensor.
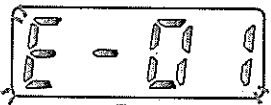
$$E - 01$$ Red (Flashing) Breaking of wire error: Will be happened by breaking the sensor while it is measuring.

↓ Return from the sensor breaking

`- - - -` Green It takes 3 minutes and 30 seconds to warm up the instrument after error is corrected caused by breaking of wire error.

4-20mA output: 2.5mA

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Once you press the "MODE" button continuously for 3 seconds when the "Measuring Mode" is indicated, the LEDs turns to the "User Maintenance Mode". The CO-500 has four user's maintenance mode: "Alarm Point Confirmation", "Alarm Summary Confirmation", "Date & Time Confirmation·Set-up", and "Alarm Test".

The following items can be selected by pressing the "MODE" switch when the menu is displayed.

Display		Description
0		Measuring Mode
MODE Press more than 3 seconds		
ALP	Green	"Alarm Point Confirmation Menu"
MODE		
AL5	Green	"Alarm Summary Confirmation Menu"
MODE		
dAtE	Green	"Date & Time Confirmati· Set-up Menu"
MODE		
ALt5	Green	"Alarm Test Menu"
MODE		
0		Measuring Mode
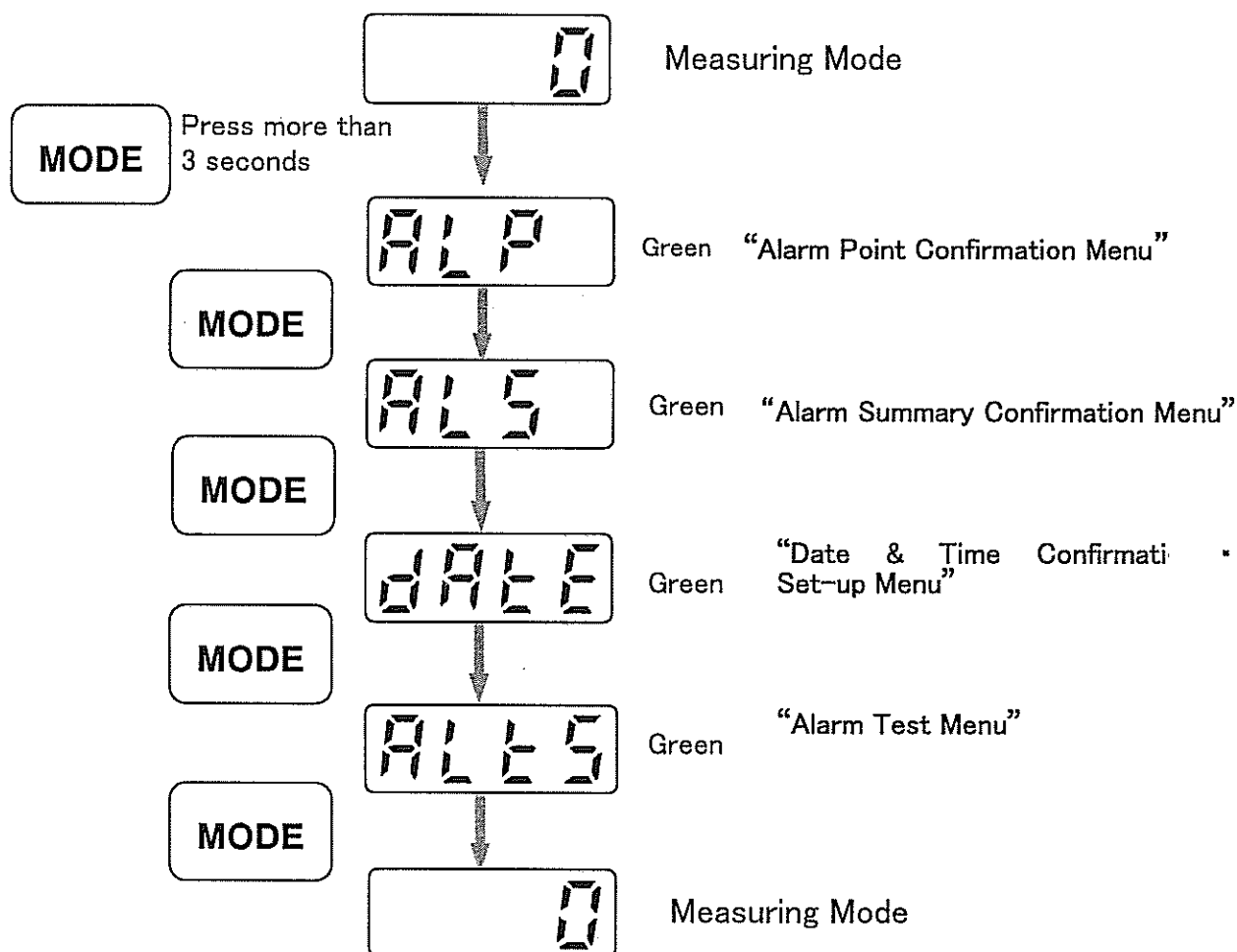
※While the "User's Maintenance Mode" is displayed on instrument screen and if you don't operate more than 1 minute, notice of completion bell will ring and it will return to the "Measuring Mode".

※Even when the screen shows the "User Maintenance Mode", instrument continues to monitor gas concentration. It will return to the "Measuring Mode" once the alarm start beeping.

※Once the "User Maintenance Mode" was set while gas alarm is on or the instrument is in trouble, it cannot monitor the gas concentration for 30 seconds.

5-1 Alarm Point Confirmation

It is the mode to confirm the alarm point.
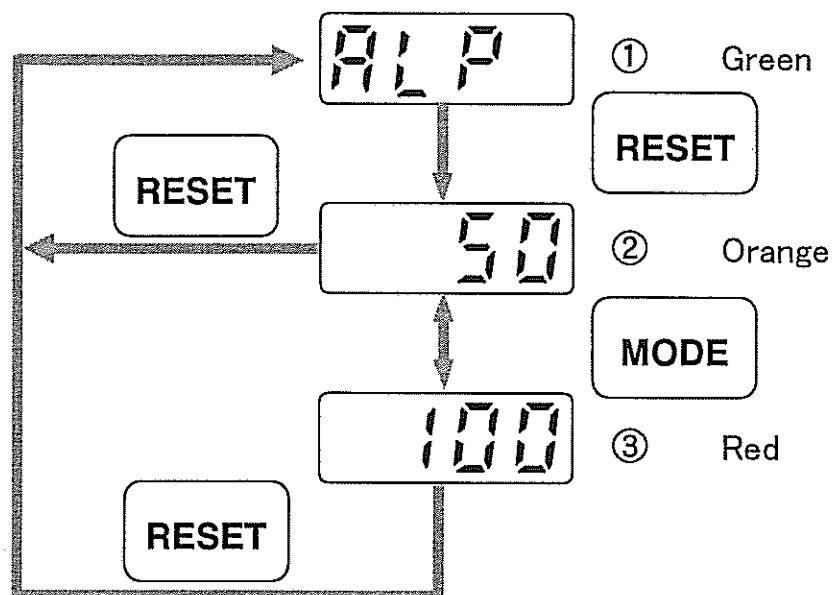
① 《Alarm Point Confirmation Menu》
Press the "MODE" button, it goes to the "Alarm Summary Menu".
Press the "RESET" button, it goes to the "Alarm Point 1 Confirmation".

② 《Alarm Point Confirmation 1》
AL1 concentration will be displayed.
Press the "MODE" button, it goes to the "Alarm Point 2 Confirmation".
When you press the "RESET" button, it return to the "Alarm Confirmation Menu".

③ 《Alarm Point Confirmation 2》
AL2 concentration will be displayed.
Press the "MODE" button, it goes to the "Alarm Point Confirmation 2".
When you press the "RESET" button, it will return to the "Alarm Confirmation Menu".

5-2 Alarm Summary Confirmation

It is the mode to confirm the alarm summary. The indications are: "Track Record No." (AL.P1、AL.P2···AL.PO) "Gas Concentration", "Year", "Month & Date", "Time". It will be able to confirm 10 cases maximum.

```
        ┌─────────┐
        │  A L S  │  ①    Green
        └─────────┘      ┌─────────┐
                         │  RESET  │
                         └─────────┘
        ┌─────────┐
        │ A L.P 1 │  ②    Green
┌───────┐└─────────┘      ┌─────────┐
│ RESET │    No. 1       │  MODE   │
└───────┘                └─────────┘
        ┌─────────┐
        │ P 1 1 S │  ③    Orange or Red 1st or 2nd  (lighting)
┌───────┐└─────────┘      ┌─────────┐
│ RESET │  Concentration │  MODE   │
└───────┘                └─────────┘
        ┌─────────┐
        │ 2 0 0 4 │  ④    Green
┌───────┐└─────────┘      ┌─────────┐
│ RESET │    Year        │  MODE   │
└───────┘                └─────────┘
        ┌─────────┐
        │ 5. 1 0  │  ⑤    Green
┌───────┐└─────────┘      ┌─────────┐
│ RESET │    Month       │  MODE   │
└───────┘                └─────────┘
        ┌─────────┐
        │ 0 8.3 0 │  ⑥    Green
┌───────┐└─────────┘      ┌─────────┐
│ RESET │    Time        │  MODE   │
└───────┘                └─────────┘
        ┌─────────┐
        │ A L.P 2 │  ①    Green
┌───────┐└─────────┘
│ RESET │    No. 2
└───────┘
```
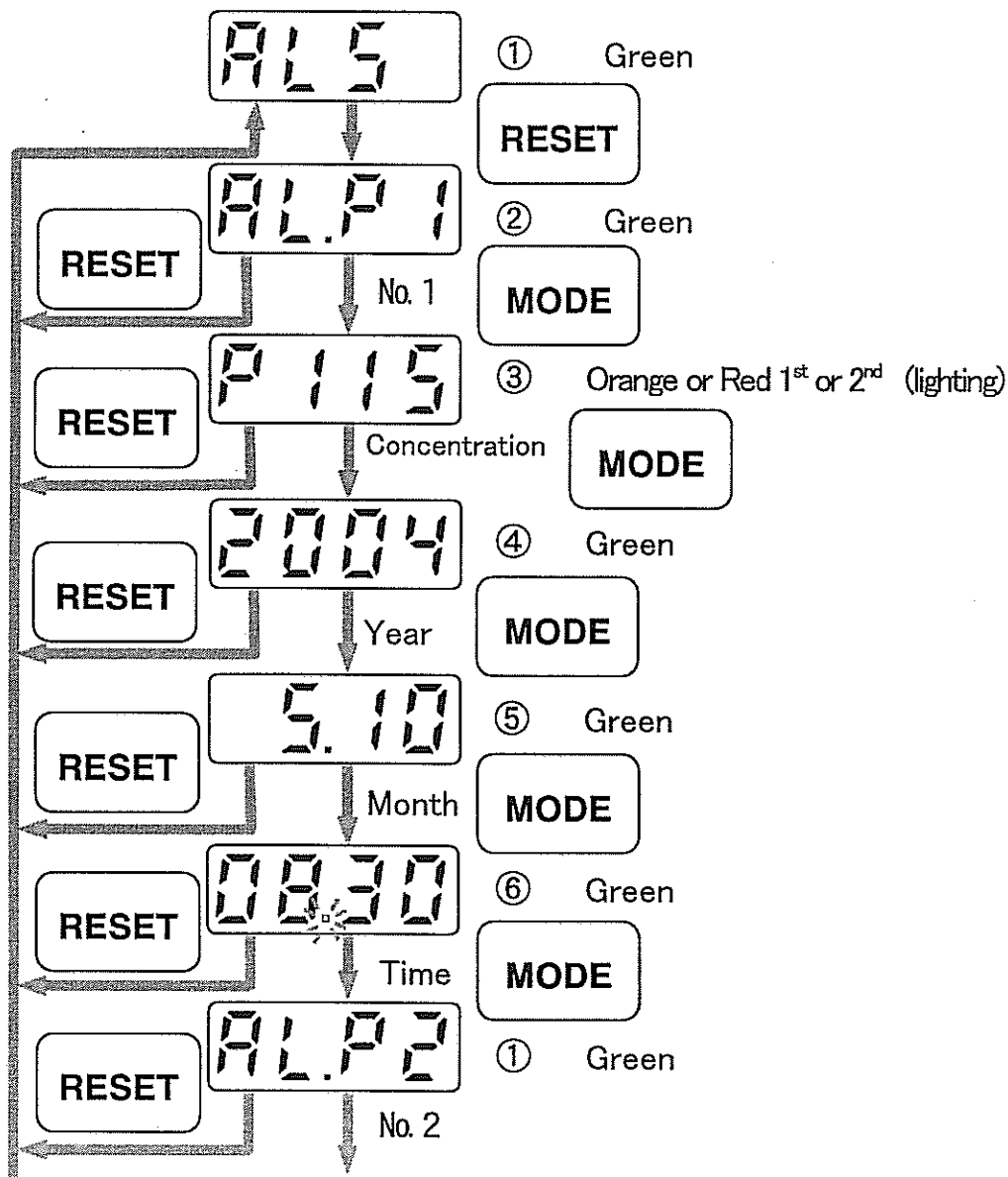
※Track Record No.1 (P1) will be the latest data.

① ≪Alarm Summary Confirmation Menu≫
Press the "MODE" button, it goes to the "Date &Time・Set-up Menu".
Press the "RESET" button, it goes to the "Indication of Truck Record ".
The alarm summary will be all cleared if you continue to press the "MAINTE" button for 3 seconds when the "ALS" is indicated. (The "ALS" which is flashing, and once it is cleared, completion sounds will beep and light will be on.)

② ≪Track Record Indication≫

Track record 1(P1)will be displayed.

Press the "MODE" button, it goes to the "Indication for Concentration".

Press the "RESET" button, it goes to the "Alarm Summary Confirmation Menu".

③ ≪Indication for Concentration≫

The Alarm Summary Concentration will be displayed.

Once the recorded concentration is in the 1st alarm time, the indication of the concentration will become orange.(1st LED flashing)

Once the recorded concentration is in the 2nd alarm time, the indication of the concentration becomes red (2ndLED flashing)

Press the "MODE" button, it goes to the "Indication for Year".

When you press the "RESET" button, it will return to the "Alarm Summary Confirmation Menu".

④ ≪Year Indication≫

Year of the alarm summary will be displayed.

Press the "MODE" button, it goes to "Month & Data Indication".

When you press the "RESET " button , it will return to the "Alarm Summary Confirmation Menu".

⑤ ≪Month & Date Indication≫

Month & Date of the Alarm Summary will be displayed.

Press the "MODE " button, it goes to "Time Indication".

When you press the "RESET" button, it will return to the "Alarm Summary Confirmation Menu".

⑥ ≪Time Indication≫

Alarm Summary Time will be displayed.

(". " flashes)

Press the "MODE" button, it goes to the next "Track Record Indication".

When you press the "RESET" button, it will return to the "Alarm Summary Confirmation Menu".

After that, along with the「Track No. 1」2→3→・・・9→0→1→・・・will be repeated.

※Track No. 1(P1)will be the latest data.

5-3 Date & Time Confirmation・Set-up

This is the mode to confirm and set up the date & time of the inner clock.
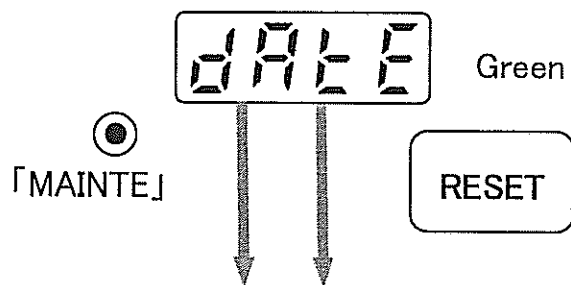
【Date & Time Setting Mode】   【Date & Time Confirmation Mode】

① ≪Date & Time Confirmation・Set-up Menu≫

Press the "MODE" button, it goes to the "Alarm Test Menu".

Press the "RESET" button, it goes to the "Date & Time Confirmation Year".

Press the "MAINTE" button, it goes to the "Date & Time Set-Up Year".

【Date & Time Confirmation Mode】
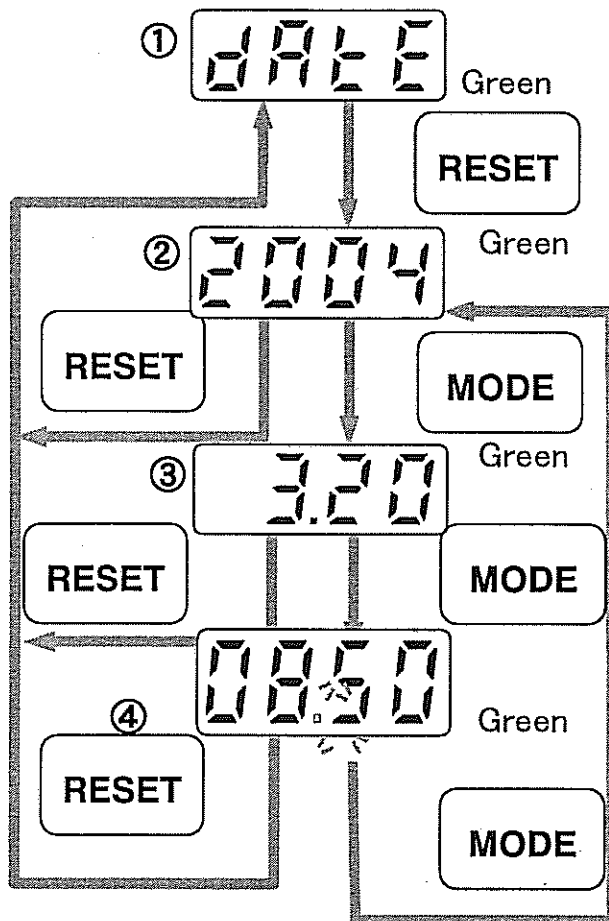
To 『Date & Time Confirmation　Year』

① 《Date & Time Conf. ・Set-up Menu》
When you press the "RESET" button, it
will return to the "Date & Time
Confirmation Year".

② 《Date & Time Confirmation　Year》
Current year will be displayed.
Press the "MODE" button, it goes to the
"Date & Time Confirmation Month &
Date". When you press the "RESET"
button, it will return to the "Date & Time
Confirmation・Set-up Menu".

③ 《Date & Time Confirmation　Month &
　Date》
Current date and time will be displayed.
Press the "MODE" button, it goes to
the "Date & Time Confirmation Time".
When you press the "RESET" switch, it
will return to the "Date & Time
Confirmation・Set-up Menu".

④ 《Date & Time Confirmation　Time》
Current time will be displayed.
Press the "MODE" button, it goes to
the "Date & Time Confirmation Year".
When you press the "RESET" button, it
will return to the "Date & Time
Confirmation・Set-up Menu".

【Date & Time Set-up Mode】

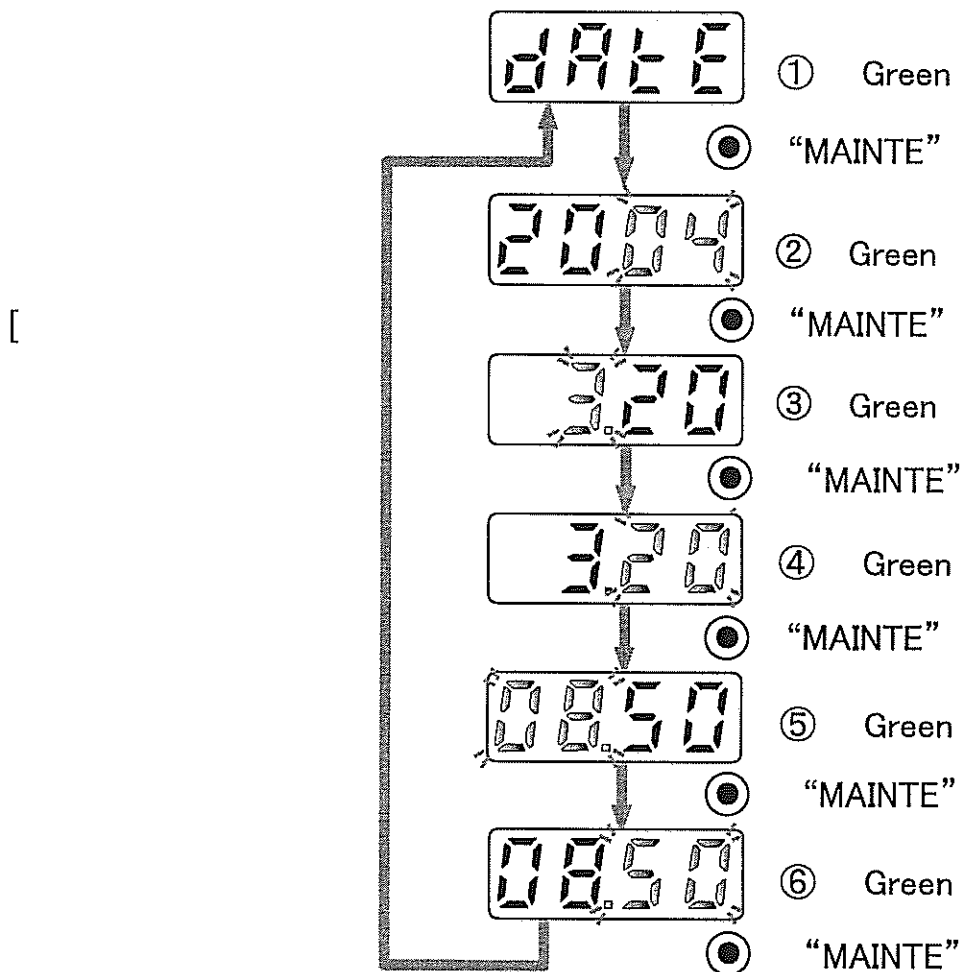|		
`dAtE`	①	Green
◉	"MAINTE"	
`2004`	②	Green
◉	"MAINTE"	
`3.20`	③	Green
◉	"MAINTE"	
`3.20`	④	Green
◉	"MAINTE"	
`08.50`	⑤	Green
◉	"MAINTE"	
`08.50`	⑥	Green
◉	"MAINTE"	

① ≪Date & Time Confirmation・Set-up Menue≫
Press the "MAINTE" button, it goes to the "Date & Time Set-up Year".
② ≪Date & Time Set-up Year≫
Current year will be displayed.
Press the "RESET" button and the Year which is indicated will go UP. (If you keep
  pressing it, the Year will go UP continuously.)
Press the "MODE" button and the Year which is indicated will go DOWN. (If you
  keep pressing it, the Year will go DOWN continuously.)
Press the "MAINTE" button and the "Date & Time Set-up Month" will appear.
※Year set-up range：2000～2099
③ ≪Date & Time Set-up Month≫
Current month and date will be displayed. (Indication for the Month will be flashed.)
Press the "RESET" button and the Month which is indicated will go UP. (If you keep
pressing it, the month will go UP continuously)
Press the "MODE" button and the Month which is indicated will go DOWN. (If you
keep pressing it, the Month will go DOWN continuously)
Press the "MAINTE" button, it goes to the "Time Set-up Date"..
※Month set-up range：1～12

24

④ ≪Date & Time Set-up Date≫

Current month & date will be displayed. (Indication for the Date will be flashed.)
Press the "RESET" button and the Date which is indicated will go UP. (If you keep
  pressing it, the Date will go UP continuously.)
Press the "MODE" button and the Date which is indicated will go DOWN. (If you
  keep pressing it, the date will go DOWN continuously.)
Press the "MAINTE" button, it goes to the "Date & Time Set-up Hour".
※Date set-up range : 1～31 (differs depending on the set-up month)

⑤ ≪Date & Time Set-up Hour≫

Current time will be displayed. (Indication for the Hour flashed.)
Press the "RESET" button and the time which is indicated will go UP. (If you keep
pressing it, the time will go UP continuously.)
Press the "MODE" button and the time which is indicated will go DOWN. (If you
keep pressing it, the time will go DOWN continuously.)
Press the "MAINTE" button, it goes to the "Date & Time Set-up Minute".
※Time set-up range : 00～23

⑥ ≪Date & Time Set-up Minute≫

Current time will be displayed. (Indication for the Minute will be flashed.)
Press the "RESET" button and the minute which is indicated will go UP. (If you keep
  pressing it, the minute will go UP continuously.)
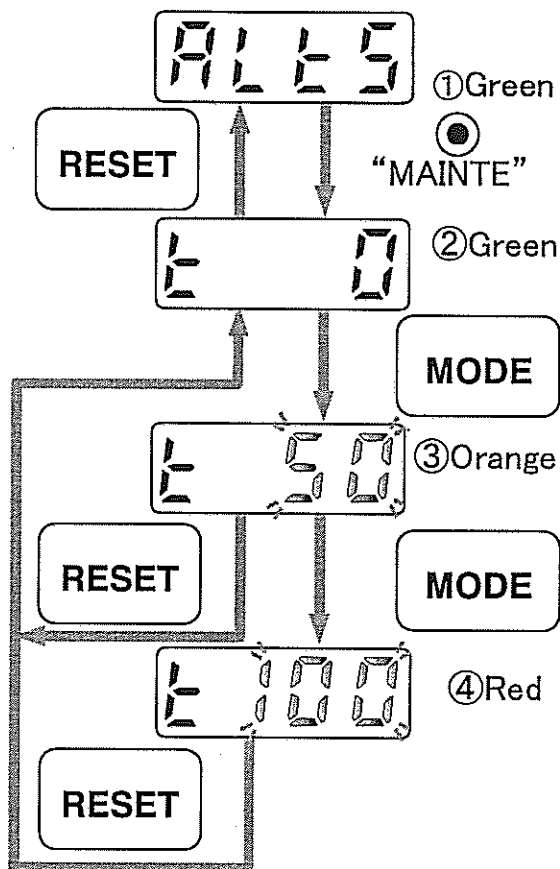Press the "MODE" button and the minute which is indicated will go DOWN. (If you
  keep pressing it, the minute will go DOWN continuously.)
Press the "MAINTE" button and the inner clock will be updated as 00 second, and
then it goes to the "Date & Time Confirmation・Set-up Menu".
※Minute set-up range : 00～59

5-4 Alarm Test

```
┌─────────────┐
│  A L t S    │ ①Green
└─────────────┘
```
RESET ↑ ↓ ● "MAINTE"

```
┌─────────────┐
│  t      0   │ ②Green
└─────────────┘
```
MODE

```
┌─────────────┐
│  t    5 0   │ ③Orange
└─────────────┘
```
RESET   MODE

```
┌─────────────┐
│  t  1 0 0   │ ④Red
└─────────────┘
```
RESET

※"t" which is located in the left
side of the test rate
will be indicated in Green.

① ≪Alarm Test Menu≫
Press the "MODE" button, it will return to the
"Measuring Mode".
Press the "MAINTE" button, it goes to the
"Alarm Test 0 " mode.

② ≪Alarm Test 0≫
Test rate 0 will be displayed.
Press the "MODE" button, it goes to the
"Alarm Test AL1" mode.
Press the "RESET" button, it will return to
the "Alarm Test Menu".

③ ≪Alarm Test AL1≫
Test rate AL1 will be displayed.
(AL1 rate flashes, AL1 LED flashes,
buzzer 1 ON)
Press the 「RESET」button, it goes to the
alarm reset mode.(AL1 rate flashes, AL1 LED
flashes, buzzer 1 OFF)
Press the "MODE" button, it goes to the
"Alarm Test AL2" mode.(AL1 mode will be
cleared.)
If you press the "RESET" button when alarm
reset mode is on, it goes to the "Alarm Test
0" mode.(AL1 mode will be cleared.)
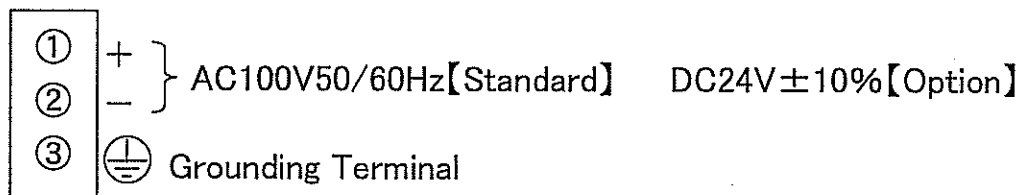
④ ≪Alarm Test AL2≫
Test rate AL2 will be indicated.
(AL2 rate flashes, AL2 LED flashes,
buzzer 2 ON)
Press the "RESET" button, it goes to the
Alarm reset mode. (AL2 rate flashes, AL2 LED
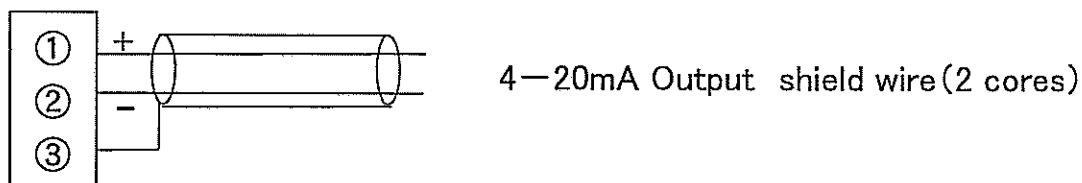flashes, buzzer 2 OFF).
Press the "RESET" button while the alarm
Reset mode is on, the "Alarm Test 0" mode
will start.(AL2 mode will be cleared.)

6. Connecting Wire

TD1

① +
② − } AC100V50/60Hz【Standard】   DC24V±10%【Option】

③ ⊕ Grounding Terminal

TD2

① +
② − } 4−20mA Output shield wire(2 cores)
③

TD3

① AL1 Alarm Point Output
② COM
③ AL2 Alarm Point Output
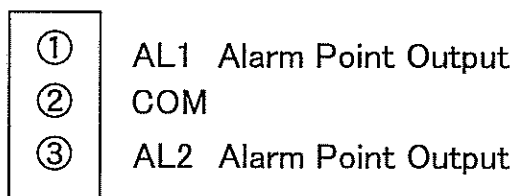
7. External Output Operation

7-1 External Output

4−20mA Output Specification

(1)Signal Transmission System   :Power Current Transmission (non-insulation)
(2)Transmission Channel   :Shield Wire
(3)Transmission Distance   :Below 1km
(4)Connecting Load Resistance :Below 300Ω
(5)Mode for Signal Level
　①Detector Mode   :4〜20mA(Depending on gas concentration)
　②Gas Alarm   :4〜20mA(Depending on gas concentration)
　③Initial Clear   :2.5mA(Fixed)
　④Maintenance Mode   :2.5mA(Fixed)
　⑤Alarm Test   :4〜20mA(Depending on gas concentration)
　⑥Accident Alarm   :0.5mA(Fixed)
(6)Power Source OFF   :0mA

7-2 4−20mA Output Chart

Status	Output mA	Remarks
Initial	2.5	Fixed rate
Normally (No alarms)	4.0〜20.0	Depending on gas concentration
Scale Over	20.1〜22.0	Depending on gas concentration
Trouble	0.5	Fixed rate
User Maintenance Mode Menu	4.0〜22.0	Depending on gas concentration
Maintenance Mode Menu	2.5	Fixed rate
Alarm Point Confirmation	4.0〜22.0	Depending on gas concentration
Alarm Summary Confirmation	4.0〜22.0	Depending on gas concentration
Date & Time Confirmation・Set-up	4.0〜22.0	Depending on gas concentration
Alarm Test	5.6〜20.0	Depending on gas concentration

7-3 LED, Contact Point Output Chart

Status	1st LED	2nd LED	1st Contact Point	2nd Contact Point
Initial	Lights out	Lights out	OFF	OFF
Normally (No alarm)	Lights out	Lights out	OFF	OFF
1st Alarm Time	Flashing (will be lighted after the reset)	Lights out	ON	OFF
2nd Alarm Time	Flashing (will be lighted after the reset)	Flashing (will be lighted after the reset)	ON	ON
Trouble	Lights out	Lights out	OFF	OFF
User Maintenance Mode Menu	Lights out	Lights out	OFF	OFF
Alarm Point Confirmation	Lights out or flashing	Lights out or flashing	OFF	OFF
Alarm Summary Confirmation	Lights out or flashing	Lights out or F flashing	OFF	OFF
Date & Time Confirmation・Set-up	Lights out	Lights out	OFF	OFF
Alarm Test	Lights out or flashing (will be lighted after the reset)	Lights out or flashing (will be lighted after the reset)	ON or OFF	ON or OFF

7. When Instrument is Not in a Good Condition

(1) Power source is not turned ON.

• Power source is unplugged → Connect the power source code to the plug

• Power source switch is OFF → Turn on the power switch

• Fuse is cut off → Find out the cause of cut off , and replace it with a new fuse.   If you cannot find causes, ask the nearest agent.

(2) Alarm summary time does not fit → Date & time set-up should be taken.

(3) 4~20mA output is differ from concentration rate→Make adjustment of 4mA、 20mA （Contact the nearest agent）

(4) No buzzer sounds

• Buzzer is set off →Set the buzzer on （Ask the nearest agent.）

(5) Contact point does not appear in the alarm test

• The zero point operation is set off in the alarm test.→ Set on while you conduct alarm test.（Contact the nearest agent.）
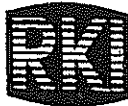

(6) Peak hold is not working when alarm beeps

•The peak hold is not set.→Set peak hold mode.（Contact the nearest agent.）

※If you still have any trouble after you have checked along with the instructions mentioned above, please ask the nearest agent.

9. Specifications

Model	CO-500
Detected Gas	Carbon Monoxide (CO)
Sampling Method	Diffusion sampling
Detection Principle	Semiconductor
Measuring Range	0～150ppm (1 digit : 1ppm)
Display	3 digits 3 color LED (Green, Orange, Red) Normal: Green
Type of Alarms	Gas alarm: 2 level alarm (Latch mode /cancelled by reset switch) Trouble Alarm: Sensor connection trouble (Non-latched mode)
Preset Alarm Levels	1st : 50ppm 2nd : 100ppm
Display of Alarm	1st Alarm: Flashing orange LED gas display 　　　　AL1LED orange color flashing, Intermittent buzzer sound 2nd Alarm: Flashing red LED gas display 　　　　AL2 LED red color flashing, Intermittent buzzer sound Trouble Alarm: Red flashing display "E-＊＊"(＊＊shows error No.), 　　　　Short buzzer intermittent buzzer sound
Alarm Relays	10 alarm occurrence, time and alarm concentration
Outputs	DC4-20mA　Trouble alarm : 0.5mA (resistive load at below 300Ω)
Alarm Contact Point	AL1/AL2 Each 1a,　Common Contact capacity : 125V 1A (Resistive load)
Operating Temp. & Humidity	0～40°C　Below 90%RH (Non condensing)
Power Requirement	AC100V　50/60Hz　Power consumption: MAX3.5VA Power cable 3m accessory (standard) Option: (DC24V, Power consumption:MAX2.0W<Special version>)
Dimension & Weight	Approx. 95(W) × 135(H) × 35(D)mm Approx. 420g (DC24V spec.　Approx. 220g)
Mounting	Wall mounting type (By using accessory mounting plate or mount at one switch box) Cable inlet: Up, down and left/right, or rear side

PRODUCT WARRANTY
1/1/2002

RKI Instruments, Inc. warranties gas alarm equipment sold by us to be free from defects in materials, workmanship, and performance for a period of one year* from the date of shipment from RKI Instruments, Inc. Any parts found defective within that period will be repaired or replaced, at our option, free of charge. Parts must be returned to RKI Instruments, Inc. for repair or replacement. This warranty does not apply to those items which by their nature are subject to deterioration or consumption in normal service, and which must be cleaned, repaired or replaced on a routine basis. Examples of such items are:

a) Pump diaphragms and valves   c) Batteries
b) Fuses   d) Filter elements

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repair procedures not in accordance with instruction manual. This warranty indicates the full extend of our liability, and we are not responsible for removal or replacement costs, local repair costs, transportation costs, or contingent expenses incurred without our prior approval.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF RKI INSTRUMENTS, INC. INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RKI INSTRUMENTS, INC. BE LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND CONNECTED WITH THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.

This warranty covers instruments and parts sold to users only by authorized distributors, dealers and representatives as appointed by RKI Instruments, Inc.

We do not assume indemnification for any accident or damage caused by the operation of this gas monitor and our warranty is limited to the replacement of parts or our complete goods. Warranty covers parts and labor performed at RKI Instruments, Inc. only, and does not cover field labor or shipment of parts back to RKI.

* The Models GX-2001 and GasWatch 2 carry a two year warranty. The two year warranty applies to the instrument including original sensors. Replacement parts and sensors have a standard one year warranty.

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