



## OPERATING INSTRUCTION MANUAL

FOR

**BUZZER UNIT TAN-590**

### Precaution in operation

- Read and understand all instructions and safety precautions in this MANUAL before performing operations.
- Keep this MANUAL where to take out easily on request.
- When carry out this MANUAL by construction etc., be sure to put it back where it was.
- This buzzer unit can not be used for no other purpose than it given one.
- When operate it not to follow this MANUAL, repair it by other rating parts or modify it on his own, the safety and quality of products can not be secured. Then, when an accident take place by it, we cannot assure our responsibility on them.

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# 1. PRODUCT OUTLINE

## 1 — 1. In the beginning

First of all, we wish to express our heartfelt thanks for your purchase of our buzzer unit TAN-590 for RM-590 series.

This instruction manual is just a guide book to operate buzzer unit TAN-590.

Your kind reading of this manual is requested not only for first user but for already experienced staff.

This buzzer unit is used in combination with RM-590 series indicator/alarm unit.

Please read instruction manual for indicator/alarm unit as well.

## 1 — 2. Application for use

- This unit is used in combination with plural indicator/alarm units.
- Sounds alarm buzzer and operates relay contact for common alarm by receiving alarm output signal from indicator/alarm unit.
- Sounds alarm buzzer and operates relay contact for trouble alarm when indicator /alarm unit become in trouble.

## 1 — 3. Identification of each cautional marks

### **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situation.

### **WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

### **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

### **\* NOTE**

This means “ADVICE” at operation.

## 2. IMPORTANT INSTRUCTION FOR THE SAFETY

### 2—1. Danger items



#### DANGER

This is not an explosion proof unit. Do not use it in a hazardous area.

### 2—2. Warning items



#### WARNING

- Indicator/alarm unit
  - Do not connect other unit than designated indicator/alarm unit RM-590series.
  - If connected, this unit or other connected unit may be broken.
- Power source
  - Before supplying the power, confirm that the power source is a designated voltage.
- Necessity of protective grounding
  - Do not cut inside or outside wire for earth, nor disconnect the wire from earth terminal.
  - In any case, the unit becomes dangerous conditions.
- Defect of protective function
  - Do not operate the unit if protective functions such as protective grounding or fuse are seems to be defective.
  - Also, before operating the unit confirm that there is no defect for protective functions.
- Fuse
  - Use the designated rating (current, voltage, type) fuse to prevent fire.
  - Replacement of fuse shall be done after put off the initial power source and put off the power switch of this unit.
  - Do not use other fuse than designated one, nor make short circuit for fuse holder.
- Operation in gas
  - Do not operate in the place where combustible/explosive gas or vapors should exist.
  - It is very dangerous to operate in such an atmosphere.
- External connections
  - After making protective grounding firmly, connect to external control circuit or detection objective.
- Measures at gas alarm
  - When detect high concentration gas than preset alarm level, it is very dangerous.
  - It is required to take an appropriate measures by customer's decision.
- Mounting/dismounting
  - Locking mechanism may be broken if the unit is mounted into the case with disengagement lever up position.
  - Make correct procedure for mounting/dismounting.

## 2—3. Cautional items



### CAUTION

- Do not use walky-talky near this gas detector.

When this detector receives the electric waves by walky-talky etc near from the cable, this will affect the reading. When use the walky-talky, operate it at the place where there is no influence of electric wave ejection.

- When make power on again, make it after an interval of over 5 seconds.

When make power on within 5 seconds, there may be no normal operation.

- When operate it not to follow this manual, repair it by other rating parts or modify it on his own, the safety and quality of products can not be secured. Then, when an accident take place by it, we cannot assure our responsibility on them.

Take enough consideration for instrumentation to keep safety even if disconnections of power and signal lines, defect of operation or trouble would be happen due to unexpected reason.

This is an electrical applied instrument.

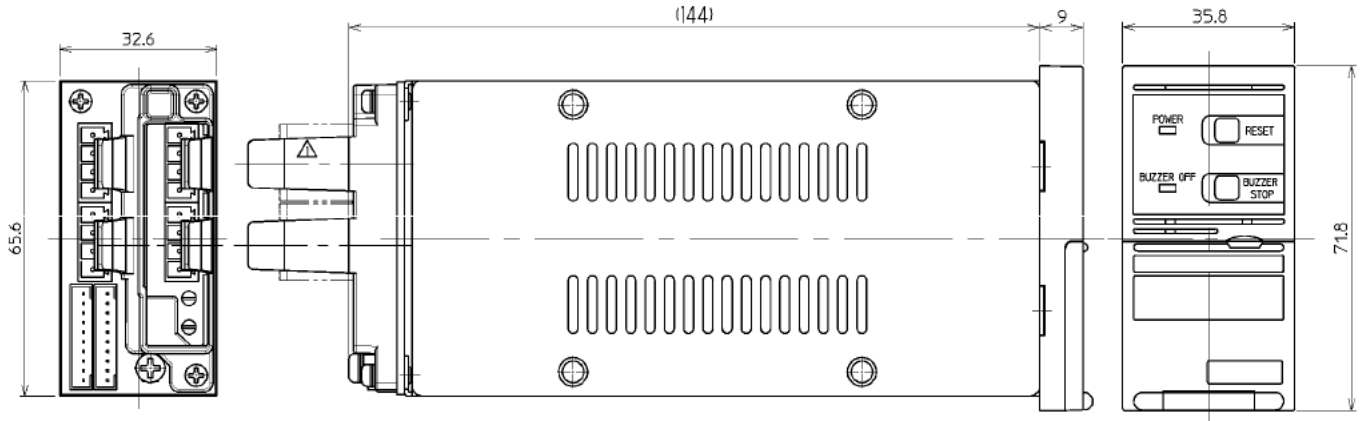
Be care it may be affected by power noise, electrostatic and electromagnetic noise.

When use under such conditions, make protective treatment for use.

### 3. PRODUCT FUNCTION

#### 3-1. External drawing (Unit with single case)

\* For multi-unit case, refer to operating instructions for multi-unit case.



#### 3-2. Appearance

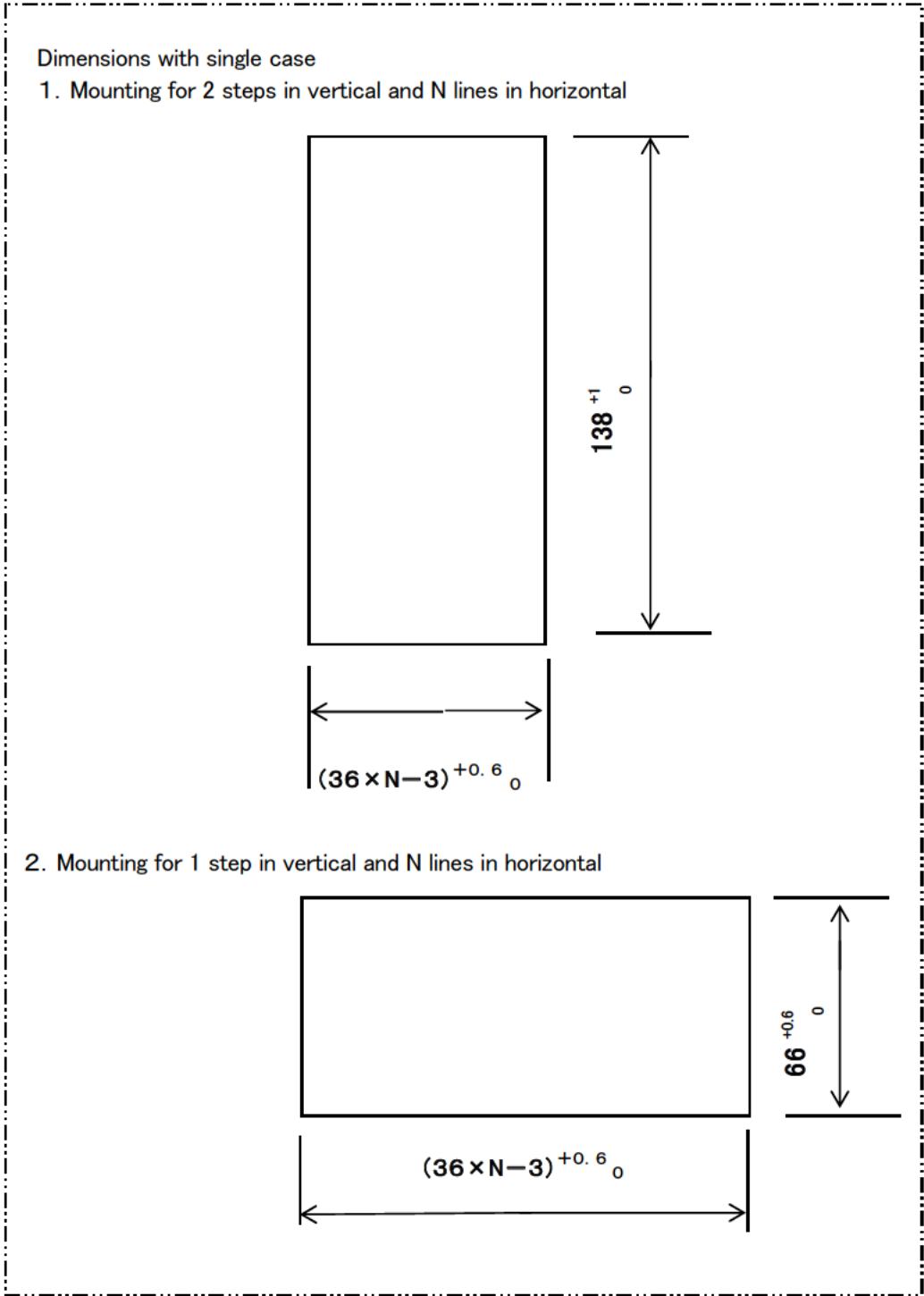


Standard version

Lock-in type

Buzzer unit

### 3—3. Panel cut-out dimensions



Required thickness of the panel: 1.2~3.2mm

Refer to the instruction manual for multi-unit case if installed the unit to multi-unit case.

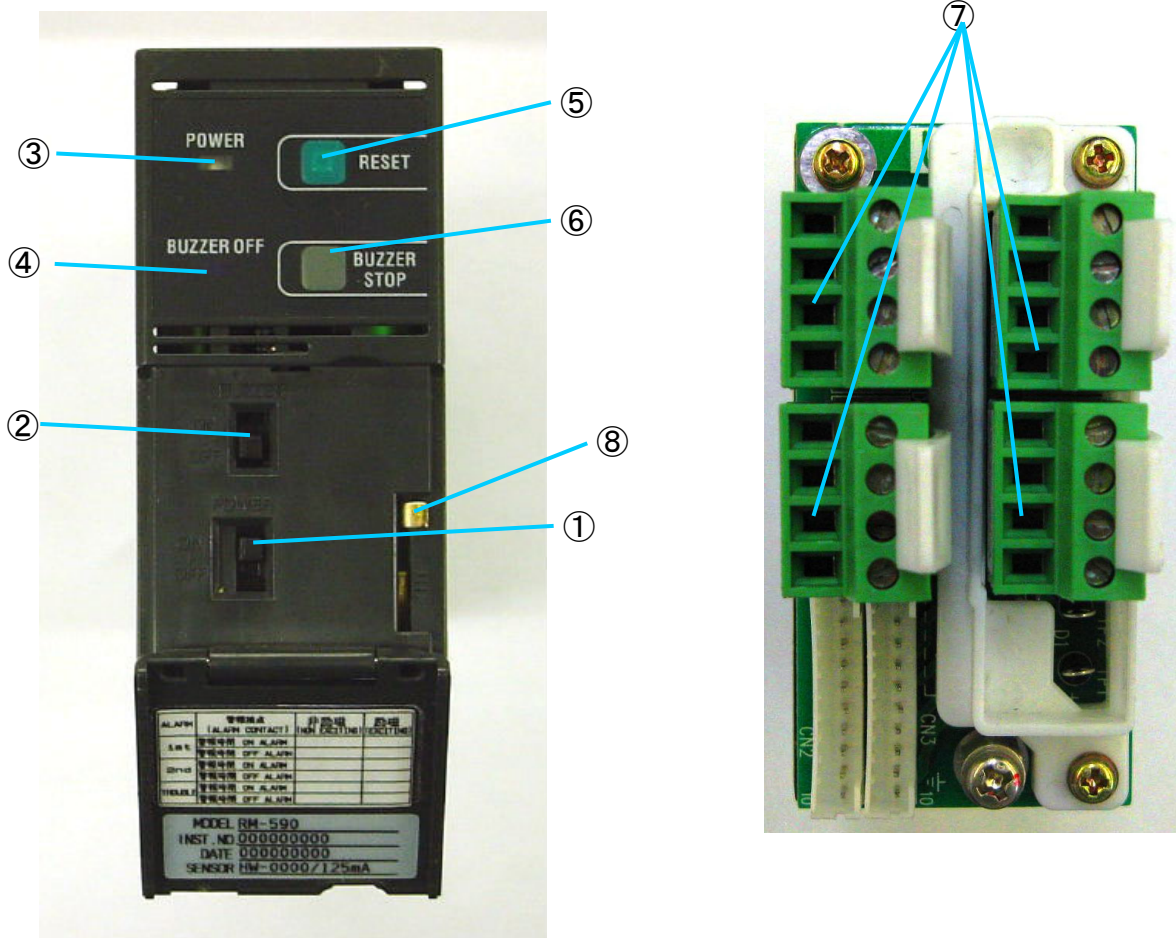


#### CAUTION

Please consult us or with our agent for installation method or installation quantity to avoid trouble caused by radiating heat.

### 3—4. Name of each part and function

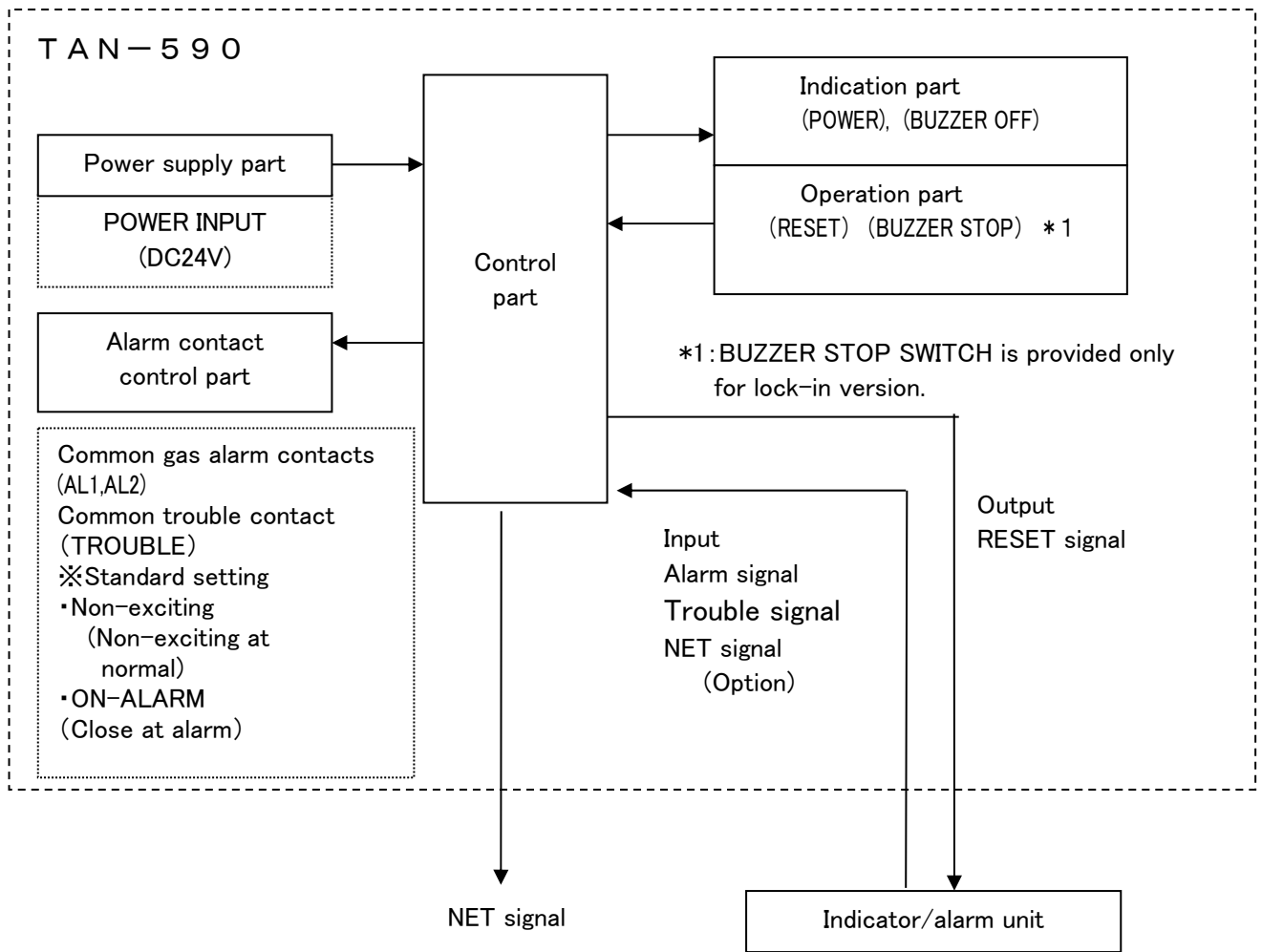
\* Picture shows the unit with single case.



- ①POWER ..... Power switch
- ②BUZZER ..... Change over switch for buzzer function
- ③Power light..... Illuminates during power on.
- ④BUZZER OFF ..... Illuminates when buzzer sound is set to OFF
- ⑤RESET..... Alarm reset switch
- ⑥BUZZER STOP ..... Buzzer stop switch for lock-in version(Provides this switch only for lock-in version)
- ⑦Terminal plate(for single case)..... Connection for outer cables.  
In case of multi-unit case, refer to instruction manual for multi-unit case.
- ⑧Disengagement lever..... Push lever down to release and pull out module.



### 3—5. Block diagram



## 4. HOW TO USE

### 4—1. Before operation

Be sure to keep cautional items of use not only for first user but for already experienced staff.  
If not keep these cautional items, the unit may be defective and correct gas detection may not be performed.

### 4—2. Mounting/dismounting procedures

#### 1) Mounting method

- Open the front cover of this unit.
- Confirm that the power switch is at OFF
- With the disengagement lever at down position, insert into the case.  
(Confirm that the edge connector is put in firmly)
- Confirm that the disengagement lever is turned upward when buzzer unit is mounted into the case firmly.
- After confirmation of lever position, put ON the power switch and then, close the cover.

#### 2) Removal of the unit

- Open the front cover of this unit.
- Confirm that the power switch is at OFF.
- Push disengagement lever down to release the lock.
- Pull out the unit from the case.
- Turn the lever upward and close the cover.



#### **CAUTION**

Mounting/dismounting of buzzer unit shall be done according to the above procedures.

If not stopping metal of transformed and the cover cannot be closed.

## 4—3. Installation place



### CAUTION

Do not install at places where direct sun drought or where the temperature is drastically changed.

Keep away the system from direct sun drought or where the temperature of the system is drastically changed.

Do not install it where vibration or shocks may take place.

The system consists of fine electronics parts.  
Install them where to be stable not to crush or fall down.

Keep the system from the equipment which may generate the noise(Unit & cable).

Keep the system from the equipment which may give a high frequency in the surroundings and install it.

- Do not put the system jointly each.
- Do not wire the cable in parallel nor take access.

Do not install it where the detection gas is deposited around.

Do not install and make gas detection at the place where the sample gas is deposited.

Do not install at the place where it is danger for maintenance service such as high voltage cable, etc.

This unit is required to make maintenance regularly. Then, do not install at the place where there is danger at maintenance time.

Do not install it where it is unable to make maintenance.

When required to stop the system at maintenance time, unable to maintain if not remove a part of system or unable to detach the case due to the pipe or rack etc. Do not install such place.

System housing that grounding construction is not enough.

Be sure to ground when install.

#### 4—4. Caution in the system engineering



#### CAUTION

Unstable power and noise may cause error of performance and alarm.  
For the system to use this unit, it is required to make design based on this manual descriptions.

##### (1) Stable power used

While the system gets stable at power on and power failure, the external output and alarm contact may be on and the care for it must be taken. In such case, use the standby battery or take an appropriate action in the receiver side. Supply the following power to this unit.

Power voltage	DC-24V $\pm$ 10%(Terminal voltage)
Power failure tolerance time	Approx 10msec. (For power failure of 10msec, it re-starts To warrant the continuous operation, install the standby battery outside.
Others	Do not connect with power involving high power load and high frequency noise. According to requirement, use line filter and separate it from noise source.

##### (2) Designing to consider radiation

When install the closed self-standing control panel, mount the fans in the upper and lower part.

### (3) Lightning measures

Lightning surge	<p>There is the problem point “Lightning” “When make outdoor wiring of cable at factory or plants etc or when make a parallel wiring in the same duct with the cable in from outdoor even at the indoor wiring.</p> <p>If the lightning is a huge generation source, the cable is a reception antenna and there is the case that cable connecting instrument is broken.</p> <p>It is impossible to prevent the generation of lightning. If the cable should put in metal tube.</p> <p>Laid in the underground, it is impossible to prevent the inductive lightning surge generating from the thunder.</p>
Lightning measures	<p>There is not the complete countermeasure for it but the following method can be considered. Make the suitable treatment accordingly.</p> <p>a) The transmission signal route is arranged for connection by the optical fiber cable etc.</p> <p>b) Countermeasure by the lightning arrester (Cable safety retainer)</p> <p>There is the way to install the lightning arrester just before the field apparatus and the central control station.</p> <p>The position of the lightning arrester installation is at each point of cable laid out from the outdoor to the indoor.</p> <p>The lightning arrester builds in the circuit to remove the surge voltage to be the source for the damage of field apparatus (Protection resistor, zero diode etc. and is designed to protect the apparatus. But as the signal may be attenuated due to the lightning arrester, check the action and it is required to use.)</p>
Grounding	<p>Surge noise shall be generated from the thunder lightning or except it. To protect detector from these cause, be sure to make grounding.</p>

\* In the lightning rod, there is the circuit to remove the surge voltage to be a cause of damage from field instruments. By installing the lightning rod, the signal may be attenuated. When install the lightning rod, it is required to check the performance in advance.

### (4) Alarm contact

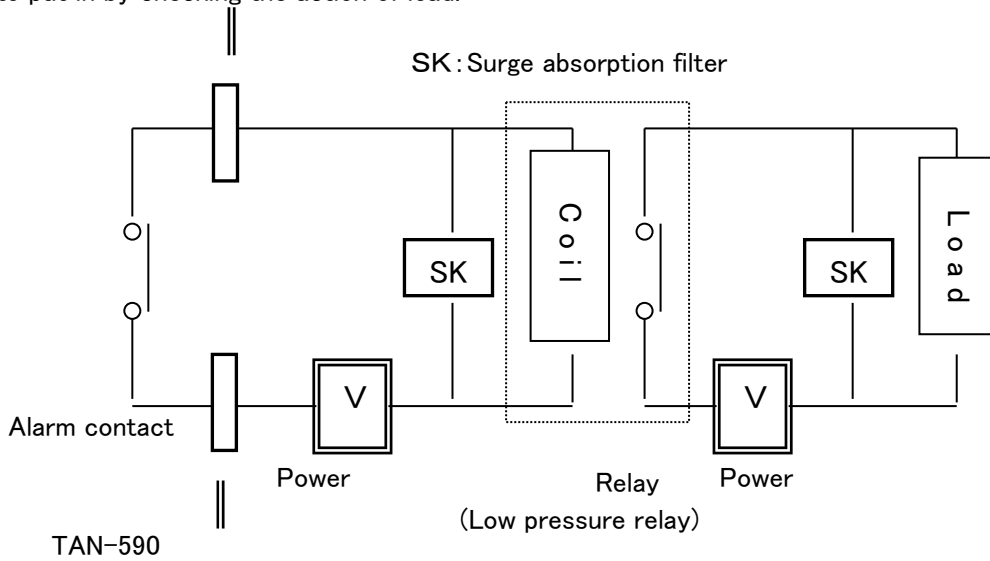
• Alarm contacts shall be used only for external buzzer and alarm light, and do not use it for the controlling use (such as solenoid valve control etc).

When control the external load, the bad influence may be given to the system according to the load characteristics. In such case, the following countermeasure shall be taken to stabilize the action and protect the contacts.

• Relayed by the low voltage relay and operate by connecting CR circuit (Spark Killer:SK) (Diode etc for DC) suited for relay coil directly to relay

• Add CR circuit to the load side of relayed relay on the request.

Reference: By the condition of load, CR circuit may be better to install in the contact side but it is required to put in by checking the action of load.



- How to think alarm contacts against inductive load -

The spec for alarm contact of TAN-590 is described by the conditions of resistive load. When use the inductive load for alarm contacts, the very high reverse electromotive voltage may be generated and the following trouble tends to be produced.)

- Contact part of relay is melted adhesively and the contacts can no work.
- High voltage is put inside of indicator/alarm unit and then, electrical parts may be damaged..
- As it is big noise, the trouble action may be taken by the reckless drive of CPU.

Irrespective of inductive load, there is the possibility of unforeseeable noise intrusion for contacts. Above trouble may be generated.)


### CAUTION

- The inductive load shall not be used in principle (Do not use fluorescent lamp).
- When use the inductive load, make the contact amplification outside, but the outside relay coil belongs to the inductive load, use the relay driven by the low voltage(within AC100V) and it is protected by an appropriate surge killer.
- When control the light inductive load directly, protect the contacts by an appropriate surge killer by all means.

\* As the inductive load, there are following samples.

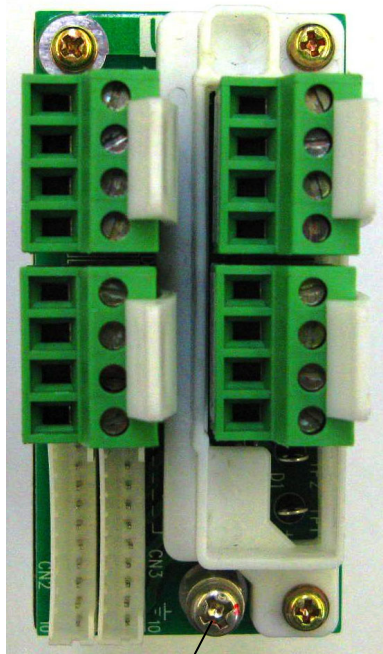
\* Patlight \* External relay \* Buzzer \* Siren \* Fan \*Fluorescent lamp \* Motor etc.


## 4—5. Grounding

Make grounding with terminal 

### WARNING

Be sure to make grounding before putting power ON.  
This picture shows the unit with single case.  
For multi-unit case, refer to operating instruction for multi-unit case.

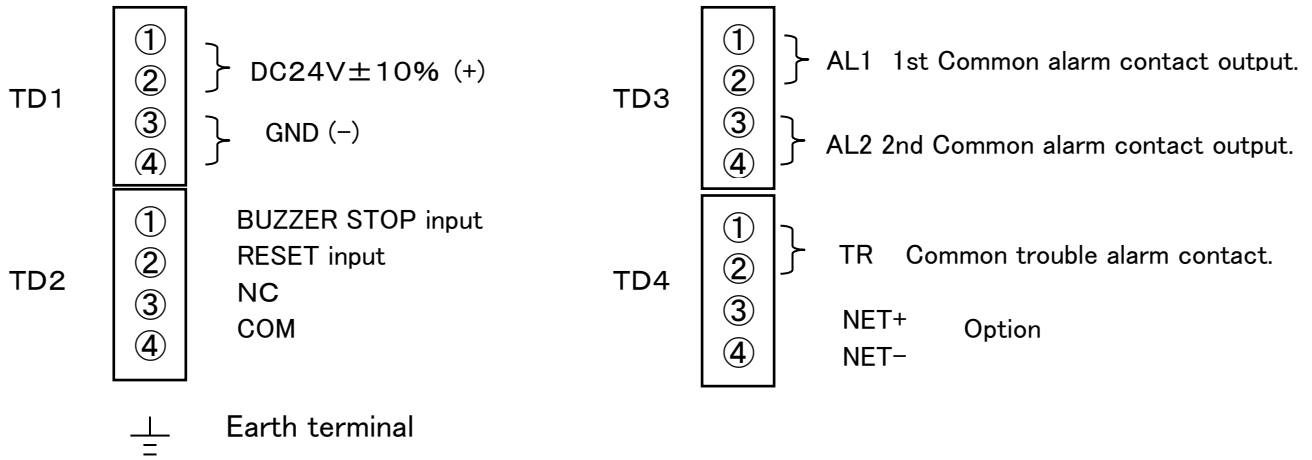


Terminal 

Be sure to make grounding for safety purpose and to keep stable operation of this unit.  
Do not connect earth wire with gas pipe. Make grounding equivalent to D-class  
grounding. (Grounding resistance : below 100 ohms.)

## 4 — 6. Wiring

(In case of single case)



Maximum cable length: 1. 25km

For multi-unit case, refer to operating instruction for multi-unit case.



### CAUTION

- Use CVVS 1.25mm<sup>2</sup> cable for connection.
- Do not distribute power cable and signal cable together with power line for motor, etc.
- Use twisted pair cable like CPEVS or KPEVS for NET signal cable (NET version is a optional spec.)
- This unit applies a connector type terminal plate for easy wiring.  
Be care not to give a high load to the connector.
- We cannot warrant the performance of this unit, if undesignated cable is used.



## 5. OPERATION METHOD

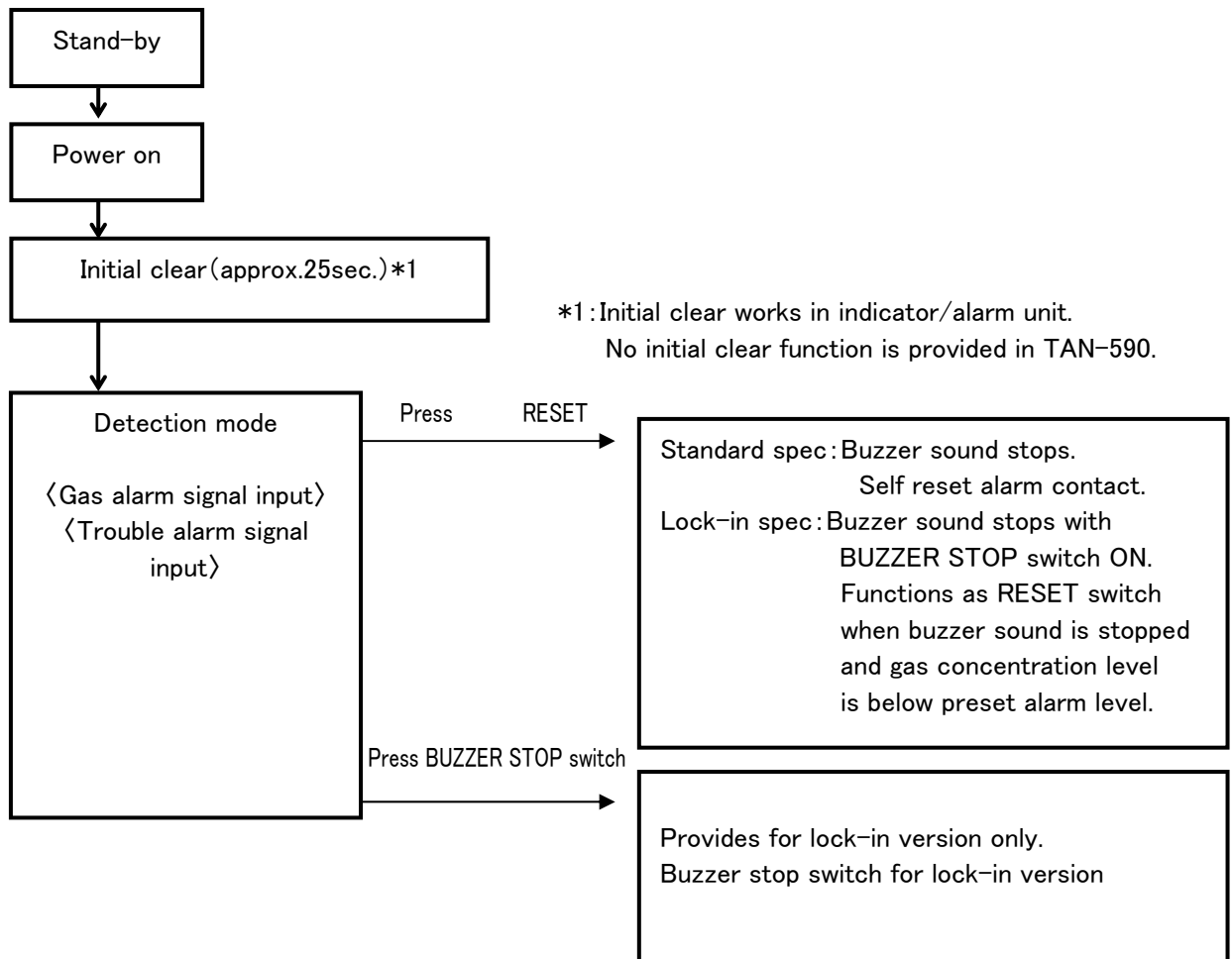
### 5-1. Start-up

Before putting power ON.....

Before putting power ON, keep following caution items. If not, danger for electric shock or damage to the unit will happen.

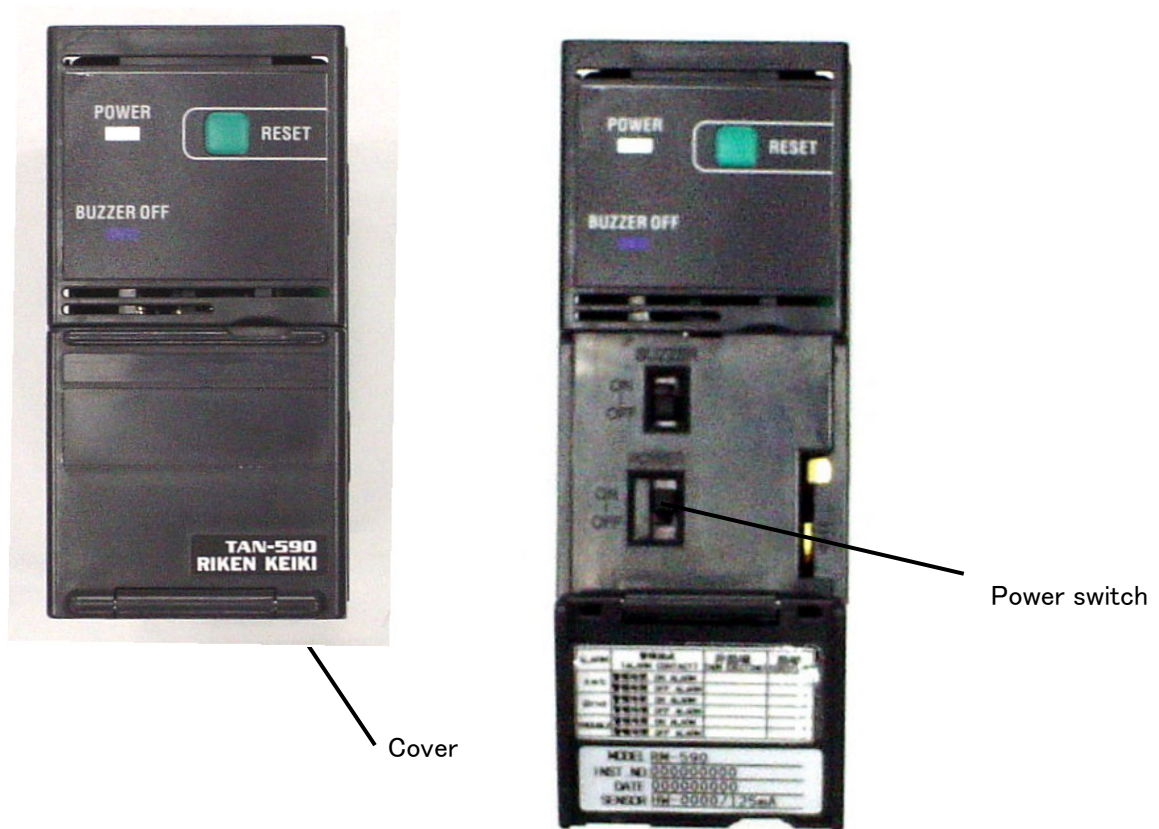
- (1) Make grounding.
- (2) Check that wirings with outer units are made correctly.
- (3) Check that the supply voltage is within a rating.
- (4) Relay contact for outer alarm may work during adjustments. Even relay contact works, treat that any influence will not be given to the outer.
- (5) To prevent fire, check that the designated fuse is used.

### 5-2. Basic performance flow



## 5—3. Start-up method

### 5—3—1. Power on



- 1) Before putting power on, check that the unit is installed correctly.
- 2) The power switch can be seen when opening the front cover.
- 3) Put the switch upward to ON and downward to OFF.
- 4) When put the switch to ON, POWER light illuminates and the unit start running.

## 5—4. Explanation of performance

### 5—4—1. Common gas alarm action

#### (1) Latching mode, self-reset after reset operation(standard)

The indicator/alarm unit outputs alarm signal when gas concentration exceeds preset alarm level. The buzzer unit receives this signal, sounds on the buzzer and actuates the common gas alarm contact. Buzzer sound and common gas alarm contact are latched mode. Buzzer sound can be stopped and relay contact changes non-latched mode after depressing the reset switch.

#### (2) Lock-in version (Option)

The indicator/alarm unit outputs alarm signal when gas concentration exceeds preset alarm level. The buzzer unit receives this signal, sound on the buzzer and actuates the common gas alarm contact. Buzzer sound and common alarm contact are latched mode. Buzzer sound can be stopped with BUZZER STOP switch and gas concentration decreases preset alarm level(lock-in version is set at factory before shipment (Please specify it when ordering, if required).

### 5—4—2. Common trouble alarm action

#### (1) Non-latched mode

The indicator/alarm unit outputs the trouble alarm signal if it judges as trouble by its self-diagnosis function.

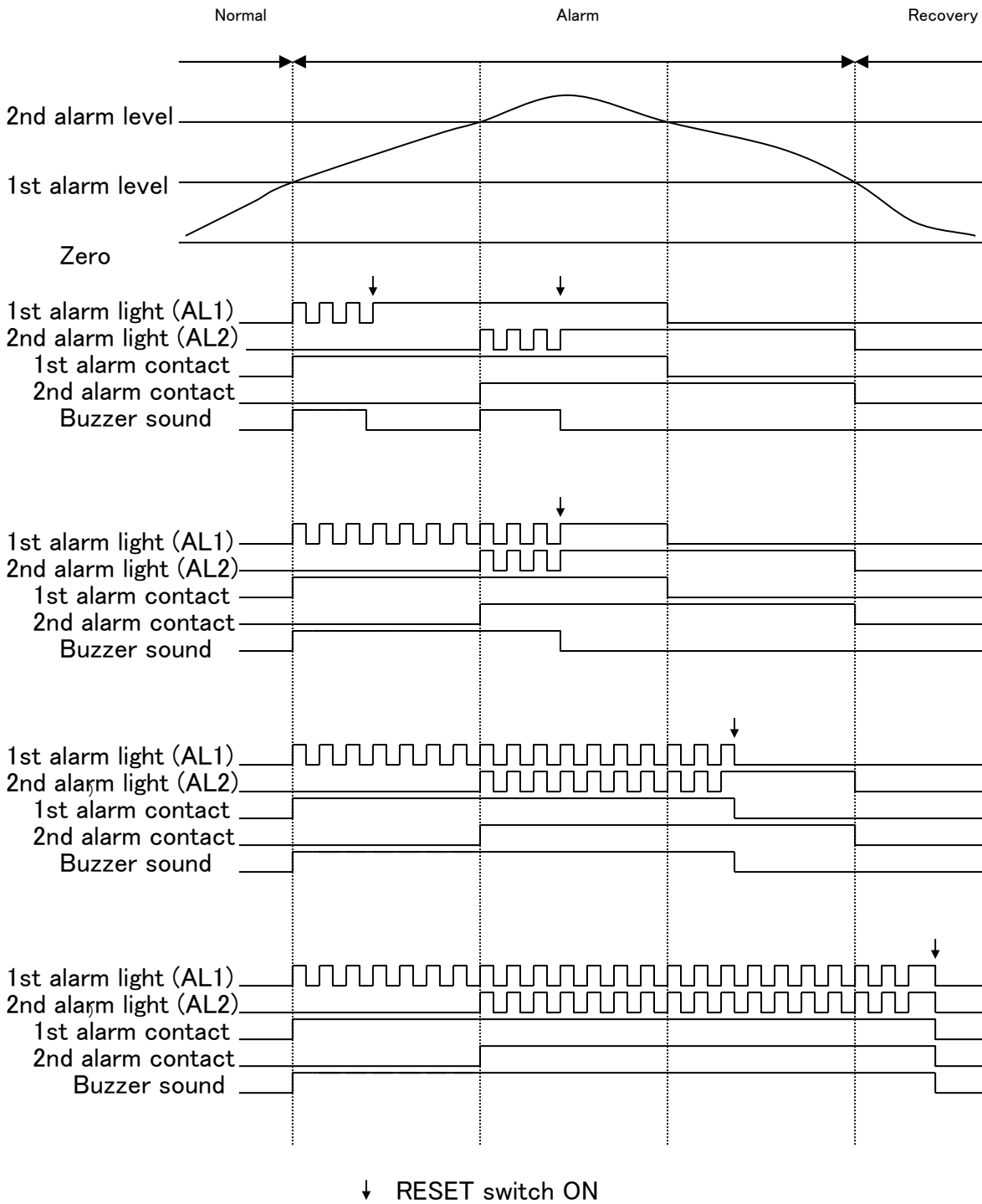
The buzzer unit receives this signal and actuated the common trouble alarm contact. This contact returns previous mode automatically whenever trouble signal from the indicator/alarm unit stops. The standard version does not give a buzzer sound at trouble.

#### (2) Latched mode, self-reset after reset operation (Option)

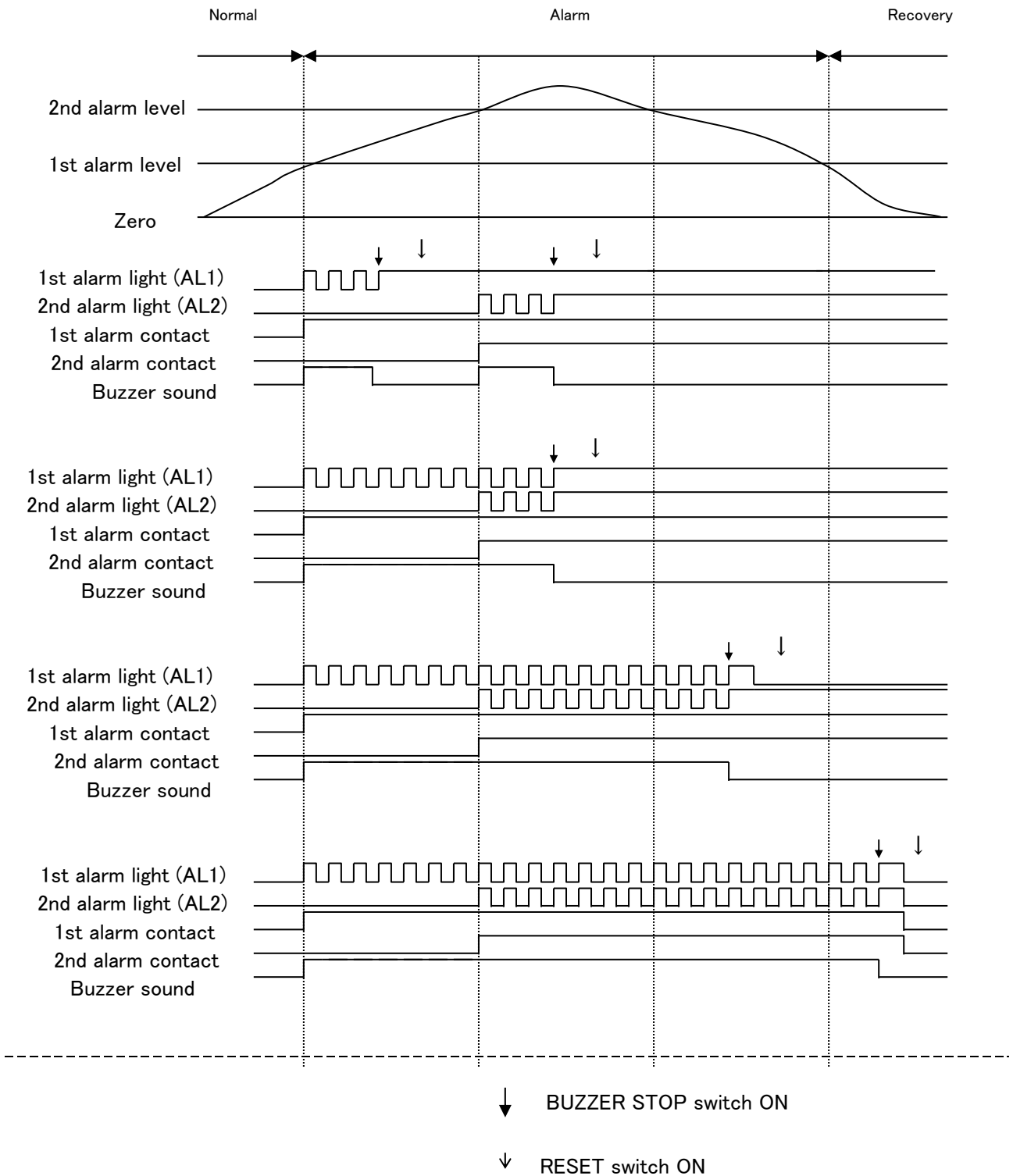
The indicator/alarm unit outputs the trouble alarm signal if it judges as trouble by its self-diagnosis function.

The buzzer unit receives this signal and actuates the common trouble alarm contact. This contact is a latched mode. It changes to non-latched mode after depressing RESET switch. The standard version does not give a buzzer sound at trouble.

Alarm pattern of latching mode



Alarm pattern of lock-in type latching mode



## 5—5. Operation method

### 5—5—1. Change of alarm contact

There are two alarm contacts such as common gas alarm contact and common trouble alarm contact for all connected indicator/alarm units.

Change of alarm contact is done with both DIP switch and alarm contact changing Pin of the buzzer unit. If change of alarm contact is required, please contact with us.



#### CAUTION

The normally-close contact(break contact) at non-exciting condition may generate a open action instantaneously by physical shock from outside.

When use normally-close contact., make countermeasure such as to add delayed relay at receiver side of normally-close contact to avoid instantaneous action.

## 6. TREATMENT AT TROUBLE CASE

Power light (Green light) is not lighting.

- Disconnection of fuse.

〈Reason and treatment〉

- Buzzer unit or outer power source are seems to be defective.  
Check the reason and replace the fuse with designated one after making proper treatment.

**\* NOTE**

Rating of the fuse to be used with this unit is “ 250V/1A.T”

## 7. PRODUCT SPECIFICATIONS

### 7 — 1 . Standard specifications

Model designation	: TAN—590
Power requirement	: DC24V±10%
Required power cable	: CVV 2-core or equivalent
Power consumption	: Max. 2W when single case is used. Max 3.5VA when multi-unit case is used.
Common gas alarm	
Alarm action	: Latched mode (Standard) or Non-latched mode, lock-in(Option)
1st alarm	: Voltage free contact 1a(standard) or 1b(Option) Non-exciting at normal(Standard) or Exciting at normal(option)
2nd alarm	: Voltage free contact 1a(standard) or 1b(Option) Non-exciting at normal(Standard) or Exciting at normal(option)
Buzzer	: Steady tone, released after reset (after buzzer stop in case of lock-in type)
Common trouble alarm	
Alarm action	: Non-latched mode
Alarm contact	: Voltage free contact 1a(standard) or 1b(Option) Non-exciting at normal(Standard) or Exciting at normal(option)
Contact rating	: 0.5A at 100VAC, 1.5A at 30VDC(Resistive load)
Buzzer	: Steady tone, released after reset (after buzzer stop in case of lock-in type)
Buzzer action	: ON at Red LED (Buzzer OFF) off, OFF at Red LED on.
Operating temp. & humidity	: 0~40°C, 10~90%RH (Non-condensing)
Structure	: Housing type for the case, front identification card type, non-explosion proof.
Dimensions and weight	: Approx. 36(W) x 72(H) x134(D) mm, approx 0.1 kg



# EU-Declaration of Conformity

Document No.: 320CE21068



We, RIKEN KEIKI Co., Ltd. 2-7-6, Azusawa, Itabashi-ku, Tokyo, 174-8744 Japan declare under our sole responsibility that the following product conforms to all the relevant provisions.

Product Name: BUZZER UNIT  
Model: TAN-590

Council Directives		Applicable Standards
2014/30/EU	EMC Directive	EN 50270:2015
2011/65/EU	RoHS Directive	EN IEC 63000:2018

Place: Tokyo, Japan

Date: Sep. 22, 2021

Takakura Toshiyuki  
General manager  
Quality Control Center