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敬告用户

在使用仪器前请仔细阅读本说明书

1、概 述

KT-602 是一种可以灵活配置的单种气体或多种气体检测报警仪，它可以配备氧气传感器、可燃气体传感器和任选两种有毒气体传感器或任选四种有毒气体传感器或任选单种气体传感器。

KT-602 具有非常清晰的大液晶显示屏，声光报警提示，保证在非常不利的工作环境下也可以检测危险气体并及时提示操作人员预防。

2、技术性能及参数

特 点

- 小巧、轻便、坚固
- 声、光报警
- 大屏幕数字、字符显示、瞬时值、峰值、平均值显示
- 开机或需要时对显示、电池、传感器、声光报警功能自检
- 定期闪灯、声音提示
- 出众的音频声音报警
- 维护费用很低
- 可以支持 1、2、3 或 4 种的气体检测

主要技术指标

检测气体	量 程	精 度	最小读数	响应时间
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氧气(O ₂)	0-30%VOL	<±5%(F.S)	0.1%VOL	≤15 秒
可燃气(Ex)	0-100%LEL	<±5%(F.S)	1%LEL	≤5 秒
一氧化碳(CO)	0-1000ppm	<±5%(F.S)	1ppm	≤25 秒
硫化氢(H ₂ S)	0-100ppm	<±5%(F.S)	1ppm	≤30 秒
二氧化硫(SO ₂)	0-100ppm	<±5%(F.S)	0.1ppm	≤30 秒
一氧化氮(NO)	0-250ppm	<±5%(F.S)	1ppm	≤60 秒
二氧化氮(NO ₂)	0-20ppm	<±5%(F.S)	0.1ppm	≤25 秒
氯气(CL ₂)	0-20ppm	<±5%(F.S)	0.1ppm	≤30 秒
氨气(NH ₃)	0-100ppm	<±5%(F.S)	1ppm	≤50 秒
氢气(H ₂)	0-1000ppm	<±5%(F.S)	1ppm	≤60 秒
氰化氢(HCN)	0-50ppm	<±5%(F.S)	0.1ppm	≤200 秒
氯化氢(HCL)	0-20ppm	<±5%(F.S)	0.1ppm	≤60 秒
磷化氢(PH ₃)	0-20-1000ppm	<±5%(F.S)	0.1/1ppm	≤25 秒
臭氧(O ₃)	0-20ppm	<±5%(F.S)	0.01ppm	≤50 秒

备注：如测其他气体或气体量程有要求的，请与我们联系。

检测方式：扩散式

电 池：3.6V 锂离子充电电池

电池工作时间：连续工作 11 小时(可燃气体)

连续工作 200 小时左右(除可燃气体)

传感器工作原理：氧气及有毒气体为电化式，可燃性气体为催化燃烧式

传感器寿命：可燃性气体传感器为三年，氧气及有毒气体传感器为二年

显 示：大屏幕液晶显示

报 警：声、光报警

直接读数：瞬时值、峰值、电池电压

防爆标志：Ex ibdIICT3

防护等级：IP45

工作温度：-10~40℃

工作湿度：5-90%RH

尺 寸：126mm（长）×66mm（宽）×32mm（厚）

重 量：220g（带充电器）

3、操作说明

开启仪器

在关机状态并且电池电量充足情况下，按“**①**”键会发出两声短促的嘟声并振动两下，仪器开机。如果电池电量耗尽，仪器不开机，如果电池电量低，提示后自动关机。

关闭仪器

在测量状态下,按“**①**”键约 2 秒屏幕出现 5 秒钟的倒计时，倒计时至 0 然后声音提示关机，如按“**①**”键没有持续到倒计时至 0,会自动返回测量状态。

电量不足

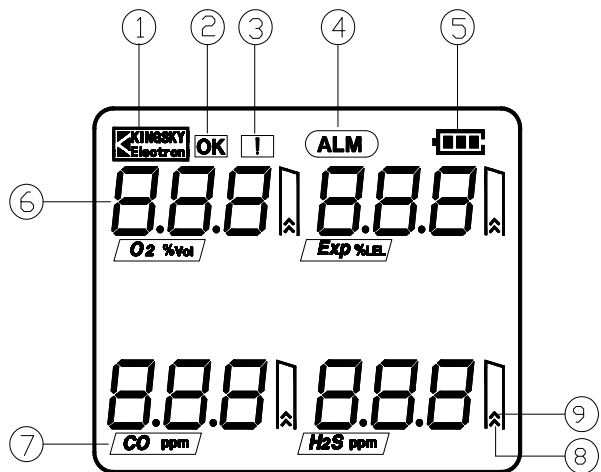
当仪器的电池电量低于预设的值后，将会激发声欠压报警，提示操作者电量不足需要充电。欠压报警时，除了声音报警外电池符号一起闪烁。当电量耗尽时，仪器会自动关机。

当发生欠压报警后，操作者应给仪器关机充电，充电大约时间 4-6 小时。

3.1 操作键的功能描述

开/关键 ①	上 键 ▲	下 键 ▼
• 开机	• 选择菜单	• 选择菜单
• 关机	• 增加数值	• 减少数值
• 自检	• 激发背景灯光	• 激发背景灯光
• 零点标定		
• 灵敏度标定		
• 设置确认		

液晶显示

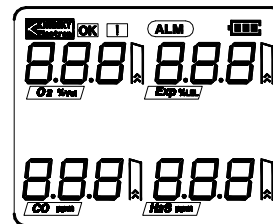


- 1 LOGO 2 检测通过符号 3 检测失败符号
4 报警符号 5 电池电量指示 6 气体检测示值
7 检测气体标识 8 一级报警符号 9 二级报警符号

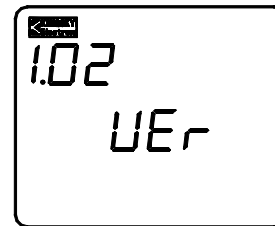
3.2 仪器执行自检

按“①”键会发出两声短促的嘟声，显示屏显示下列信息：

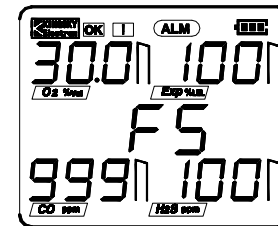
3.2.1、显示所有的数字和字符提示信息；检查声音，灯光报警；检查电池，电路和传感器



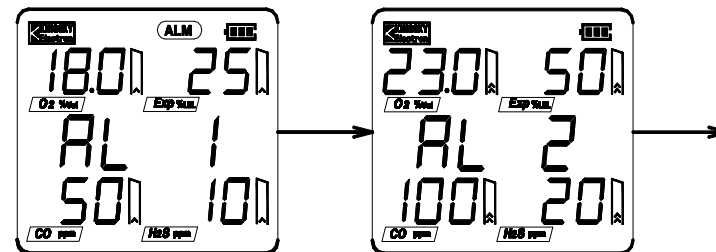
3.2.2、显示运行的软件版本



3.2.3、满量程

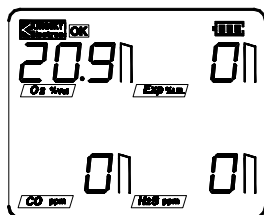


3.2.4、显示一级报警点（可燃气和有毒气低浓度，氧气高浓度报警）和二级报警点（可燃气和有毒气高浓度，氧气低浓度报警）；

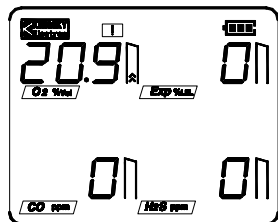


3.2.5、自检结果的显示如下：

自检通过



自检失败



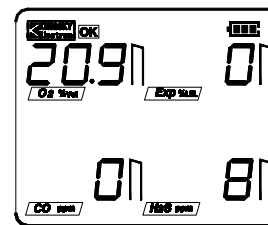
另外，仪器将会定期的检查电池，电路和传感器。

！注意：如果自检失败，应重新进行自检，如果再次失败请联系我们或当地代理/服务商。

3.3 测量模式

仪器采用自由扩散式检测方式，在正常的操作过程中，仪器可以固定在腰带或手持使用。一旦开机，仪器将连续测量，周围的空气可以通过扩散方式进入传感器，通常空气的流动可以将测量目标气体直接送入传感器，传感器就会对气体的浓度有反应并会给出测量结果。扩散式检测原理就是利用以上方式直接检测仪器周围的气体浓度，扩散式的优点是响应的时间迅速。如果需要对采样位置的气体进行远程检测，就需要使用吸气方式进行测量，这时仪器需要使用标定罩和可选的气泵，在使用标定罩时，应确保采气的方向按照箭头指示的方向。

气体的类型和浓度值为同一显示屏的独立显示，如果传感器的安装少于4个，则未安装的传感器位置显示为空白。



正常显示

3.3.1 气体报警

仪器具有两个瞬时的气体报警等级，二级报警点（可燃气和有毒气高浓度报警，氧气低浓度报警）比一级报警点（可燃气和有毒气低浓度报警，氧气高浓度报警）对可燃气和有毒气而言更需要紧急处理，对于氧气浓度过高或过低同样重要。

用户可在设置模式中完成对一级报警点，二级报警点的设置。

注意：对于可燃气体、有毒气体，一级报警点设定值低于二级报警点设定值。

如果有报警发生，报警提示符号 **ALM** 将显示并闪烁，同时相应的报警符号 **^**（一级，氧气为高报），**^**（二级，氧气为低报），将会按照发生报警的气体类型和等级相应显示。

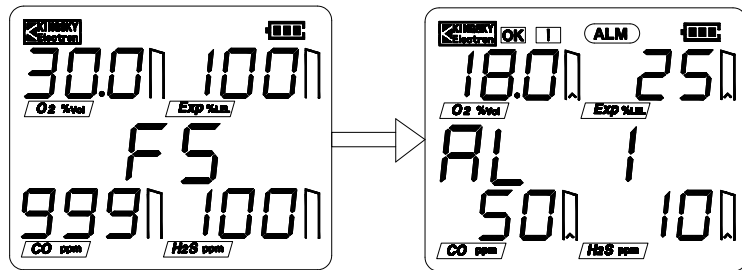
如果检测气体的浓度超过测量范围，在报警的同时，满量程值还将闪烁。

3.3.2 仪器状态查看

！警告：在仪器状态查看的过程中，不能用于检测周围的气体浓度。

在测量模式下，按“▲”或“▼”键约 2 秒钟，仪器将激发 2 次声音提示,进入状态查看模式。此时按“▲”（正次序）或“▼”（逆次序）键会依次显示满量程“FS”、一级报警值“AL1”、二级报警值“AL2”、最高值“CH”、最低值“CL”，按“①”退出状态查看模式。

屏幕如下图所示：



满量程

一级报警值

仪器可以记录开机后所测量气体浓度的最大值“CH”，最小值“CL”（仅对氧气）。

如果经过 10 秒没有任何按键操作，仪器将返回到正常测量模式中。

3.3.3 声、光工作提示

仪器可以选择每隔 5 分钟进行一次声、光工作提示，表示仪器工作正常。使用者可以选择激活或者关闭此项功能，还可以对

提示类型进行选择（见设置模式）。仪器的出厂默认为关闭声、光、振动提示。

3.4 设置模式

注意：在设置模式中，仪器不能用于测量。

操作者在设置模式中可以完成以下功能的设置：

- 安全提示类型
- 报警提示类型
- 一级报警点数值
- 二级报警点数值
- 设置参数确认

3.4.1 进入设置模式

在正常的测量模式，同时按住“▲”和“▼”键约 2 秒钟，仪器将激发 2 次声音提示,进入设置模式。此时屏幕显示是否确认进行设置提示“SEt P”，通过“▲”和“▼”键选择“yES”，按“①”键确认进入设置模式。

3.4.2 更改仪器设置

设置模式的菜单机构见表 1。

在设置模式中，按“▲”或“▼”键选择设置项，按“①”键确认选项。然后进入该选项可以修改参数。

对于参数，按“▲”键增加数值或上翻状态，按“▼”键减

少数值或下翻状态。按“**1**”键确认修改。

参数修改完成以后必须按“**▲**”或“**▼**”进入操作确认“EntEr”菜单，选择“yES”按“**1**”键确认修改以后方可生效。

一旦完成修改，新的参数将被仪器保存。

表 1

设置类型	显示（举例）	说明
安全提示		通过按“ 1 ”选择该项，然后通过按“ ▲ ”或“ ▼ ”键，改变提示类型（方式），再次按“ 1 ”键确认修改的提示类型（0，表示关闭每五分钟一次的安全提示，1-7 对应不同的提示类型）
报警方式		通过按“ 1 ”键选择该项，然后通过按“ ▲ ”或“ ▼ ”键，改变提示类型（方式），再次按“ 1 ”确认修改的提示类型（0，表示关闭报警提示，1-7 对应不同的提示类型）

一级报警		通过按“ 1 ”键选择要修改的通道，当选定要修改的通道后，对应的数值开始闪烁，然后通过按“ ▲ ”或“ ▼ ”键，增加或者减小数值
二级报警		通过按“ 1 ”键选择要修改的通道，当选定要修改的通道后，对应的数值开始闪烁，然后通过按“ ▲ ”或“ ▼ ”键，增加或者减小数值
设置操作确认		按“ 1 ”选择该项，操作状态开始闪烁，选择 yES 确认保持参数，选择 no，放弃本次设置，然后按“ 1 ”执行所选操作，然后返回到测量模式

注：对于安全提示类型和报警提示类型，每个项目有 8 中类型，无论哪个类型，每次都能激发屏幕背光亮 3 秒

- 0：关闭该项功能
- 1：执行闪灯提示
- 2：执行声音提示
- 3：执行闪灯和声音提示

4: 执行振动提示

5: 执行闪灯和振动提示

6: 执行声音和振动提示

7: 执行闪灯和声音以及振动提示

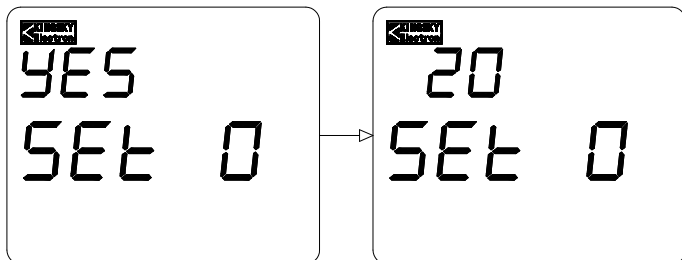
4、调校菜单

仪器出厂时已经调校合格,用户不需要对仪器校正。当仪器使用一段时间后,或认为有必要对其重新调整时,可参阅本章节,对仪器进行校验。校验工作必须由专业人员或经过培训的仪器使用人员进行。

4.1 零点标定（对于氧气为灵敏度标定,值为 20.9%vol）

零点标定必须在干净的空气中进行,最好每天或发生报警后进行一次零点标定。

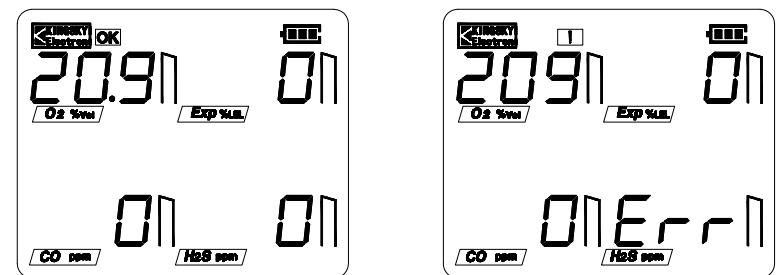
在正常测量状态下,同时按住“①”和“▼”键约 3 秒钟,仪器将激发声音提示进入零点标定,通过“▲”或“▼”键选择“yES”或“no”后,按“①”确认选项,屏幕将会出现零点标定提示符号“SEt 0”同时开始 20 秒钟的倒计时零点校准开始:



• 当所有传感器的零点标定全部成功后,检测通过符号(OK)显示,返回到测量模式。

• 如果一个或以上的传感器零点标定没有成功,显示未通过检测符号(!),同时未通过标定校准的对应通道显示“Err”。

如下图所示:



全部通过

一个没有通过

注意: 如果有任何传感器的没有通过,在干净的空气中重新进行零点标定,如果再次失败请联系我们或当地代理/服务商。

4.2 灵敏度标定（对于氧气为零点标定,值为 0.0%vol）

对于氧气、可燃气体、有毒气体传感器,应至少每隔 6 个月进行一次灵敏度标定。用户应用一种标准气对一个传感器进行标定,仪器将自动检测。做标定时最好关闭不相关的传感器通道,只对所标定的传感器通道而标定。

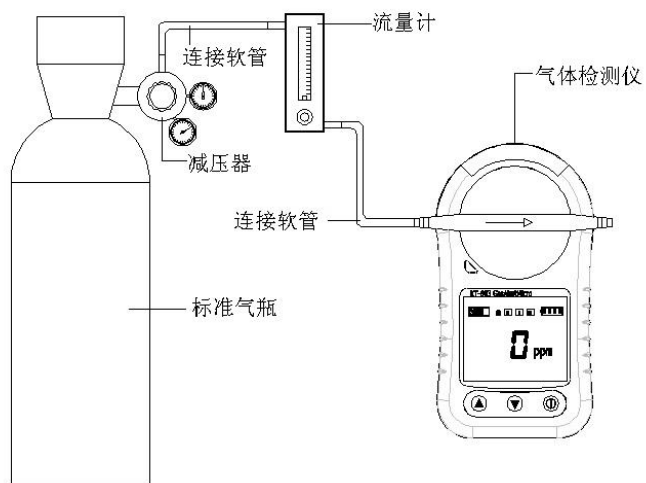
在进行灵敏度标定时,操作者需要以下的标定工具:

- 已知浓度的标准气瓶

气体种类	推荐的标准气浓度
甲烷	50%LEL
高纯氮	99.99%
CO	500ppm
H2S	50ppm
其它气体	联络制造商

- 流量计和减压阀，推荐的流量为每分钟 300 毫升。
- 减压阀和标定罩之间的连接管。

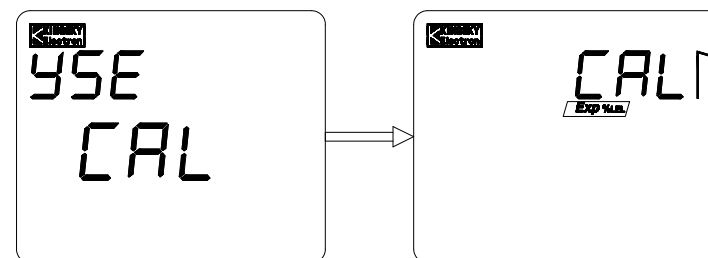
如下图所示：



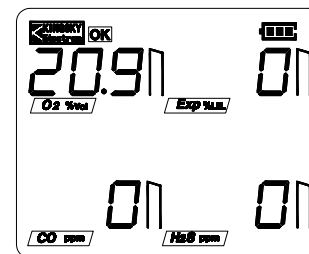
- 进行灵敏度标定以前，应首先完成零点标定。
- 最好使用推荐的标准气体浓度进行标定，如果选择其他浓度，对应可燃气和有毒气，浓度至少不低于满量程的 10%，对于氧气浓度不高于 5%vol。

- 在正常测量状态下,同时按住“①”和“▲”键约 2 秒钟，仪器将激发声音提示进入灵敏度标定菜单，显示“CAL”和“no”，此时通过“▲”或“▼”键选择“yES”后按“①”确认进行灵敏度标定。进入标定状态后屏幕会显示当前默认的标定通道（默认为Ex），然后通过“▲”或“▼”键选择需要标定的通道，选择好后按“①”键确认，开始标定 60 秒倒计时。

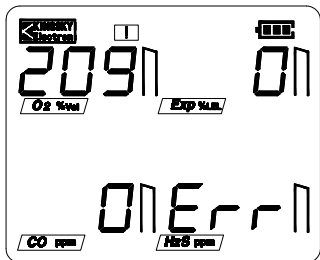
如下图所示：



- 如果检测到气体浓度符合以上要求，显示 PASS，同时显示计算出的气体浓度，通过按“▲”或“▼”键调整到标气的浓度值，然后按“①”确认，保存数值。如下图所示例：



- 如果检测到气体浓度不符合以上要求，显示 Err，然后按 “①” 退出标定模式。如下图所示例：



5、日常使用与维护

- 5.1 在使用仪器之前，请详细阅读操作手册。
- 5.2 本仪器需由经过一定时间培训的人员或专门人员使用与维护。
- 5.3 本仪器的使用必须严格按我公司确定的规则操作。
- 5.4 仪器的维修和部件的更换，必须采用我公司的原装备件，并由受过专门培训的人员来完成。
- 5.5 更换电池或充电时必须安全场所进行。
- 5.6 请注意防止仪器从高处跌落，或受到剧烈振动。
- 5.7 仪器显示不正常，并发出间断声响，是电池电压过低所致，充电后即可恢复正常。
- 5.8 严禁将仪器暴露在高浓度腐蚀性气体环境下长时间工作，以防降低传感器灵敏度，严重时损坏传感器。

6、仪器贮存和质保

- 6.1 本公司负责 KT-602 多种气体检测报警仪 12 个月的保修期，

保修期从用户拿到仪器之日算起。

- 6.2 用户在使用中，应遵守使用说明，由于用户使用不当，或工作环境超范围而造成仪器损坏，不在保修范围之内。
- 6.3 因用户违反规则擅自开机修理或更换部件，仪表的可靠性责任本公司概不负责。
- 6.4 在船舶或特别潮湿的环境中存放请加防潮袋

7、产品成套性

- | | |
|----------------------|----|
| 7.1 KT-602 多种气体检测报警仪 | 一台 |
| 7.2 使用说明书 | 一本 |
| 7.3 产品合格证 | 一张 |
| 7.4 仪器专用箱 | 一个 |

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Single & Multi Gas Detector KT-602

Instruction

(Please read through this instruction before using the device)

1. Description

KT-602 is a flexible gas detector which is applicable for both single gas detection and multi gas detection. It can be equipped in below ways:

- Oxygen sensor, combustible sensor and two optional toxic gas sensors
- Four optional toxic gas sensors
- Optional single gas sensors

With the large LCD screen and accurate acousto-optic alarm, KT-602 can detect the hazardous gas in severe operating environment and alert the operator for preventive measure in time.

2. Specifications

Features

- Small figure, portable and firm
- Acousto-optic alarm
- Large screen alphanumeric display for the instantaneous value, peak value and average value
- Self-checking for the display, battery, sensor and acousto-optic alarm after start up or when necessary.
- Regulation alert with glitter or sound signal
- Outstanding audio signals alarm

- Low cost for maintenance
- Support single gas detection, two in one gas detection, three in one gas detection or four in one gas detection

Technical Parameter

Detecting Gas	Detecting Range	Accuracy	Resolution	Response time
Oxygen (O ₂)	0-30%VOL	<±5%(F.S)	0.1%VOL	≤15s
Combustible gas (Ex)	0-100%LEL	<±5%(F.S)	1%LEL	≤5s
Carbon Monoxide (CO)	0-1000ppm	<±5%(F.S)	1ppm	≤25s
Hydrogen Sulfide (H ₂ S)	0-100ppm	<±5%(F.S)	1ppm	≤30s
Sulfur Dioxide (SO ₂)	0-100ppm	<±5%(F.S)	0.1ppm	≤30s
Nitrous Oxide (NO)	0-250ppm	<±5%(F.S)	1ppm	≤60s
Nitrogen Dioxide (NO ₂)	0-20ppm	<±5%(F.S)	0.1ppm	≤25s
Chlorine (Cl ₂)	0-20ppm	<±5%(F.S)	0.1ppm	≤30s
Hydrogen Nitride (NH ₃)	0-100ppm	<±5%(F.S)	1ppm	≤50s
Hydrogen (H ₂)	0-1000ppm	<±5%(F.S)	1ppm	≤60s
Hydrocyanic Acid (HCN)	0-50ppm	<±5%(F.S)	0.1ppm	≤200s
Chlorine Hydride (HCL)	0-20ppm	<±5%(F.S)	0.1ppm	≤60s
Hydrogen Phosphide (PH ₃)	0-20-1000ppm	<±5%(F.S)	0.1 / 1ppm	≤25s
Ozone (O ₃)	0-20ppm	<±5%(F.S)	0.01ppm	≤50s

(Remark: If you have request for the applicable gas or detecting range, please contact us).

Sampling Method: Diffusion

Battery: 3.6V Li-Ion rechargeable battery

Continuous Working Period:

11 hours (for combustible gas);

200 hours (for oxygen & toxic gas)

Gas Sensor Type:

Catalytic combustion (for combustible gas);

Electrochemical (for oxygen & toxic gas)

Gas Sensor Performance Life:

3 years (catalytic combustible sensor);

2 years (electrochemical sensor)

Display: Large-screen LCD

Alarming Method: Acousto-optic alarm

Direct Readout: Instantaneous value, peak value, battery voltage

Explosion-proof Grade: Ex ibd IICT3

Protection Grade: IP45

Operating Temperature: -10~ 40℃

Operating Humidity: 5~90%RH

Dimensions: 126mm*66mm*32mm

Weight: 220g (with the charger)

3. Operating Instruction

Switch On

When the device is shutdown and with enough electricity, press the key “①”, the device will start up with double short duration tones and double vibrations. If the electricity is empty, the device will can not start up. If the electricity is low, the device may start up but will be automatically shutdown after the alert.

Switch Off

In the working state, keep pressing the key “①” uninterruptedly for about 2 seconds, there will be a 5-second countdown displayed on the screen. Keep pressing the key “①” until the countdown is over and shutdown warning tone sounded, the device will shutdown. If the duration of pressing button “①” did not last until the countdown is over, the device will return to the working state.

Low Voltage

When the battery electric quantity is lower than the pre-set value, the acoustic under-voltage alarm will be activated to remind the operator to charge up the battery. At the same time, the under-voltage signal  will also glitter on the screen. When the power is exhausted, the device will be automatically shutdown.

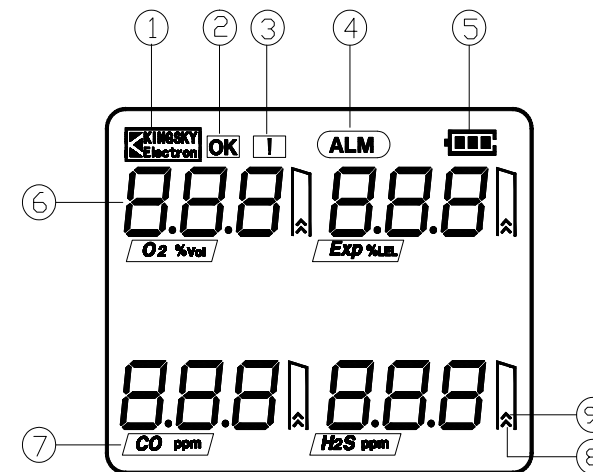
When the under-voltage alarm occurred, please power off the

device and charge up the battery. The charging period should be about 4 ~ 6 hours.

3.1 Function of the Operational Keys

Switching Key ①	Upward Shift ▲	Downward Shift ▼
·Switch on	·Select the menu	·Select the menu
·Switch off	·Add the value	·Minus the value
·Self-checking	·Activate backlight	·Activate backlight
·Zero point calibration		
·Sensibility calibration		
·Confirmation		

LCD Display



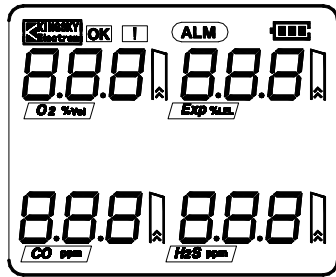
The backlight will be automatically activated if the gas concentration alarm sounded or any key was pressed. In poor lighting operating environment, you can press the upward key or downward key to activate the backlight.

- | | | |
|-------------------|------------------------------|--------------------------|
| 1 Logo | 2 Successful Checking Signal | 3 Failed Checking Signal |
| 4 Alarming Signal | 5 Battery Energy Indicator | 6 Gas Concentration |
| 7 Gas type | 8 Grade – I Alarm | 9 Grade – II Alarm |

3.2 Self-checking Function

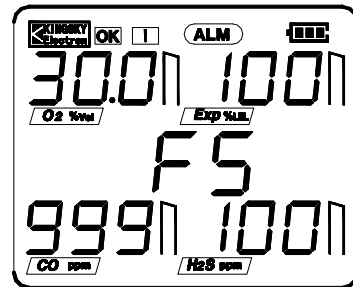
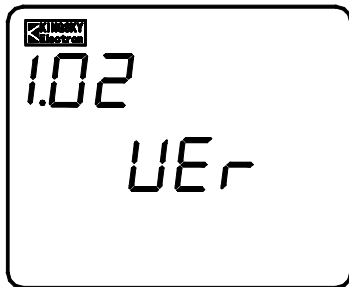
Press the key “①”, double short duration tones will sound.
Below information will display on the screen:

3.2.1 All the digital and characters prompt message display;
Check the acoustic, optic alarm; Check the battery, circuit and sensors.

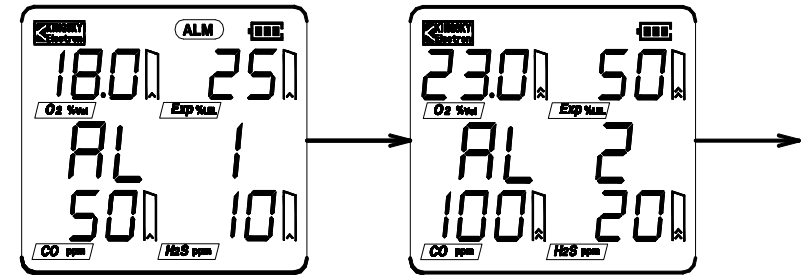


3.2.2. Display the software version.

3.2.3. Full scale.



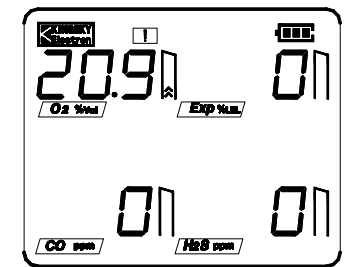
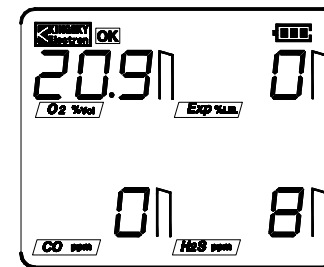
3.2.4. Display the Grade- I alarm threshold (combustible gas & toxic gas low concentration alarm, oxygen high concentration alarm) and Grade –II alarm threshold (combustible gas & toxic gas high concentration alarm, oxygen low concentration alarm).



3.2.5. Self-checking result will be displayed as below,

Successful self-checking

Failed self-checking



In addition, the device checks the battery, circuit and sensors termly.

! Attention: If the self-checking failed, please try again. If failed again, please contact us or local agent.

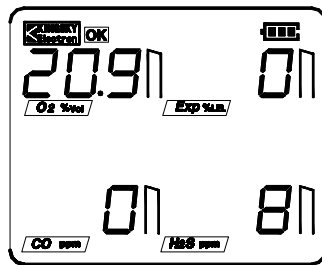
3.3 Detection Mode

The device adopts free diffusion sampling method. During the normal operation, the device can be fixed on the belt or held in hand. Once start up, the device will detect continuously. Accompanies the surrounding air diffusion, the

target gas will flow into the sensor. The sensor will response to the gas concentration and provide the observed result. Detecting principle of diffusion is to inspect the surrounding air directly according to the above method. The advantage is quick response.

If it is need to remotely detect the gas in the sampling position, the method of suction is applicable. Then, the device needs a calibration cap and optional gas pump. The calibration cover is a plastic cap which covers on the sensor for sampling. When using the calibration cap, please ensure the sampling direction is in accord with the direction of arrow.

Gas type and concentration are independently displayed on the same screen. If the combined sensors number is less than four, the vacant positions will show blank area on the screen.



Normal Display

3.3.1 Gas Alarm

This device has two-stage instantaneous alarm function. For the combustible gas and toxic gas, Grade – II alarm threshold (combustible gas & toxic gas high concentration alarm, oxygen low concentration alarm) is more dangerous than Grade- I alarm threshold (combustible gas & toxic gas low

concentration alarm, oxygen high concentration alarm). For oxygen, too low concentration is as dangerous as too high concentration.

In the setting mode, you can preset the Grade- I & Grade – II alarm threshold value.

Attention: For the combustible gas and toxic gas, the Grade- I preset alarm threshold value must be lower than Grade – II preset alarm threshold value.

If there is alarm occurred, the alarm signal  will glitter, the alarm type signal  (Grade- I alarm signal; high alarm signal for oxygen) and  (Grade – II alarm signal; low alarm signal for oxygen), will be displayed correspondingly according to the alarmed gas type and alarm grade.

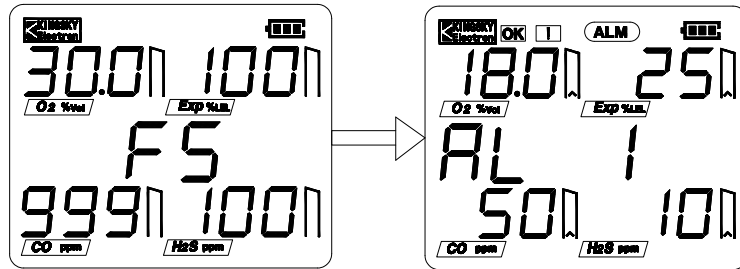
If the target gas concentration exceeded the detecting range, the alarm will be activated, the full range value signal will also glitter.

3.3.2 Check the Device State

! Caution: Do not check the device state when the device is used for detecting surrounding gas concentration.

In the working mode, keep pressing “▲” or “▼” for about 2 seconds, the device will go into state checking mode with double prompt tones. Now, press “▲” (in-order) or “▼” (in the reverse order) will sequentially display full scale “FS”, Grade- I alarm value “AL1”, Grade – II alarm value “AL2”, the maximum value “CH”, minimum value “CL”. Press “” to exit the checking mode.

Display:



Full Scale

Grade- I alarm value

After starting up, the device will keep record of the maximum value “CH”, minimum value “CL” (only for oxygen).

If no key was be pressed in 10 seconds, the device will return to the normal working mode.

3.3.3 Acousto-optic alerting signal

There will be an acousto-optic alerting signal every 5 minutes to inform you the device works normally. You can activate or close this function. You can also choose the alarm mode (details refer to 3.4 setting mode). The factory-set state for the acoustic, optic, vibration prompt function is closed.

3.4 Setting Mode

Attention: In the setting mode, the device can not be used for work.

You can adjust the below options in setting mode:

- Security prompt mode
- Alarm mode
- Grade- I alarm threshold value
- Grade – II alarm threshold value
- Confirm the update data

3.4.1 Enter the setting mode

In the normal working mode, keep pressing both “▲” and “▼” for about 2 seconds, the device will activate double prompt tones and enter the setting mode. The screen will display the setting prompt “SET P”, press “▲” or “▼” to select “YES”, and press “⏏” to go into the setting mode.

3.4.2 Update the setting parameter

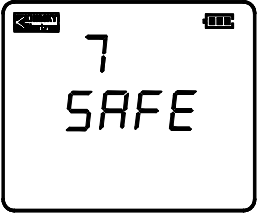
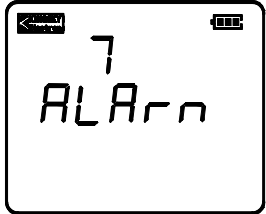
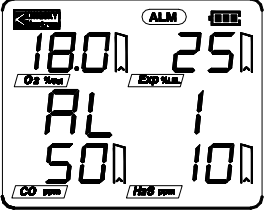
In setting mode, press “▲” or “▼” to select the option, press “⏏” to confirm and enter, then you can update the parameter.

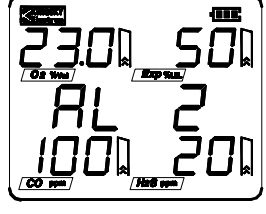
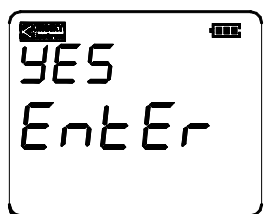
For the parameter, press “▲” to add the value or go upward, press “▼” to subtract the value or go downward. Press “⏏” to confirm the update.

After the update, please press “▲” or “▼” to go into the confirmation menu “ENTER”, choose the option “YES” to confirm the update.

Finally press the key of “⏏”, the new parameter will be saved.

The menu selection in setting mode refers to the below list,

Setting options	Display (for example)	Instruction
Security Prompt Mode		Press “①” to select this option, press “▲” or “▼” to adjust the prompt mode. Press “①” to confirm the setting (0 means close the security prompt which will be an alert per 5 min, 1~7 represent different prompt mode).
Alarm Mode		Press “①” to select this option, press “▲” or “▼” to change the alarm mode. Press “①” to confirm the setting (0 means close the alarm prompt, 1~7 represent different mode).
Grade- I Alarm Threshold Value		Press “①” to select the channel which need to adjust, then, the data displayed on the channel will glitter. Press “▲” or “▼” to add or subtract the value.

Setting options	Display (for example)	Instruction
Grade – II Alarm Threshold Value		Press “①” to select the channel which need to adjust, then, the data displayed on the channel will glitter. Press “▲” or “▼” to add or subtract the value.
Setting Confirmation		Press “①” to select this option, the displayed state will glitter. Opt “YES” to confirm and save the update, or opt “NO” to renounce the adjustment. Then, press “①” to confirm and return to working mode.

Attention: For options of security prompt mode and alarm mode, there are below 8 modes to be opted, every mode can activate the backlight on for 3 seconds.

- 0: close the prompt
- 1: optical prompt (with the light glitter)
- 2: audible prompt
- 3: audible-visual prompt
- 4: vibration prompt
- 5: vibration-optical prompt
- 6: audible-vibration prompt
- 7: audible-optical-vibration prompt

4、Calibration Menu

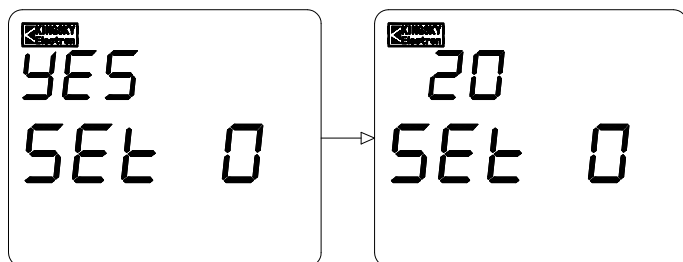
The device has been calibrated when leave the factory, so it need not calibrated when first use. After used for a period, or when you think it needs to recalibrate, please calibrate it based on the below instruction. The calibration must be operated by professionals or trained users.

4.1 Zero Calibration

(for oxygen, it is sensibility calibration with the standard value of 20.9%VOL)

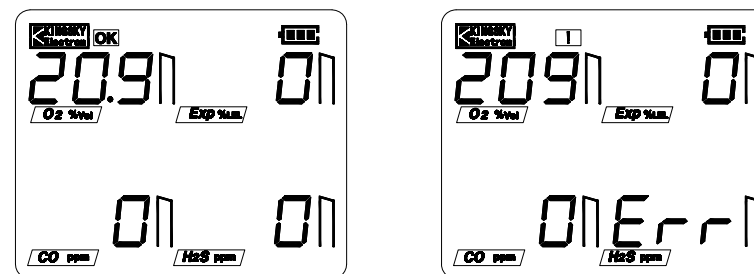
Zero calibration must be operated in clear air environment, preferably once a day or calibrated after an alarm.

In the normal working mode, keep pressing “**①**” and “**▼**” for about 3 seconds, the device will activate auditory tone cues and enter zero calibration. Press “**▲**” or “**▼**” to select “YES” or “NO”, then press “**①**” to confirm the option, the zero calibration signal “SET 0” will be displayed on the screen. At the same time, the 20-second countdown will start.



- If the zero calibration for all the sensors were successfully completed, the successful checking signal (OK) will be displayed, then return to working mode.
- If there is failed calibrated sensor(s), the failed checking signal (!) will be displayed, and the failed channel will show the signal “Err”.
- If the zero calibration for all the sensors were failed, the failed checking signal “!” will be displayed, and all the channels will show the signal “Err”.

Displayed as below,



Completely successfully passed

A channel failed

Attention: If there is any sensor failed in zero calibration, please recalibrate in clear air. If failed again, please contact us or local agent.

4.2 Sensibility Calibration

(for oxygen, it is zero calibration with the standard value of 0.0%VOL)

For oxygen & combustible gas & toxic gas sensor, the sensibility calibration should be operated once every 6 months at least. You should calibrate a sensor for only one kind of calibrating gas, the device will operate calibration

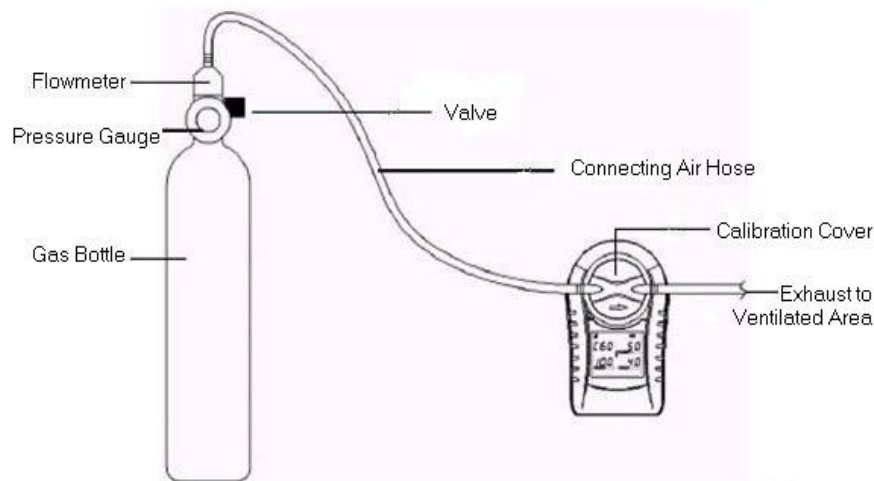
automatically. You'd better close the unrelatable channels when calibrating, only open the calibrated sensor channel.

The below calibration tools are needed for sensibility calibration,

- Calibrating gas bottle with known concentration,

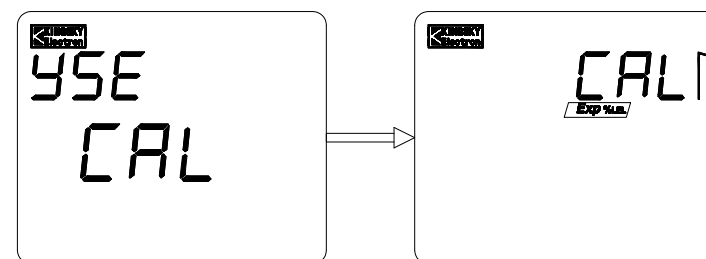
Gas Type	Recommended Calibrating Gas Concentration
Isobutane	50%LEL
High Purity Nitrogen	99.99%
CO	500 ppm
H ₂ S	50 ppm
Other Gas	Renegotiable

- Flow meter and pressure reducing valve, the recommended flow rate is 300ml / min.
- A connecting hose between pressure reducing valve and calibration cover.



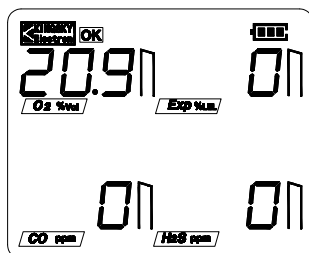
- Before the sensibility calibration, the zero calibration has to be completed.
- It is best to calibrate with the recommended gas concentration. If used the calibration gas with other concentration, please notice the below information:
For combustible or toxic gas, the concentration should be not less than 10% of full scale;
For oxygen, the concentration should be not more than 5%VOL.
- In the normal working mode, keep pressing “①” and “▲” for about 2 seconds, the device will enter sensibility calibration with auditory tone cues and “CAL” “NO” displayed. Now, please press “▲” or “▼” to select “YES” and press “①” to confirm the calibration. After went into the calibration mode, the current calibration channel (default setting is Ex) will be displayed. Press “▲” or “▼” to select the channel need to calibrated, and press “①” for confirmation. Then, the 60-second countdown will start.

Displayed as below,

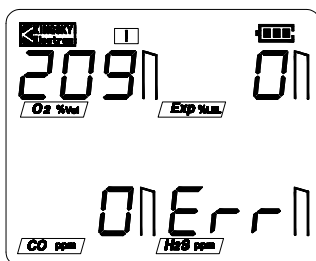


- If the detected concentration conforms to the above request, the screen will display “PASS” and the calculated value of gas concentration. Please press “▲” or “▼” to adjust the value to the recommended calibration gas concentration,

then, press “①” to confirm and save the update. Displayed as below,



- If the detected concentration does not conform to the above request, the screen will display “Err”. Please press “①” to exit the calibration mode. Displayed as below,



5、Ordinary Use and Maintenance

- 5.1 Before using the detector please read through the manual.
- 5.2 Only professionals or trained personnel should conduct maintenance.
- 5.3 Please use the device in strict accordance with the owner’s manual confirmed by Kesa.
- 5.4 The parts must be replaced with Kesa original

accessories, and serviced by professionals or trained personnel.

- 5.5 Please remove or charge up the battery in safe place.
- 5.6 Avoid heavy vibrations or dropping the device from high position.
- 5.7 If the battery is under voltage, the device may displays abnormally, together with discontinuous sound prompt. Please charge up the battery at once, it will soon right itself.
- 5.8 Do not expose the device in the operating environment of high concentration aggressive gas for long time. In order to avoid desensitization or even damage for the sensor.

6. Storage and Guarantee

- 6.1 KT-602 multi gas detector is sold with a twelve-month warranty (from the day receiving the device). During this period, Kesa will be responsible for giving free maintain to the quality problems of breakdown under normal usage.
- 6.2 Kesa disclaims all responsibility for the damage caused by misuse or transnormal working conditions.
- 6.3 Attempt to disassemble the product or replace the parts without authorization can damage it and void your warranty. Kesa disclaims all responsibility for the unreliability.
- 6.4 Please use a moisture barrier bag when store the device in a humid environment.

7. Standard Delivery

7.1	KT-602 multi gas detector	1
7.2	Operating manual	1
7.3	Certificate of quality	1
7.4	Calibration cap	1