mPower Electronics
Making Powerful Senses

MUNI
Composite gas detector
MP420
User guide



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Notes before use

Anyone must carefully read this manual before using, maintaining, and overhauling the product.

Only by using, maintaining and repairing according to the instructions of the manufacturer, the operation of the product can meet the design requirements.

The user should understand how to set the instrument parameters and understand the meaning of the obtained test data.

Attention !

- **In order to prevent the danger of electric shock, the power supply must be turned off before opening the instrument cover.**
- **Only mPower 's rechargeable lithium battery pack (P / N M020-3001-000) can be selected.**
- **To charge the lithium battery can only choose mPower 's matching charger, away from the dangerous area to charge.**
- **The use of non-mPower components does not give quality assurance and affects the safety performance of the instrument.**
- **Replacing components may affect the intrinsic safety performance of the product.**

Note : Changes in high and low readings or high concentration readings indicate that there may be an explosion risk.

Warning !

- **Methane gas must be tested with a known concentration (equivalent to 20 ~ 50 % of the meter 's full-scale concentration) prior to daily use. The sensitivity of the instrument. The detection accuracy of the instrument must be within 0 ~ 20 % of the actual value.**

Note : Combustible gas detection part of the instrument must pass the explosion-proof safety test.

Instructions for safe use

- If the MP420 composite gas detector does not pass the functional test, or replace a new sensor, must be calibrated ; according to the use of environmental conditions, at least once every 180 days calibration.
- For portable devices with plastic, metal casing or a combination of both, anti-static discharge precautions are necessary, such as the use of anti-static shoes.

Note : General instructions on the installation, operation and maintenance of combustible gas parts are recommended for users to refer to ISA-RP12.13 Part II (1987).

Equipment abandoned



- The WEEE Directive aims to improve the recycling of electronic waste and electronic products at the end of the life of equipment. This symbol (a cross on a wheeled box) indicates that electronic waste and electronic products are to be separated for recycling in Europe. Such electronics may contain nickel-metal hydride, lithium or alkaline batteries. The manual must specify the battery information and the battery must be properly recycled or disposed of.
- At the end of the life of electronic products, such products must be separated from the general household waste disposal, please follow your country's waste recycling regulations.

1. Standard packaging

MP420 (MUNI) in addition to the host and the configuration of sensors, back clips, standard configuration also includes :

- Rechargeable lithium battery
- Charging Adapter
- Calibration adapter
- Qualification certificate
- Quick Operation Guide (Chinese / English)

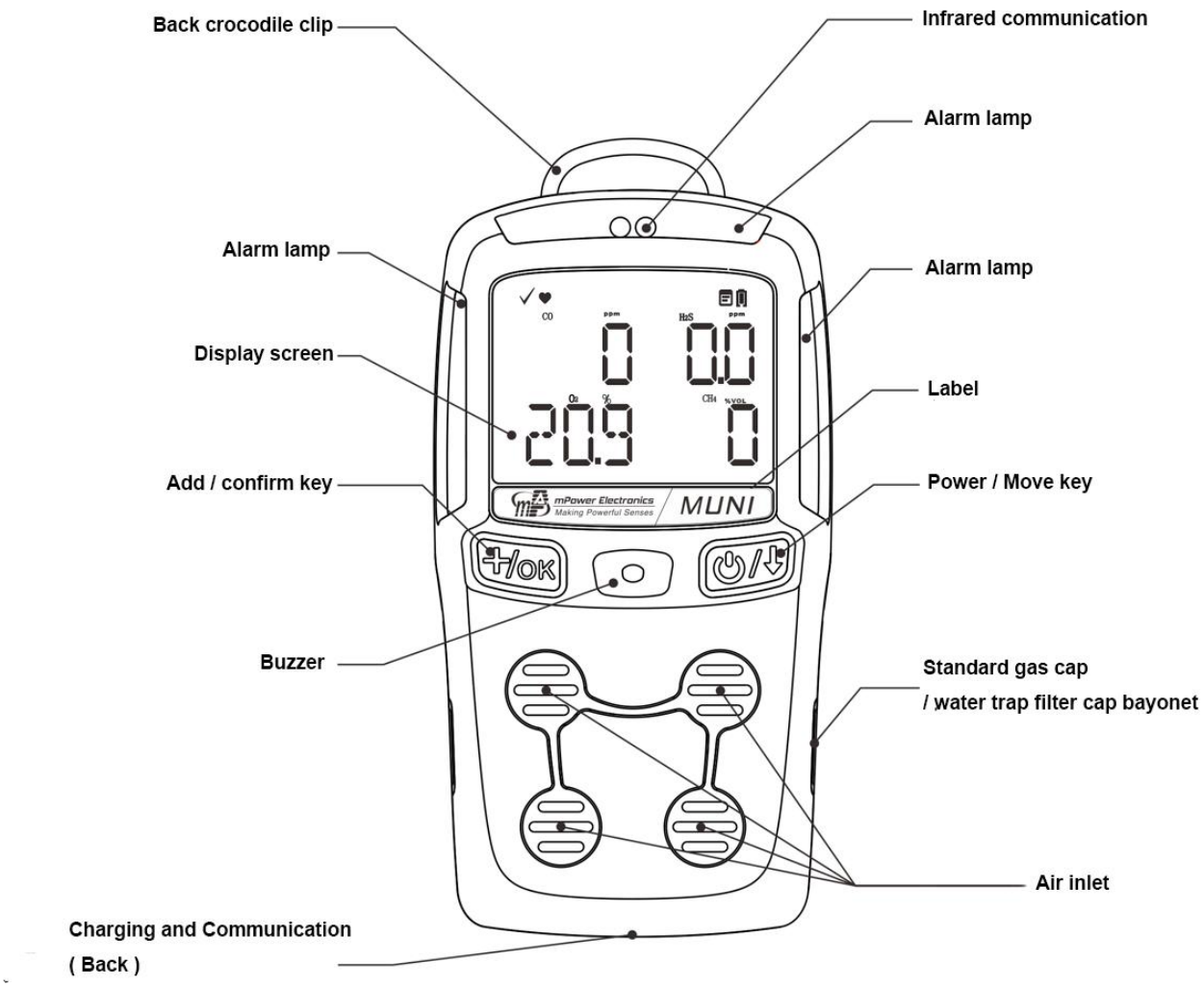
2. Product overview

MUNI is mPower 's new generation of portable four-gas detector, which can accurately detect four gases including combustible gas (LEL), oxygen (O_2), carbon monoxide (CO) and hydrogen sulfide (H_2S) at the same, time for different applications. For different application industries can choose to detect HCN, SO2, low-power infrared combustible gas sensor and lead-free oxygen; mPower energy consumption control technology can ensure more than 24 hours of continuous operation time after a single charge, the selection of low-power infrared sensor can be more than 300 hours of continuous operation time on a single charge; Protection level up to IP68, can be suitable for any harsh working environment; The rugged design and easy operation not only ensure occupational health and high safety, but also ensure very low operating costs.

Main feature

- Compound gas detector can detect oxygen, toxic gas and combustible gas, and detect up to four gases at the same time.
- Diffusion sampling method is adopted.
- Small size, light weight suitable for personal wear, the smallest four-in-one gas detector in the standard four-series sensor
- Automatic backlight, super large screen LCD, large digital display, clearly visible
- Double button operation, simple and convenient
- Charging once can ensure that the catalytic sensor runs for 24 hours, or the low-power infrared methane sensor runs longer.
- High-bright red LED all-round alarm
- Replaceable sensor & battery
- IP68 protection grade, 95dB@30cm sound alarm
- Compliance and safety tips ensure the personal safety of users.
- Four red LEDs, 360 degree visibility, three different colors (green, yellow and red) indicate different working conditions
- mPower sensor, battery, circuit self-diagnosis technology to ensure that the instrument is always in the best working condition
- Supports low-power infrared combustible gas sensors, lead-free oxygen sensors, HCN and SO_2 sensors

- Optional BLE wireless communication
- Shell is made of high strength material, comfortable and durable.

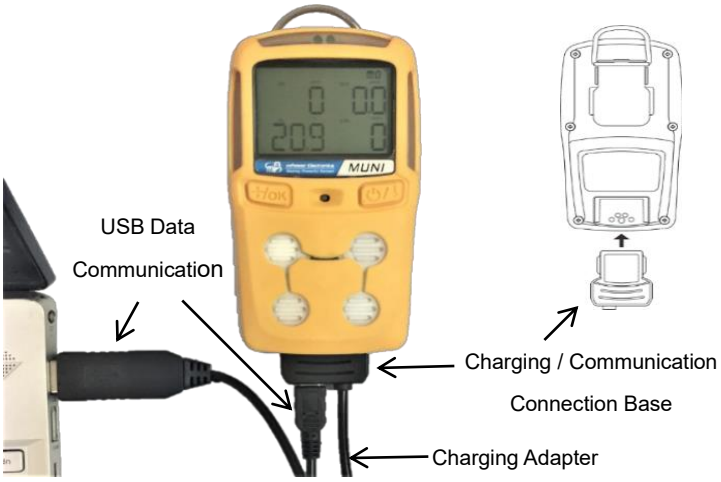


3. Battery

Try to fully charge the battery before each use of the instrument. Connect the four metal contacts of the charging adapter (P/N: M020-3006-U00) and the four metal contacts on the back of the instrument to charge.

3.1 Battery charging

- Align the travel charger with the instrument in the middle and insert the power adapter (P/N: M020-3006-U00) plug into the card slot on the back of the instrument.
- Plug the other end of the power adapter into the power supply, and when the power supply battery starts to charge, the LCD displays a battery icon from empty to full; When fully charged, the liquid crystal displays a full battery.
- To remove the instrument's portable charging base, simply pull the portable charging base out of the instrument's card slot.



Warning

In order to reduce the risk of fire in dangerous environment, please charge in the known safe area !

Note: Use the dedicated USB data communication cable provided by non-mPower to connect to the computer, which can be used to charge the instrument; However, mPower Suite cannot be connected for data communication; To connect to the mPower Suite, use the dedicated USB data communication cable provided by mPower (P/N M011-3003-000).

3.2 Battery state

The battery icon on the display displays the battery level and prompts for charging information.

			Flicker
Full	**3 / 5 electric quantity**	**1 / 5 electric quantity**	**Battery alarm**

When the battery voltage is lower than the preset voltage, the instrument emits a buzz and flicker once per minute, and flashes an ' empty battery ' icon once per second to warn. The instrument is turned off within 10 minutes and must be recharged after shutdown. When the battery is insufficient to alarm, we recommend replacing a fully charged instrument immediately and charging the battery in a non-dangerous place.

3.3 Battery exchange

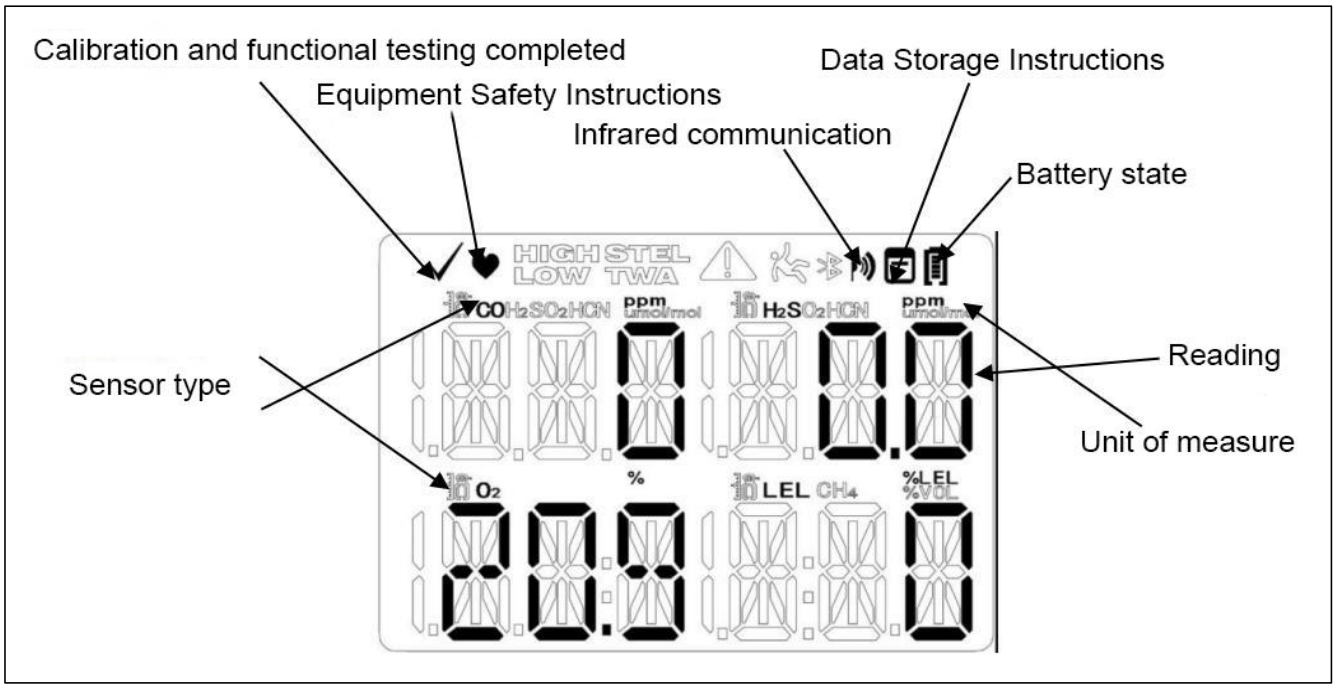
MUNI lithium-ion battery packs are soldered to a circuit board and maintenance-free. If the battery fails or expires, contact mPower after-sales service or an authorized service center to replace the battery.

4. User interface

MUNI's user interface includes display, LEDs, buzzer and two buttons.

4.1 Display overview

LCD displays various instrument information including: sensor type, reading, battery status and other functions.



4.1.1 State indicator icon

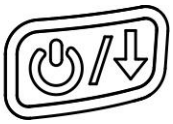
According to the instructions of the display icon, the customer can easily identify whether the function is turned on or the signal strength level.

Icon	Functional description
	Bluetooth wireless communication enabled
	Heart flickers, along with the green LED flicker, indicating that the instrument is in operation.
	Event logging Enabled (cannot be disabled)
	Battery voltage state
	All sensors pass the test mark (all sensors have passed functional testing and calibration; No sensor overdue functional testing and calibration during the configured interval)
	Overdue calibration
	Overdue functional test

4.1.2 Keys and the corresponding interface

MUNI has two keys :





The left key [+ / OK] indicates ' confirm operation or ' or ' increase quantity ', and the right key[⏻/ ↓]indicates ' switch on ' or ' move cursor '.

In addition to the above functions, pressing the left [+/OK] key on the main display can manually activate the LCD backlight when the LCD backlight is off, and manually test whether the LED, sound, and vibration alarm functions are normal.

4.2 Alarm overview

MUNI can accurately issue four types of alarm alerts, including audible alarm, LED flashing visual alarm, vibration alarm and alarm on the display screen. These alarm functions can be programmed or optionally turned on or off.

During the measurement period, the gas concentration corresponds to the set low alarm, high alarm, TWA and STEL alarm values. If the concentration exceeds the set value, the alarm function is activated immediately and an alarm is sent to the instrument user. In addition, MUNI will also send an alarm signal when the power is low or other failure conditions. If workers find themselves in distress, an alarm can be manually triggered to notify nearby workers to come and help.

Alarm type and priority

Alarm type	LED lamp	Buzzer	Quake
Emergency alarm	1 time/second	A long beep	1 time/second
Sensor fault alarm	3 times/second	3 times/second	1 time/second
Overrange alarm	3 times/second	3 times/second	1 time/second
High-limit alarm	3 times/second	3 times/second	1 time/second
Low alarm	2 times/second	2 times/second	1 time/second
Zero drift	1 time/second	1 time/second	1 time/second
STEL alarm	1 time/second	1 time/second	1 time/second
TWA alarm	1 time/second	1 time/second	1 time/second
Calibration failure	1 time/second	1 time/second	1 time/second
Functional test failure	1 time/second	1 time/second	1 time/second
Undervoltage alarm	1 time/minute	1 time/minute	1 time/minute

5. Turn MUNI on/off

5.1 Open MUNI

In the off state of the instrument, press and hold the key [⏻/↓] for 3 seconds until you release the key when you hear the buzzer sound, and the LCD will display the boot interface. After starting up, first enter the self-test process, and then enter the preheating. After the detection is complete, the normal detection screen displays the real-time gas concentration value.

If the sensor is not warmed up, it will display "--" until it is warmed up (usually no more than 30 seconds).

Warning: The alarm is loud, and most of the sound can be eliminated by placing your finger on the buzzer port when starting. Never tape the buzzer port to permanently mute it.

5.2 Turn off MUNI

In the detection mode, long press the key [⏻/↓] the instrument enters the 5-second countdown, the finger must be held down the key [⏻/↓] during the entire shutdown process.

Red light flashes every second, the buzzer sounds once every second, and when the last long flash and long buzzer is over, the LCD displays "UNIT OFF" and the instrument is turned off.

5.3 Sensor display

When one or more sensors are not installed or turned off, the display displays only the sensors that are installed and in use.

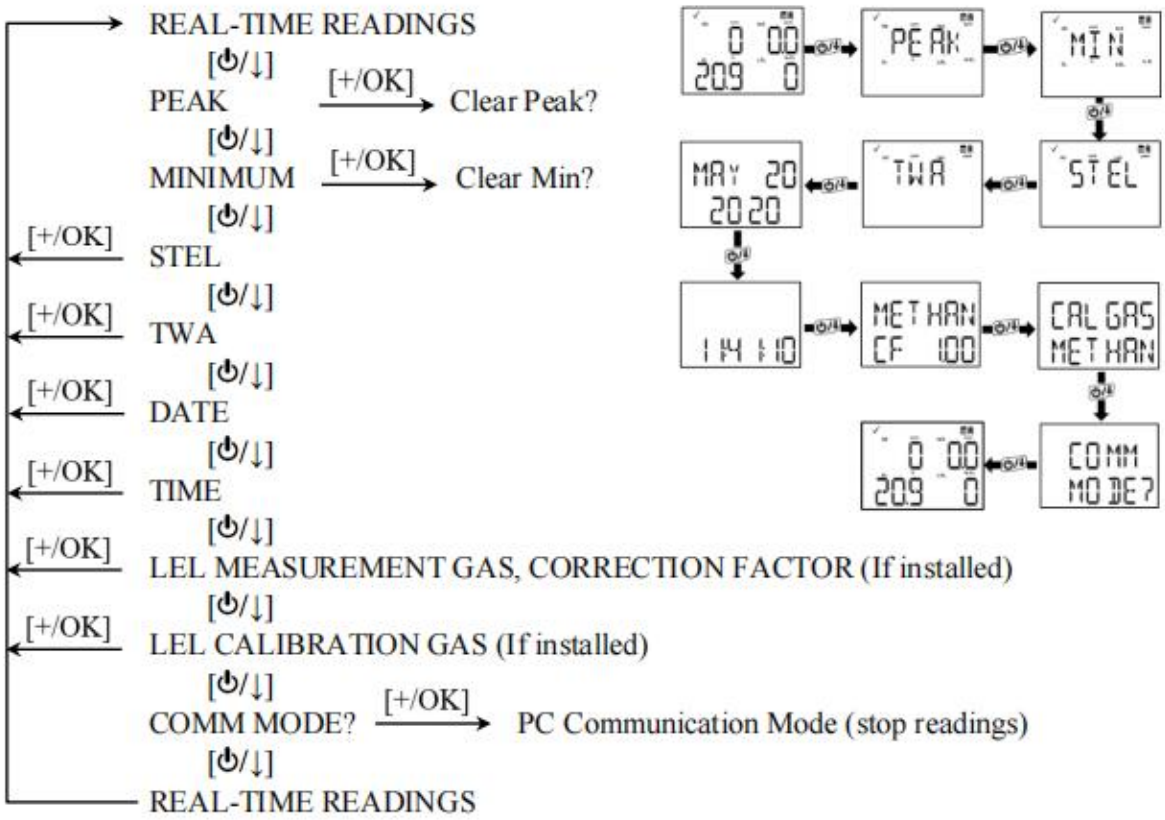
5.4 Alarm test and backlight

In the normal working state (no alarm state), we can all test the buzzer, vibration, light and backlight by pressing the [+/OK] key. If any alarm indication does not respond, then the instrument cannot be used.

In manual mode, the backlight can be activated by pressing the left [+/OK] or the right button [⏻/↓] to improve visibility in dark environments.

5.5 Main user interface

Press the [+/OK] and [⏻/↓] keys to easily switch between display interfaces.


REAL-TIME READINGS
[⏻/↓]
PEAK
[+/OK]
Clear Peak?
[⏻/↓]
MINIMUM
[+/OK]
Clear Min?
[⏻/↓]
[+/OK]
STEL
[⏻/↓]
[+/OK]
TWA
[⏻/↓]
[+/OK]
DATE
[⏻/↓]
[+/OK]
TIME
[⏻/↓]
[+/OK]
LEL MEASUREMENT GAS, CORRECTION FACTOR (If installed)
[⏻/↓]
[+/OK]
LEL CALIBRATION GAS (If installed)
[⏻/↓]
COMM MODE?
[+/OK]
PC Communication Mode (stop readings)
[⏻/↓]
REAL-TIME READINGS
0 00
20.9 0
PEAK
MIN
MAY 20
2020
TWA
STEL
METHAN
CF 100
CAL GAS
METHAN
COMM
MODE?

6. Set mode

In setup mode, the user can calibrate the sensor, check the ventilation, modify the alarm point, and modify various configuration parameters of the instrument.

6.1 Enter setup mode

As long as [+ / OK] and [⏻/ ↓] double bond more than three seconds, the instrument to enter the password input interface (PWD_ _ _ _? , default password.The code is "0000" and the password can be changed through mPower Suite. You only need to enter a password when you enter setup mode for the first time after starting up.

- Press the right button [⏻/ ↓] to move the cursor
- Left press [+/OK] to increase the number from 0 to 9
- After entering the four-digit password, press the right button [⏻/ ↓] to move the cursor to ? , and press the left [+/OK] button to confirm, and the instrument enters the setting mode.

If the password is incorrect, the device prompts' PWD ERROR RETRY? '. Press the left [+/OK] button to re-enter the password, and press the right button [⏻/ ↓] to enter the normal detection mode. If the password number is entered incorrectly, press the right button [⏻/ ↓] to move the cursor between the numbers, and press the left [+/OK] button to change the number.

6.2 Exit set mode

In Setting mode, right-click [⏻/ ↓] to jump to the main configuration menu until EXIT? is displayed. Press the left key [+/OK] to exit setup mode. Or do not press the button for one minute, the machine automatically returns to normal detection mode.

6.3 Menu and submenu

After entering the setting mode, the first thing that is displayed is CAL? Calibrate the menu. Press the right button [⏻/ ↓] to jump to the menu, and press the left [+/OK] key to enter the menu. After entering the submenu, press the right button [⏻/ ↓] to move the cursor, and press the left [+/OK] button to edit and save parameters. To EXIT the submenu, jump to the entire list until EXIT? Then left click [+/OK] to exit.

In setting mode, the menu and submenu are as follows:

CAL? (Calibration menu)	SENSOR ONOFF? (Sensor on/off)	SENSOR ALARM? (Alarm value setting)	MNT SETUP? (Instrument display Settings)	EXIT?
AIR CAL?	SAVE?	HIGH ALARM?	DATE?	
SINGLE SPAN?		LOW ALARM?	TIME?	
MULTI SPAN?		STEL ALARM?	EXIT?	
SET SPAN?		TWA ALARM?		
SINGLE BUMP?		EXIT?		
MULTI BUMP?				
CAL INTVL?				
BUMP INTVL?				
EXIT?				

6.4 Calibration and functional testing

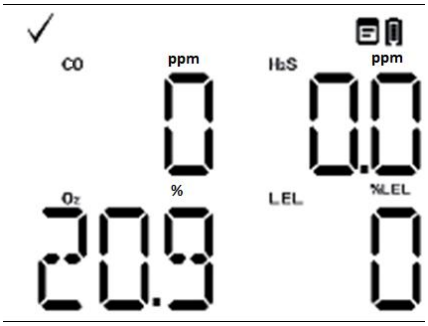
Use this menu for air and calibration calibration of a single or multiple sensors to change the preset calibration gas concentration value and the selected calibration gas.

MUNI should be calibrated on the first day of use, the calibration period is generally not more than 180 days, and the calibration interval also depends on the environment to which the sensor is exposed to toxicants and contaminants. Functional tests should be performed daily to ensure that the instrument sensor has an accurate response to the gas and that all alarm functions are complete.

- **Functional testing** Sensor is briefly exposed to the gas (usually 10-20 seconds) to determine that the sensor is responsive and the alarm is working properly, without considering quantitative measurements.

- **Calibration** Expose the sensor to a known concentration of a standard gas (usually 30-60 seconds, HCN longer) and set the sensor's reading to equal the concentration of the standard gas used.

Calibration intervals and functional tests vary depending on sensor type, environmental conditions, local regulations, and the user's company policy * Automatic reminders for calibration and functional tests can be used using CAL? Menu or use mPower Suite software Settings. When calibration and functional testing are performed, (calibration) and (functional testing) will be displayed next to the sensor on the display screen, as shown in the figure below:



Sensors need to be calibrated in the following situations:

- Sensor failed in a previous functional test or calibration.
- Sensor module overdue calibration.
- Sensor module needs to be replaced.

6.4.1 Calibration of gas and concentration

6.4.1.1 Calibration gas

When calibrating all four sensors of a standard 4-in-1 instrument simultaneously, mPower recommends a standard gas concentration of 60 ppm CO / 15 ppm H_2S / 2.5% CH_4 (50% LEL) / 18% O_2(equilibrium gas N_2).

Other configuration sensor standard gas information please refer to the following table:

Sensor	**Range**	**Standard gas concentration**
LEL/O_2/CO/H_2S 4-Gas Mix	Specific Settings are as follows	50%LEL/18% O_2/60 ppm CO/15 ppm H_2S
Oxygen (O_2)	0.1-30%Vol	18 %Vol O_2 and/or 100% N_2 are zero rated
Catalytic Combustion Sensor (LEL%)	1-100%LEL	50% LEL (2.5%Vol CH_4, equilibrium gas is air)
Infrared Methane Sensor (LEL%)	1-100%LEL	50 %LEL (2.5 %Vol CH_4)
CO (Carbon monoxide)	1-1000 ppm	60 or 100 ppm CO
H_2S (hydrogen sulfide)	0.1-100 ppm	15 or 25 ppm H_2S
HCN (hydrogen cyanide)	0.1-100 ppm	10 ppm HCN
SO_2 (sulfur dioxide)	0.1-20 ppm	5 ppm SO_2

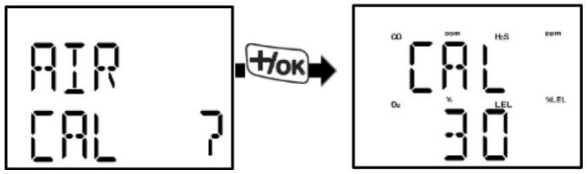
Note: The balance gas used by the standard gas is generally air or nitrogen (the standard gas used by the catalytic sensor must contain oxygen).

6.4.2 Calibration

6.4.2.1 Air calibration

Zero calibration is used to obtain the baseline of the sensor and must be done in fresh air or clean air. It is best for MUNI to complete the calibration of zero point before calibration of standard gas.

- In Setup mode, enter the calibration menu and select the first air calibration:
  Config Mode → CAL?→AIR CAL?



- Press the left button [+/OK] to start calibration. The LCD displays a 30-second countdown. When the countdown ends, the screen displays "PASS" or "FAIL", indicating successful or failed calibration. In the countdown process, you can press the right button [⏻/↓] to end the calibration.
- Oxygen sensor is rated 20.9% in air and zero in nitrogen.

6.4.2.2 Gas calibration

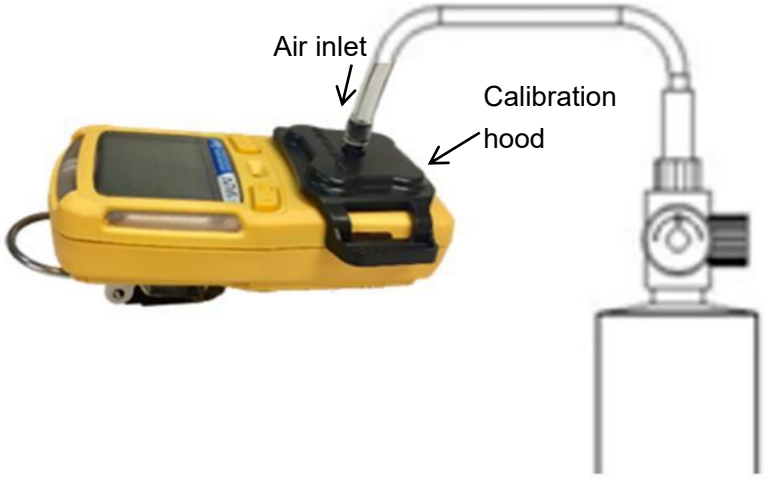
Select the appropriate concentration of standard gas according to the calibration gas described above, and confirm that the concentration of standard gas is consistent with the calibration value set by the instrument. If not, please adjust the set calibration value according to the following method. In addition, check the validity period of the standard gas to ensure that it is used within the validity period.

- In the setting mode, enter the calibration menu, right-click [⏻/↓] jump menu to select the calibration value setting:
  Config Mode →CAL? → → → MULTI SPAN?
- Press the left key [+/OK] to enter the calibration value interface and display the calibration value.



- As shown in the figure below, install the calibration cover in the sensor part of the instrument and set the gas flow rate to 300-500mL/min.
- Press the left button [+/OK] to start calibration. The LCD displays a 30-second countdown. When the countdown ends, the screen displays "PASS" or "FAIL", indicating successful or failed calibration. In the countdown process, you can press the right button [⏻/↓] to end the calibration.
- Close the reducing valve, remove the calibration cover, right-click [⏻/↓] to jump to the menu, select EXIT? , exit the calibration menu.
- When the composite gas detector is calibrated, the parameters of the oxygen sensor are set:

- The calibration value can be selected from any value except 20.9% of the range (0-30%) (in air the calibration value is 20.9%).
- Zero in nitrogen.



Note: If calibration fails, re-calibrate once, if it fails again, turn off the instrument and replace the sensor.
⚠**Warning!** Do not replace sensors in hazardous environments.

6.4.2.3 Individual sensor gas calibration

To perform extended calibration for a single sensor, follow these steps:

- In the setting mode, enter the calibration menu, press the right button [⏻/↓] to jump to the menu to select a single calibration gas calibration:
  Config Mode → CAL? → → SINGLE SPAN?
- Press the left button [+/OK] to enter the sensor screen. The name of the first sensor flashes. Press the right button [⏻/↓]to select the sensor to be calibrated.
- Left-click [+/OK] to display the calibration Settings for the selected sensor.
- Connect the calibration cover to the calibration air source and calibrate according to the calibration method described above.

6.4.2.4 Multi-sensor gas calibration Settings



You can set separate gas calibration values for each sensor:

- In the setting mode, enter the calibration menu, press the right button [⏻/↓] to jump to the menu and select the calibration Settings:
  Config Mode → CAL? → → → SET SPAN?
- Press the left button [+/OK] to enter the sensor screen. The name of the first sensor flashes. Press the right [⏻/↓] button to select the sensor to be calibrated.
- Left-click [+/OK] to display the calibration Settings for the selected sensor.
- Press the right button[⏻/↓] to move the cursor to select the value you want to edit, and press the left [+/OK] button to increase the number from 0 to 9.
- Press the right button [⏻/↓] to move the cursor to select? , left press [+/OK] to save the Settings. Repeat for other sensors as needed.

6.4.2.5 Single sensor and multiple sensor functional testing

Functional testing is a way to quickly check whether the sensor and alarm functions are working properly without the need for precise calibration.

- In the setting mode, enter the calibration menu, press the right button [⏻/↓] to jump to the menu to select a single sensor or multiple sensor function test:
  Config Mode → CAL? → → → →SINGLE BUMP? → MULTI BUMP?
- Press [+/OK] The sensor is displayed. Press [+/OK] to confirm
- The countdown ends, indicating success or failure



6.4.3 Interval between calibration and functional testing

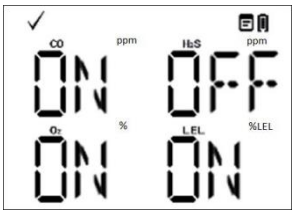
The calibration and functional test interval is the time period (up to 365 days) when MUNI reminds the user to perform these tests again.

- In the setting mode, enter the calibration menu, press the right button [⏻/↓] to jump to the menu to select the calibration or functional test interval:
  Config Mode → CAL? → → → SPAN INTVL? → BUMP INTVL?
- Press the left [+/OK] button to display the sensor. The name of the first sensor flashes. Press the right button [⏻/↓] to select the sensor that you want to set.
- Press the left button [+/OK] to determine the sensor. The interface displays the time interval (unit: day).
- Press the right button [⏻/↓]to move the cursor to select the value you want to edit, and press the left [+/OK] button to increase the number from 0 to 9.
- Press the right button [⏻/↓]to move the cursor to select? , left press [+/OK] to save the Settings. Repeat for other sensors as needed.

6.5 Use or turn off the sensor

For multi-gas MUNI instruments, if a sensor is not needed in a special environment or a sensor fails.You can choose to turn off a sensor and the other sensors work normally.

- In Settings mode, go to the Use or Turn off Sensor menu:
  Config mode →→ SENSOR ONOFF?
- Press the left [+/OK] button to display the status of the sensor in use or off. The name of the first sensor flashes. Press the right button [⏻/↓] to select the sensor to be set.
- Press the left [+/OK] button to set the sensor to use or off.



- Press the right button [⏻/↓]to move the cursor. Do you know that SAVE is displayed? Press the left key [+/OK] to save the Settings.

6.6 Alarm setting

There are four sets of alarm Settings in the alarm limit, and the alarm point of each sensor can be set separately in each set of Settings.
Settings:

- High reporting limits
- Low-reporting limits
- STEL limit
- TWA limit

Note: Some alarm Settings do not work with all sensors. If some alarm Settings are not associated with a sensor (such as STEL or TWA for a flammable gas sensor), the sensor will not appear in the list.

- In the setting mode, enter the sensor alarm value menu, press the right button [⏻/↓] to select the alarm value to be set:
  Config mode →→→SENSOR ALARM? →HIGH ALARM? →LOW ALARM? →etc.
- Press the left key [+/OK] to enter the alarm value menu that needs to be set.
- If the first sensor blinks, press the right button [⏻/↓] to select the sensor that you want to set, and press the left [+/OK] button to confirm.
- Press the right button [⏻/↓] to move the cursor to select the value you want to edit, and press the left [+/OK] button to increase the number from 0 to 9.
- Press the right button [⏻/↓] to move the cursor to select? , left press [+/OK] to save the Settings.
- Repeat for other alarm values as needed.

6.7 Display setting

Date and time are displayed in the format of year - month - day, and time is displayed in 24 hours.

Instrument communicates with the computer through the mPower Suite, and the time can be synchronized with the computer.

- In the setting mode, enter the display setting menu, press the right button [⏻/↓] to select the required date or time:
  Config mode →→→MNT SETUP? →DATE? →TIME?
- Press the left button [+/OK] to access the submenu.
- Press the right button [⏻/↓]to move the cursor to select the value you want to edit, and press the left button [+/OK] to increase the number from 0 to 9.
- Press the right button [⏻/↓]to move the cursor to select? , left press [+/OK] to save the Settings.

7. Data transmission

The following events can be performed through mPower Suite software:

1) Download the data record of the instrument
2) Update the instrument configuration parameters
3) Update the firmware version of the instrument

The mPower Suite and instrument firmware can be downloaded from the mPower website:
https://www.mpowerinc.com/software-downloads/



Micro B (5-Pin) to USB cable

8. Maintenance

MUNI requires almost no maintenance, except charging (see section 3), regular filter changes, and sensor changes as needed (1 to 3 years depending on the sensor and conditions of use). Batteries may need to be replaced during prolonged use or under extreme conditions.

8.1 External filter

When MUNI is used in a dusty or humid environment, an external filter is required. For use, the external filter is mounted on the surface of the MUNI four sensor air intakes.

Note: External filter dirt will increase the response time of MUNI sensors. When the filter is obviously dirty or the response time is significantly longer, replace the filter.

8.2 Replace the internal filter, sensor, LCD display, or battery

> ⚠**Warning!**
> Only open the instrument housing in non-hazardous areas.

1. Turn off the device.
2. Remove the six screws securing the upper rear cover.
3. Turn the instrument over and remove the front cover.
4. **Sensors:** Carefully remove each sensor to be checked or replaced.
   Install the sensor. Make sure the electrical contact pins are aligned with the holes in the PC board and the sensor is securely secured. The sensor position is marked on the circuit board and cannot be interchanged with different types of sensors.
5. **Filter:** Peel off the inside of the front housing cover and replace the white filter gasket. Choose whether to replace the black sensor gasket according to the specific situation. ..
6. **LCD display:** Take out the LCD display, connect the new LCD display cable to the white socket on the circuit board, and press the black latch to secure the cable (see the picture below).
7. **Battery:** Battery is soldered to the bottom of the circuit board and should be replaced at an authorized service center.
8. Ensure that the LCD is properly connected, close the front cover, and tighten the six screws.

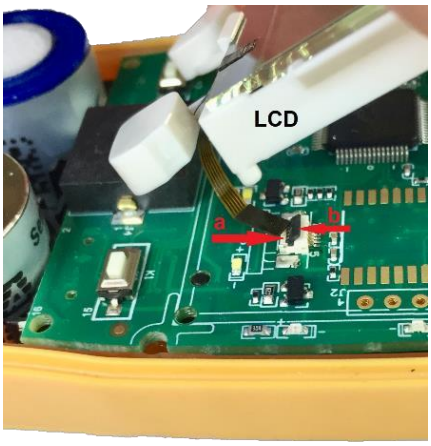
Important ! A complete calibration should be performed after replacing the sensor.



Replace the sensor and LCD



Replace the filter and sensor



LCD connection:
a. Connect the LCD cable to the white socket
b. Press the black latch to secure the cable

9. Fault handling

Problem	Possible causes and solutions
Cannot be turned on after charging	**Cause:** Charger is damaged, the battery is damaged. **Solution:** Replace the battery or charger
Password loss	**Solutions :** Please call technical support or free hotline :
Buzzers,LED lights and vibrations are ineffective	**Cause :** alarm function closed or buzzer damaged **Solutions :** Check whether the alarm function is turned off. Please call automatic technical support.
Abnormally high, low, or noisy reading	**Reasons :** Filter or inlet is dirty or blocked, and water condenses on the air inlet; Sensor failure; Incorrect calibration. **Solution :** Replace the filter ; replace the sensor ; recalibration
E001 Error; E002 Error	**Reasons :** No LEL sensor ;LEL sensor failure **Solution :** Replace the LEL sensor
Data transfer failure	**Reasons :** Inappropriate data line or poor contact **Solutions :** Using mPower USB data line (P / N M011-3003-000). Replace the charging connector / AC adapter Fasten connector contacts

If you want to change parts, please contact an authorized dealer or contact after-sales directly.

10. Instrument index

Size	110*60*28mm
Weight	226g
Sensor configuration	Standard configuration is LEL/O_2/CO/H_2S Options are SO_2 and HCN
Sampling mode	Diffused
Calibration	Zero + standard gas
Battery run time	Standard 20 hours *Operating time at low temperature -20℃ for more than 12 hours
Battery charge time	Less than 6 hours
Operating temperature humidity	-20℃~60℃; 0-95%RH (non-condensing)
Safety certification	UL:Class L Div 1,GroupA,B,C,D T4,-20°C≤Tamb≤+50℃ IECEx Ex da ia ⅡC Ga T4 ATEX: Exia ⅡC Ga China Ex ia IIC T4 Ga
CE certification	2014/30/EU(EMC)
Metrological certification	China CPA
Performance test certification	LEL(EN60079-29-1)Oxy(EN50104)
Class certification	CCS, ABS
Data storage	1000 events included (alarm, functional test and calibration)
Calibration mode	Manual and automatic calibration stations
Key	Two keys
Alarm mode	95dB@30cm,LEDs flicker and vibrate
Anti-electromagnetic radiation	EMI/RF rating: EMC Directive 2014/30/EU
Display screen	LCD ,with automatic backlight
Display content	Sensor name, real-time display value, battery voltage, data storage status, security policy indication
Alarm signal	High/low alarm, TWA/STEL alarm, battery undervoltage alarm,sensor fault alarm, over range alarm
Class of protection	IP68
Quality guarantee	Standard machine warranty 1 year, optional machine warranty 1 year

Instrument specifications may change, please pay attention to it.

Sensor	Detection range	Detection Resolution	Response time (T90)	Detection error
CO	0-1000ppm	1ppm	15s	≤3%
H2S	0-200ppm	0.1ppm	20s	
O2	0-30%Vol	0.1%Vol	15s	
LEL	0-100%LEL	1%LEL	15	
	0-5.0%Vol	0.01%Vol		
HCN	0-50ppm	0.1ppm	45s	≤5%
SO2	0-20ppm	0.1ppm	30s	

* Alarm point Settings can be adjusted, the alarm point is automatically displayed at startup

Standard configuration

- MP420 host, configuration sensor, and back clip
- Rechargeable lithium battery
- Charging adapter
- Calibration adapterCertificate of conformity
- Quick Operation Guide (Chinese/English)

Optional configurations & Accessories

- External filter
- Data cable
- MP300T4
- USB charging converter

Technical support and manufacturer

mPower Electronics (Shanghai) Co., Ltd
Address : No.2 Building, No.66 Chunzhong Road, Minhang District, Shanghai, 201108
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