UNI 321

Maintenance-Free
Single Gas Detectors

User's Guide

mPower Electronics
Making Powerful Senses

Ver 1.3
September 2020

Contents

Read Before Operating

This manual must be carefully read by all individuals who have or will have the responsibility of using, maintaining or servicing this product. The product will perform as designed only if it is used, maintained and serviced in accordance with the manufacturer's instructions.

WARNING

- Never operate the monitor when the cover is removed.
- Remove the monitor cover and battery only in an area known to be non-hazardous.
- Use only mPower's lithium battery part number M500-0001-000 [1.17.02.0002] (3.6V, 2700mAH, AA size) or part No. ER14505 cell manufactured by EVE Energy Co., LTD.
- This instrument has not been tested in an explosive gas/air atmosphere having an oxygen concentration greater than 21%.
- Substitution of components will impair suitability for intrinsic safety.
- Substitution of components will void warranty.
- It is recommended to bump test with a known concentration gas to confirm the instrument is functioning properly before use.
- Before use, ensure that the colorless ESD layer on the display is not damaged or peeling. (The loose blue or colorless protective film used for shipment may be removed.)

AVERTISSEMENT

- N'utilisez jamais le moniteur lorsque le couvercle est enlevé.
- Retirer le couvercle du moniteur et la batterie uniquement dans une zone connue comme non dangereuse.
- Utilisez uniquement la batterie au lithium de mPower, pièce No. M500-0001-000 [1.17.02.0002] (3.6V, 2700mAH, taille AA) ou celle de EVE Énergie Cie., Lté, pièce No. ER14505.
- Cet instrument n'a pas été testé dans une atmosphère explosive gaz / air ayant une concentration en oxygène supérieure à 21%.
- La substitution de composants compromettra l'aptitude à la sécurité intrinsèque.
- La substitution des composants annulera la garantie.
- Il est recommandé de tester avec un gaz de concentration connu pour confirmer que l'ins trument fonctionne correctement avant de l'utiliser.
- Avant l'utilisation, assurez-vous que la couche ESD incolore de l'écran n'est pas endommagée ou épluchée. (Le film protecteur bleu peut être enlevé.)

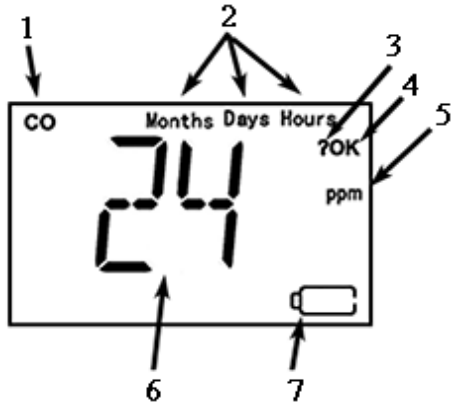
Proper Product Disposal at End of Life

The Waste Electrical and Electronic Equipment (WEEE) irective (2002/96/EC) is intended to promote recycling of electrical and electronic equipment and their components at end of life. This symbol (crossed-out wheeled bin) indicates separate collection of waste electrical and electronic equipment in the EU countries. This product may contain one or more nickel-metal hydride (NiMH), lithium-ion, or alkaline batteries. Specific battery information is given in this user guide. Batteries must be recycled or disposed of properly. At the end of its life, this product must undergo separate collection and recycling from general or household waste. Please use the return and collection system available in your country for the disposal of this product.

General Information

The UNI 321 is a disposable or maintenance-free version of the UNI single gas detector. It detects H_2S, CO or O_2 in a selection of models for an operation life of either 12 months (MP101), 24 months (MP102) or 36 months (MP103). The detector has a large LCD providing maximum readability in the field. Six bright red LEDs allow for quick alarm notification. Constructed of strong and durable material, the UNI 321 is designed to be comfortable, yet drop-resistant.

User Interface



Display

1. Gas name, includes: CO, H_2S and O_2
2. Remaining time unit: Months, Days, Hours
3. Question mark: Daily alarm test needed; Bump test due; Perform menu function
4. OK: Accept menu entry; Unit status indicator
5. Gas concentration unit (for alarm setting display)
6. Remaining operating time (Months/Days/Hours)
7. Low battery warning

Normal Operation

Normal operation is limited to the following functions

- Displaying the remaining operating time (the unit cannot be turned off)
- Displaying (and logging) the Alarm Level if this concentration of gas is exceeded
- Entering Configuration Mode to perform a fresh air zero calibration
- Replacing the sensor filter if used in especially highly dusty or moist environments

Full bump test or calibration, and setting other functions can only be performed using a UNI Docking Box MP100T or the CaliCase MP300T1 by a qualified service technician.

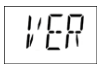
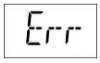
Normal Mode Operation

Turning the Unit On

⚠ **NOTE: ONCE THE UNIT IS TURNED ON IT CANNOT BE TURNED OFF AND THE BATTERY LIFE COUNTDOWN TIMER BEGINS.**

Press and hold the Right Key ⏻ for 3 seconds, until the LCD displays  , the buzzer beeps, and the green LED flashes.

Warm-up Sequence

After powering on, the unit enters a warm up and self-test sequence, showing the firmware version   followed by the the High Alarm  and Low Alarm  limits. If a sensor is not installed or cannot be identified by the instrument, the screen flashes between  and  .

Remaining Time Display

After the start-up sequence, the unit enters normal mode and displays the remaining operating time.  Once the unit is running, it cannot be turned off manually and it stays on until the battery loses power.

Alarms

Daily Alarm Test (Flashing ?)

Before each day's use, the ? question mark will be flashing to remind the user to press the Left [OK↑] Key once to test the function of the audio, visual and vibration alarms.

⚠ **WARNING: IF ANY OF THE NEEDED ALARMS ARE NOT FUNCTIONING, DO NOT USE THE INSTRUMENT AND RETURN IT FOR SERVICE.**

Normal Alarm Function

If the gas concentration exceeds an alarm limit, the display shows the alarm value being exceeded  and gives audio, visual and vibration alarms according to the table at the end of this manual (see Alarm Signal Summary). Once the concentration is no longer in an alarm condition, the unit reverts back to the time display, but logs the alarm event in memory.

Calibration Fail Alarm (For Service Use Only)
If the instrument fails calibration, it will alternately display  and the remaining run time  , once per second. The user can perform a manual Zero Calibration (see below) on the instrument alone, but a full span calibration requires a Docking Box or CaliCase.

Bump Fail Alarm (For Service Use Only)
If the instrument fails a Bump test using the Docking Box or CaliCase, it will alternately display  and the remaining run time  once per second.

Bump Due Alarm (For Service Use Only)
If the Bump Due setting is enabled and the due date has passed, the question mark will flash twice per second while the display continues to show the remaining run time  .

Configuration Mode

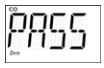
In the configuration mode the user can do a zero (fresh air) calibration and set the high and low alarm thresholds. In general, use the Left Key to increase the number or confirm, use the Right Key to move the cursor or move to the next programming item. Detailed configuration settings can be performed using the mPower Suite software through the UNI Docking Box MP100T or CaliCase MP300T1 (see UNI or CaliCase manual).

Entering and Exiting Configuration Mode

Press and hold the Left Key and the Right Key simultaneously for 3 seconds. The unit prompts for a password by displaying  and  , with the first digit flashing. The UNI 321 preset password is 0000. Use the Left [OK↑] Key to increase the number, and the Right [→⏻] Key to move the cursor. Once all four digits are entered, the cursor will move to "OK", causing it to flash. Press the Left Key to accept and enter the Configuration Mode.

To **Exit Configuration Mode**, scroll through the menu using the Right [→⏻] Key until EXIT? is shown, and press Left [OK↑].

Zero (fresh air) Calibration

Zero (Air) calibration is to set the base line for the sensor. It is done in fresh air or other source known to be free of detectable gas (For an O_2 unit, "zeroing" sets the value to 20.9%, so air must be used). When the LCD displays  , press the Left Key to begin the air calibration. The unit will start a 15 second count-down, and then display the calibration result as either pass  or fail  . The user can abort the zero calibration during the 15 seconds count-down by pressing the Right Key, after which  is displayed.

Set High and Low Alarm Levels

After Air calibration is completed or skipped, the unit displays  to set the High Alarm limit.

- Press Left to enter the menu. The current setting value is displayed, with the first digit flashing: 
- Use the Left Key to increase the current digit, cycling from 0 to 9: 
- Use the Right Key to move the cursor to the next digit: 
- After all digits are entered, use the Right Key to move to the "OK" symbol, and press the Left Key to save the entry. The unit will display SAVE for a few seconds while storing the value but it is not necessary to press OK to initiate saving.  
- The display automatically moves to set the Low Alarm limit 

Adjust the Low Alarm in the same way as for the High Alarm.

Maintenance

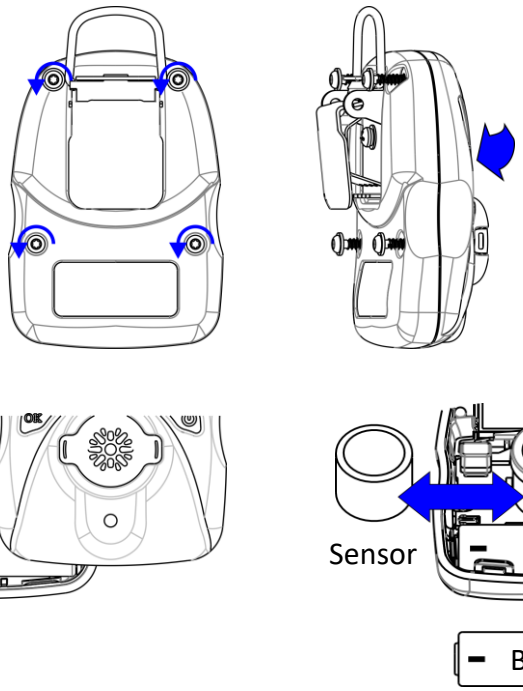
NOTE: The UNI 321 is designed as a disposable instrument and does not need maintenance under normal circumstances. However, in highly dusty or wet environments, it may be necessary to replace the sensor filter as described below.

> ⚠ Maintenance should be performed only by a qualified person who has proper training and fully understands the contents of the manual.

Replacing the Sensor Filter

The filter may need replacement under special circumstances such as use high-dust or condensing environments. External filter clips are available to reduce the need to replace the internal filter. Sheets of 5 "peel-and-stick" internal filters are available for this purpose:

1) Turn off the UNI 321 and place it face down on a soft surface.
2) Use a T10 Torx screwdriver to loosen (counterclockwise) each of the four screws.
3) Remove the top cover after carefully unplugging the buzzer connector.
4) Peel a filter from the sheet and center it over the sensor. Gently press down.
5) Re-connect in the buzzer connector and re-install the top cover.
6) Re-install the screws in the back cover. Be careful to not overtighten the screws.



External Filter Clip

⚠ CAUTION

- Change battery only in area known to be non-hazardous.
- Use only mPower battery, PN: 1.17.02.0002 or PN ER14505 cell manufactured by EVE Energy Co., LTD.

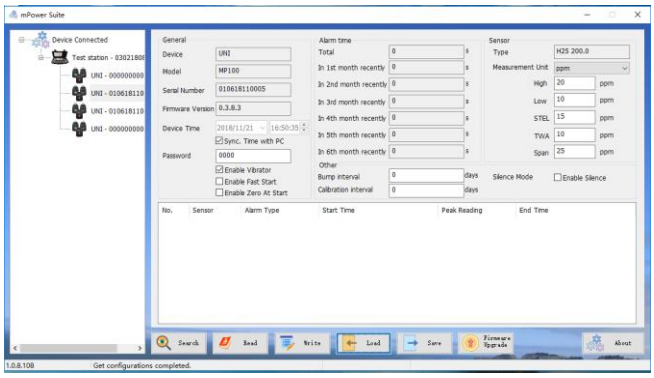
⚠ ATTENTION

- Changez la batterie uniquement dans une zone connue pour être non dangereuse.
- Utilisez uniquement la batterie au lithium de mPower, pièce No. 1.17.02.0002 (3.6V, 2700 mAH, taille AA) ou celle deEVE Énergie Cie., Lté, pièce No. ER14505.

Specifications

Size	3.46 x 2.44 x 1.3 in. (88 x 62 x 33mm)
Weight	4.4 oz. (125 g)
Temperature	-4 to 122°F (-20 to 50°C)
Humidity	5 to 95% relative humidity (non-condensing)
Alarm types	High alarm, low alarm adjustable Over range alarm, battery low alarm
Alarm signal	Audible: 95 dB @ 30 cm Visual: Bright red LED Vibration: Built-in vibrator
Calibration (Service Center)	2 point calibration, zero and span, power on zero (user-selectable). The UNI detectors can also be bump tested and calibrated with the UNI Docking Box or CaliCase System.
Event log	Latest 50 alarm events (display on unit or download using mPower Suite** software)
Response time (t_{90})	20 seconds for most sensors. See TA-4 for details.
IP Rating	IP67
EMI/RFI	Compliant with EMC 2004/108/EC
Intrinsic Safety Certifications	Class I, Div 1, Group ABCD c UL us Class II, Div 1, Group EFG Class III, Div 1 T4, -20°C ≤ T_{amb} ≤ +50°C IECEx Ex ia IIC T4 ATEX Ex ia IIC T4 CE European Conformity
Battery & Life	AA size Lithium battery Up to 3 years if used within specifications
Operating Life	1 year for MP101 2 years for MP102 3 years for MP103

**mPower Suite is the PC software used to show and set more configuration parameters of UNI 321 instrument through the UNI Single Docking Box MP100T or CaliCase System MP300T1.



Configuration Set-up Using mPower Suite

Sensor Configurations

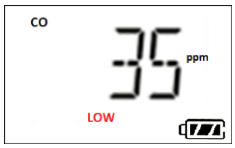
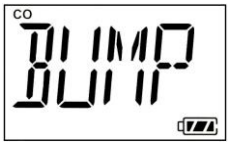
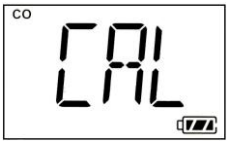
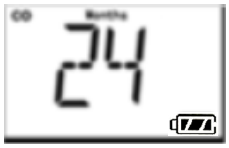
Sensor	Range (ppm)	Resolution (ppm)	Span (ppm)	Low (ppm)	High (ppm)	Panel Ring	T90(s)
CO	0-500	1	50	35	200	Red	20
H_2S	0-100	0.1	25	10	20	Light Blue	20

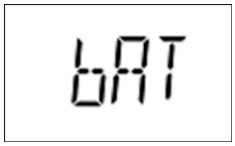
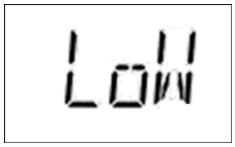
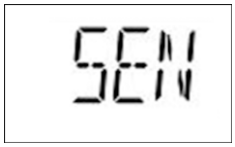
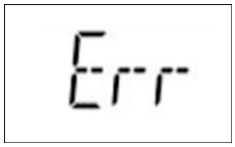
Sensor	Range (%)	Resolution (%)	Span (%)	Low (%)	High (%)	Panel Ring	T90(s)
O_2	0 - 30	0.1	0.0	19.5	23.5	Dark Blue	20

CAUTION

Use only mPower sensors.

Alarm Signal Summary

LCD Display	Reason/Alarm Signals
	Low alarm： Buzzer 2 beeps per second LED 2 flashes per second 1 vibration per second "LOW" 2 flashes per second
	High alarm： Buzzer 3 beeps per second LED 3 flashes per second 1 vibration per second "HIGH" 2 flashes per second
 	Over-range： Buzzer 3 beeps per second LED 3 flashes per second 1 vibration per second "OVER" and "500" 1 flash per second
	Daily Alarm Check needed or Bump Due alarm: ? 2 flashes per second
 	Bump Fail alarm: Buzzer 1 beep per minute LED 1 flash per minute 1 vibration per minute "Bump" and "Remain Time" alternate display per second
 	Calibration Fail alarm: Buzzer 1 beep per minute LED 1 flash per minute 1 vibration per minute "CAL" and "Remain Time" display alternately once per second

	Battery Low alarm： Battery Empty prompt Buzzer 1 beep per minute LED 1 flash per minute 1 vibration per minute
 	Battery fail alarm： Buzzer 1 beep per second LED 1 flash per second "bAT LoW"1 flash per second
 	Sensor error： Buzzer 1 beep per second LED 1 flash per second "SEN Err"1 flash per second

Troubleshooting

Problem	Possible reason	Solution
Cannot turn on unit	Depleted or defective battery	Call authorized service center
Weak or No Response	Filter(s) plugged	Replace external filter clip or internal filter
Buzzer, LED, or vibration alarm inoperative	Bad buzzer, LEDs, or vibration alarm.	Call authorized service center
	Blocked alarm port	Clean or unblock alarm port

mPower Electronics, Inc.
3046 Scott Boulevard, Santa Clara, CA 95054
Phone: (408)320-1266
Fax: (669)342-7077
info@mpowerinc.com
www.mpowerinc.com