Forsensal FS11301

Manual del usuario del detector multigas Forsensal 4 Gas Monitor

Modelo: FS11301

1. Introducción

El detector multigas Forsensal 4 Gas Monitor es un dispositivo portátil diseñado para el monitoreo continuo de cuatro gases críticos: gas combustible (EX), oxígeno (O_2), sulfuro de hidrógeno (H_2S) y monóxido de carbono (CO). Este dispositivo está diseñado para la seguridad personal en entornos con posibles concentraciones peligrosas de gases. Cuenta con alarmas sonoras, visuales y vibratorias para alertar a los usuarios sobre condiciones inseguras. Este manual proporciona instrucciones esenciales para la correcta configuración, operación, mantenimiento y resolución de problemas de su monitor de gases.

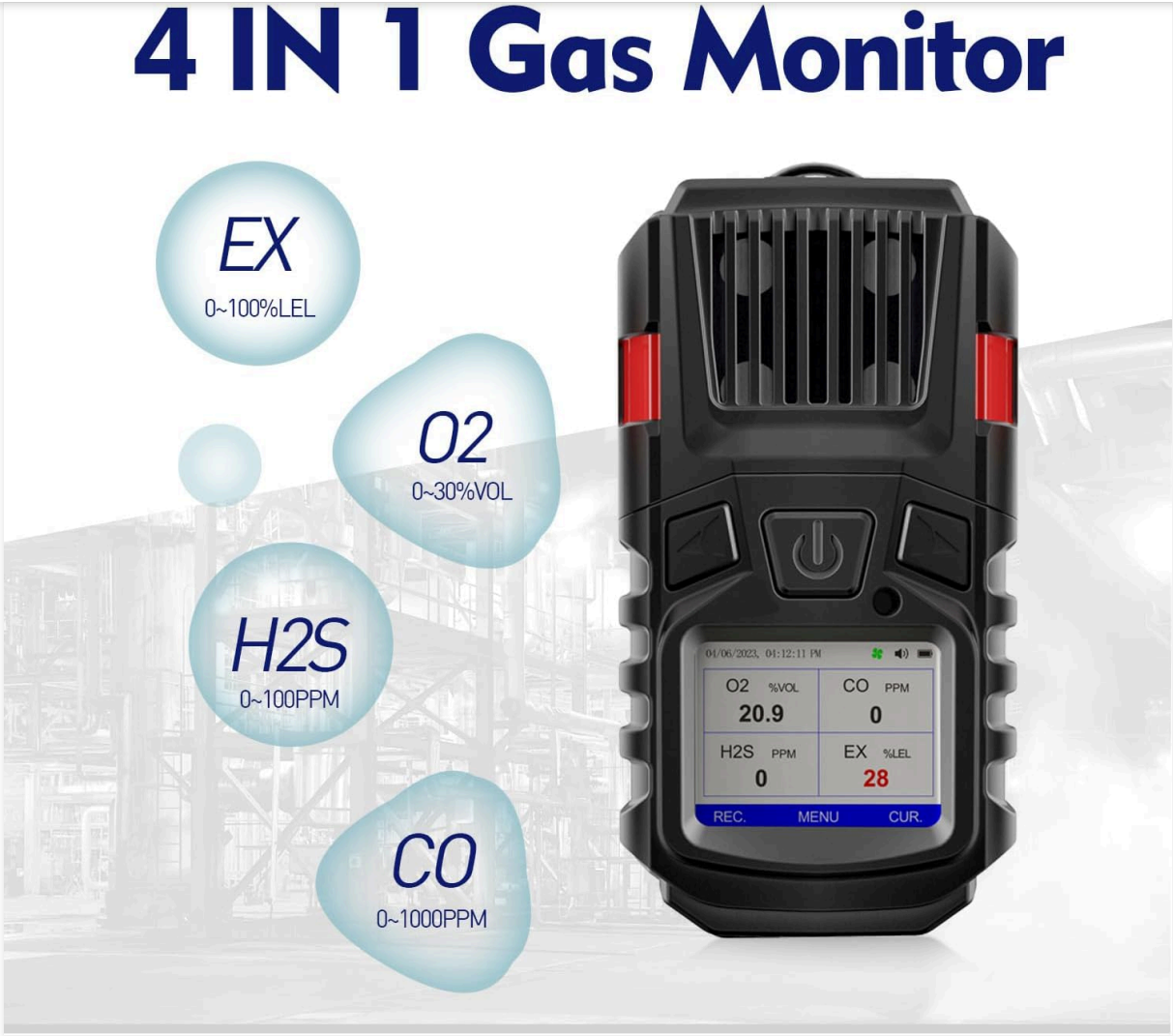

Figura 1.1: El monitor de gas 4 en 1 Forsensal, que ilustra su capacidad para detectar gases combustibles (EX), oxígeno (O2), sulfuro de hidrógeno (H2S) y monóxido de carbono (CO) con sus respectivos rangos de medición.

El detector es ampliamente aplicable en diversas industrias, incluidas la del petróleo, la química, la metalurgia, la refinación, el transporte de gas, la biomedicina, la agricultura y la minería, lo que garantiza la seguridad en diversas condiciones de trabajo.

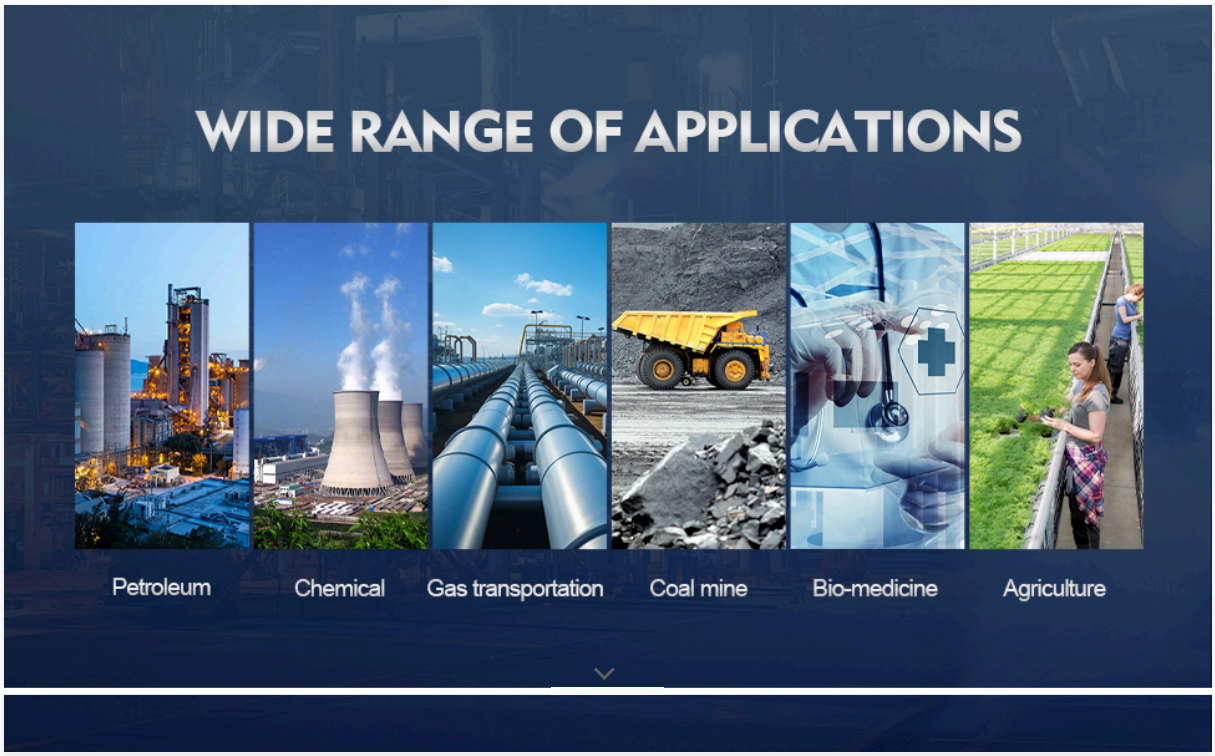

Figura 1.2: Una descripción general de la amplia gama de aplicaciones del monitor de gas Forsensal 4, que demuestra su utilidad en diversos entornos industriales y ambientales.

2. Descripción general del producto

2.1 Características principales

- Detección simultánea de EX, O2, H2S y CO.
- Gran pantalla LCD para una visualización clara de las concentraciones de gas.
- Funciones de alarma audible, visual y vibratoria.
- Batería de litio recargable de 3000 mAh con >8 horas de tiempo de espera.
- Construcción duradera: plásticos de ingeniería de alta resistencia y caucho antideslizante compuesto.
- Diseño a prueba de agua, polvo y explosiones.
- Capacidades integradas de registro de datos y visualización de curvas.
- Cómodo clip trasero para fácil portabilidad.

2.2 Componentes del dispositivo

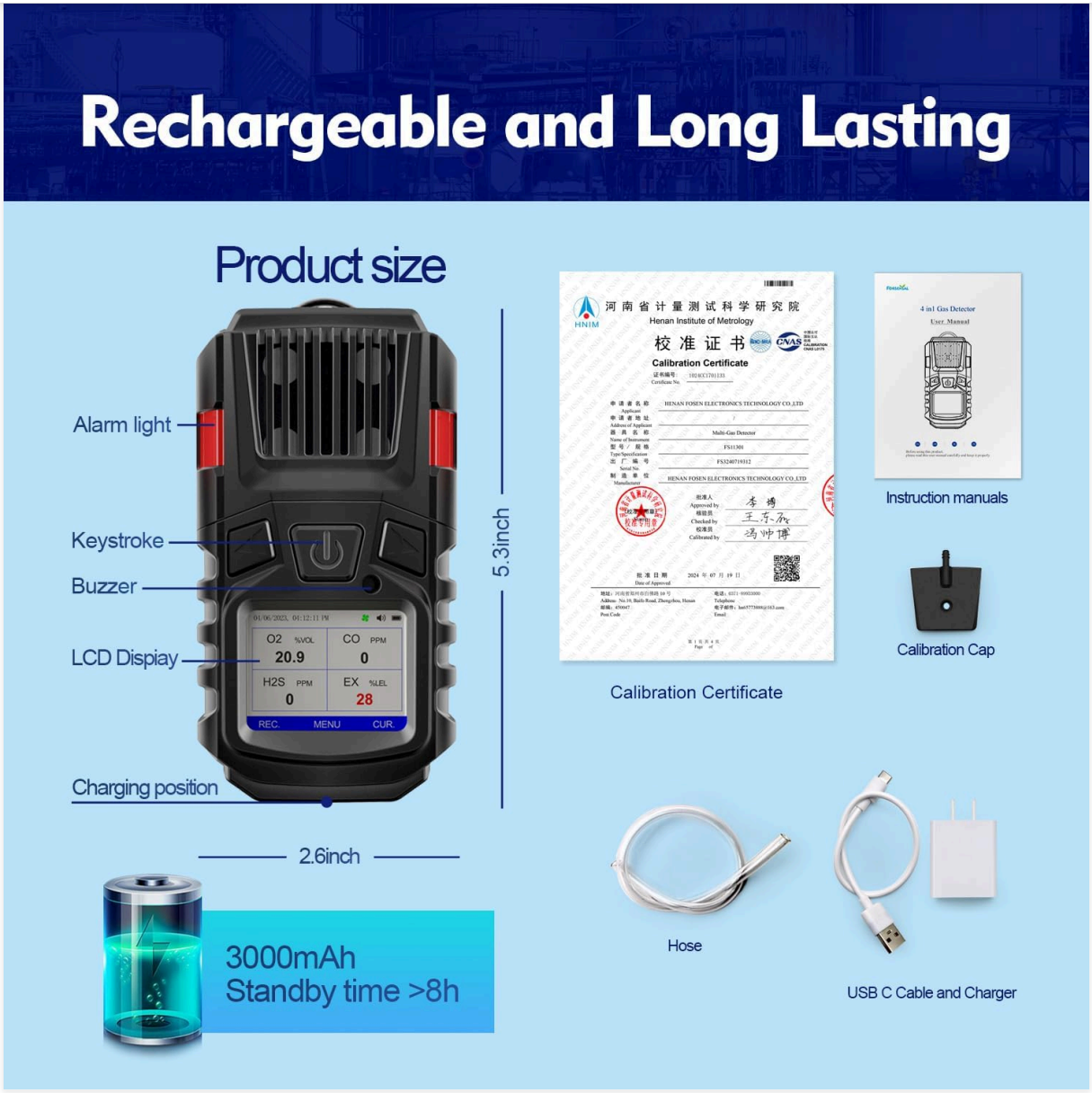

Figura 2.1: Diagrama etiquetado del monitor de gas Forsensal 4 y sus accesorios incluidos, destacando las principales características físicas y el contenido del paquete.

El dispositivo presenta un diseño robusto con una pantalla LCD nítida, botones de control intuitivos, luz de alarma y timbre. Un resistente clip posterior permite sujetarlo fácilmente a la ropa o a cualquier otro equipo. El puerto de carga se encuentra en la parte inferior para una recarga cómoda.

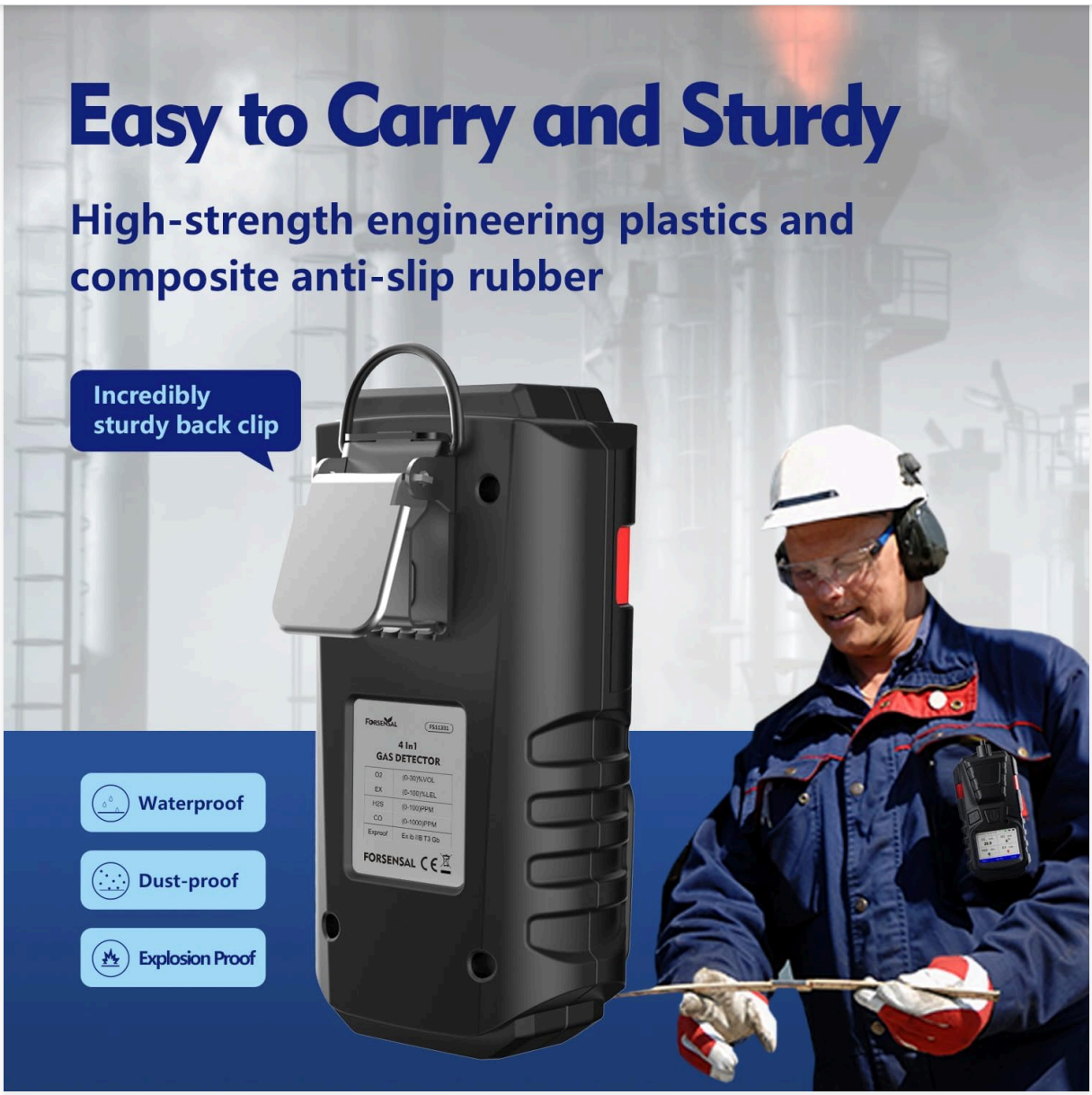

Figura 2.2: El monitor de gas Forsensal 4 demuestra su portabilidad con un clip posterior resistente y resalta sus características a prueba de agua, polvo y explosiones.

3. Especificaciones

La siguiente tabla describe las especificaciones técnicas y los parámetros de detección del monitor de gas Forsensal 4.

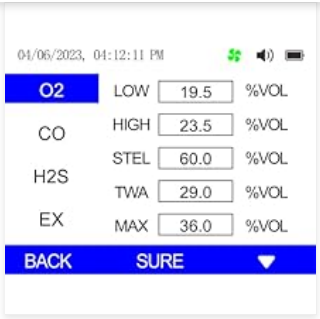

Figura 3.1: La interfaz de configuración de alarma, que permite personalizar los umbrales de alarma para cada gas.

Parámetros técnicos

Tipo de aire	Rango de medición	Punto de alarma bajo	Punto de alarma alto	Resolución
EX	(0~100)% LIE	20% LIE	50% LIE	1% LIE
H2S	(0~100) ppm	10 ppm	35 ppm	1 ppm
CO	(0~1000) ppm	50 ppm	150 ppm	1 ppm
O2	(0~30)%vol	19.5%vol	23.5%vol	0.1%vol

- **Power Source:** Battery Powered
- **Battery Type:** 3000mAh Lithium Ion (included)
- **Product Dimensions:** 2.36"D x 2.6"W x 5.75"H
- **Item Weight:** 0.7 Pounds (approx. 11.2 ounces)
- **Alarm:** Audible, Visual, and Vibration
- **Operating Humidity:** <95% RH (non-condensing)
- **Upper Temperature Rating:** 131 Degrees Fahrenheit (55 Degrees Celsius)
- **Sensor Type:** Electrochemical (for O2, H2S, CO), Catalytic Combustion (for EX)
- **Material:** Composite anti-slip rubber, engineering plastics
- **Response Time:** <30 seconds

4. Setup

4.1 Unpacking and Initial Inspection

Upon receiving your Forsensal 4 Gas Monitor, carefully unpack all components and inspect for any signs of damage. The package should include:

- Forsensal 4 Gas Monitor Multi Gas Detector
- Calibration Cap
- Calibration Certificate
- Hose

- USB-C Cable and Charger
- User Manual (this document)

4.2 Charging the Device

Before first use, fully charge the device. Connect the provided USB-C cable to the charging port on the device and plug the charger into a power outlet. The battery indicator on the LCD screen will show charging status. A full charge typically provides over 8 hours of continuous operation.

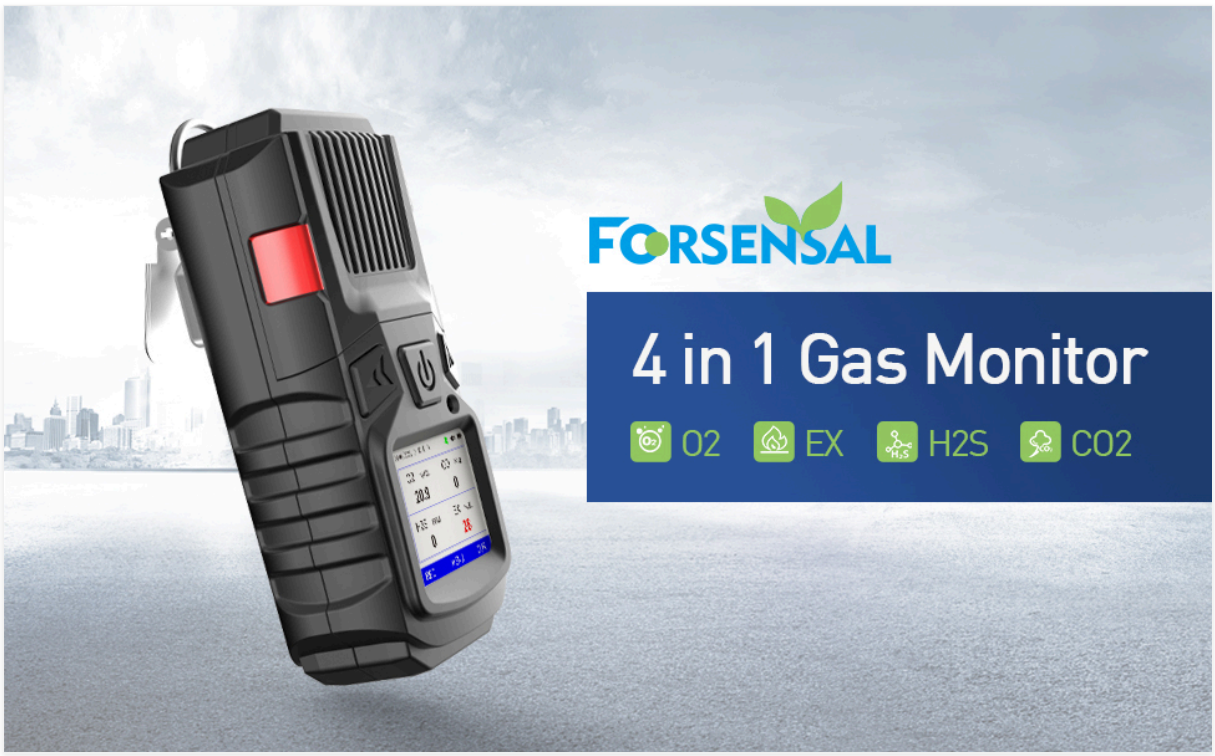

Figure 4.1: The Forsensal 4 Gas Monitor connected to its USB-C charger, highlighting its 3000mAh battery and fast charging capability for extended standby time.

4.3 Initial Power On and Calibration Certificate

The device comes pre-inspected and certified. Upon initial power-on, you may be prompted for a password to access certain settings or to acknowledge the calibration status. The initial password is **"4321"**. Refer to the included Calibration Certificate for details on the factory calibration.

4.4 Setting Date and Time

To ensure accurate data logging, set the local date and time on your device:

1. Press the **MENU** button to access the main menu.
2. Navigate to **Time Settings** using the arrow buttons.
3. Select **Set time** and adjust the date and time parameters as needed.
4. Confirm your settings by selecting **SURE**.

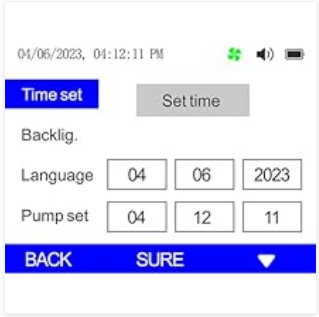

Figure 4.2: The 'Time set' screen, allowing users to configure the device's internal clock.

5. Operating Instructions

5.1 Power On/Off

- **To Power On:** Press and hold the power button (usually the central button) until the device powers on and the display illuminates.
- **To Power Off:** Press and hold the power button until the device prompts you to confirm shutdown, then confirm.

5.2 Basic Gas Detection

Once powered on, the device will automatically begin monitoring the four gases. The LCD screen will display the current concentration for EX, O2, H2S, and CO in real-time.

5.3 Alarm Settings

The device provides audible, visual (warning light), and vibration alarms when gas concentrations exceed or fall below set thresholds. You can customize these thresholds:

1. Press the **MENU** button.
2. Navigate to **Alarm Setting**.
3. Select the gas you wish to adjust (O2, CO, H2S, EX).
4. Adjust the **LOW** and **HIGH** alarm points using the arrow buttons. Some gases may also have STEL (Short-Term Exposure Limit) and TWA (Time-Weighted Average) settings.
5. Confirm your settings by selecting **SURE**.

When an alarm is triggered, the device will emit a beep, flash the warning light, and vibrate. You can choose to turn off the sound when the alarm goes off by pressing the MUTE button (refer to device specific button layout).

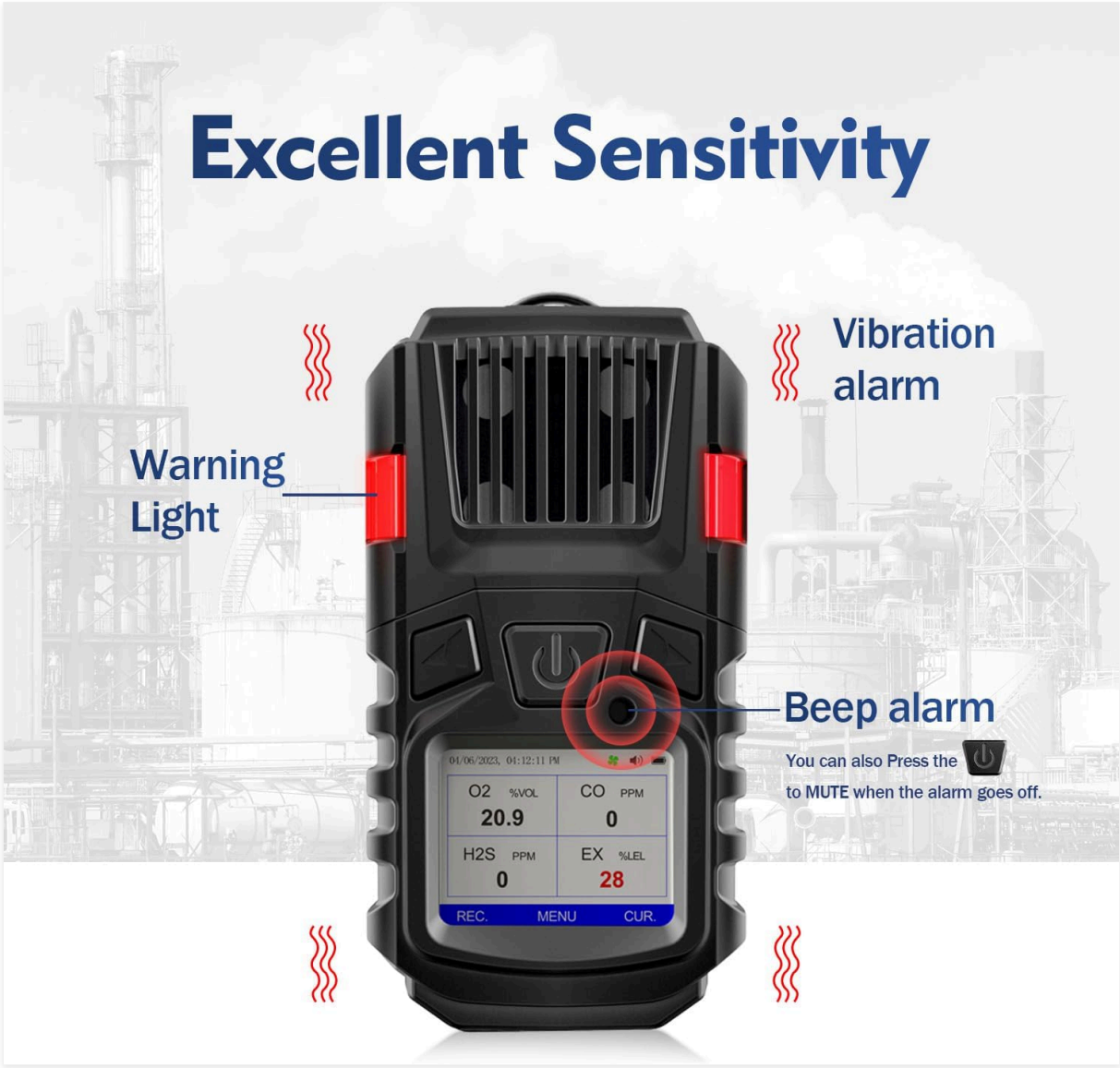

Figure 5.1: The alarm indicators on the Forsensal 4 Gas Monitor, showing the warning light, vibration, and audible beep, with an option to mute the sound.

5.4 Viewing Records and Curves

The device stores historical data, allowing you to review past gas concentrations:

1. From the main screen, select **REC.** (Records) or **CUR.** (Curve) using the corresponding soft keys or menu options.
2. **Records:** Displays a list of recorded alarm events or peak readings with timestamps.
3. **Curve:** Shows a graphical representation of gas concentration changes over time for a selected gas type (e.g., O2).

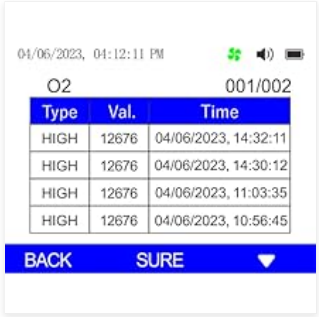

Figure 5.2: The 'View records' screen, showing a log of gas detection events.

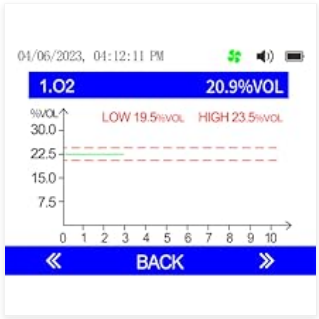

Figure 5.3: The 'View curve' screen, illustrating the historical trend of gas concentrations, such as O2 levels, relative to alarm thresholds.

5.5 Calibration Process

Regular calibration is crucial for maintaining the accuracy and reliability of your gas monitor. The calibration process typically involves exposing the sensors to known concentrations of calibration gases. Accessing the calibration menu requires a password, which is **"4321"**. It is recommended that calibration be performed by trained personnel or according to local safety regulations. Use the provided Calibration Cap and Hose for proper gas delivery during calibration.

6. Maintenance

6.1 Cleaning

Wipe the exterior of the device with a soft, damp cloth. Do not use abrasive cleaners or solvents, as these can damage the casing or sensors. Ensure that the sensor openings are free from dust and debris.

6.2 Battery Care

To maximize battery life and performance:

- Recharge the device regularly, especially after prolonged use.
- Avoid completely discharging the battery whenever possible.
- If storing the device for an extended period, charge it to approximately 50% and recharge every few months.

6.3 Sensor Longevity

The sensors have a limited lifespan. Exposure to high concentrations of target gases, extreme temperatures, or humidity can shorten their life. Regular calibration helps monitor sensor health. If a sensor consistently fails calibration or provides erratic readings, it may need replacement.

7. Troubleshooting

This section addresses common issues you might encounter with your gas monitor.

Problem	Possible Cause	Solution
Device does not power on	Low or depleted battery	Charge the device fully using the provided USB-C cable and charger.
Inaccurate or erratic gas readings	• Sensor contamination or blockage • Sensor nearing end of life • Needs calibration	• Ensure sensor openings are clear. • Perform a bump test or full calibration. • If issues persist, contact support for sensor replacement.

Problem	Possible Cause	Solution
Alarm triggers unexpectedly (e.g., O2 at 30%)	• Incorrect alarm settings • Sensor malfunction • Needs calibration	• Verify alarm thresholds in the settings menu. • Perform a bump test or full calibration. • If the issue persists, the sensor may be defective; contact support.
CO sensor not responding	• Sensor malfunction • Needs calibration	• Perform a bump test or full calibration with CO gas. • If the sensor still shows no response, it may be defective; contact support.
Cannot access calibration menu	Incorrect password	The default password is **"4321"**. Ensure it is entered correctly.

8. Safety Information

Please read and adhere to the following safety guidelines to ensure safe operation and prevent injury or damage to the device:

- Always perform a bump test before each use to verify sensor and alarm functionality.
- Regularly calibrate the device according to manufacturer recommendations or local regulations.
- Do not expose the device to extreme temperatures, direct sunlight, or corrosive chemicals.
- Ensure the device is fully charged before use in critical environments.
- Never attempt to open or repair the device yourself, as this may compromise its explosion-proof rating and void the warranty.
- This device is a safety tool; however, it should not replace proper safety procedures and personal protective equipment.
- Be aware of the specific hazards of the gases being monitored and follow all relevant safety protocols.

9. Warranty and Support

The Forsensal 4 Gas Monitor Multi Gas Detector comes with a **1-YEAR quality guarantee** from the date of purchase. This warranty covers defects in materials and workmanship under normal use.
For technical support, warranty claims, or any questions regarding the operation or maintenance of your device, please contact Forsensal customer service through the retailer where the product was purchased or visit the official Forsensal website for contact information. Please have your model number (FS11301) and purchase details ready when contacting support.