

DTS-B004(D) Portable Gas Detector

Operating Instruction



Henan DUOTESI Electronic Technology Co., LTD

Manual Version V1.0

Catalogue

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Thank you for using our products. Before you use our products, please be sure to read this manual first and use them according to the relevant operation instructions provided, so that you can fully enjoy the products and services provided by our company, and avoid unnecessary damage or other accidents.

I. Product Introduction

The Portable Voice-Guided Quadruple Gas Detector (hereinafter referred to as the detector) is a safety device capable of continuously monitoring leaked gas concentrations. Employing advanced integrated circuit technology, embedded microcomputer control, and premium imported gas sensors, it delivers exceptional sensitivity and outstanding repeatability. Featuring a dot-matrix LCD display with support for both Chinese and English interfaces alongside voice prompts in both languages, users can swiftly familiarise themselves with the product, ensuring straightforward operation and maintenance. The housing is constructed from high-strength engineering plastic, offering excellent shock resistance and durability. Its premium, robust design incorporates dustproof, waterproof, and explosion-proof capabilities.

This detector finds extensive application across industries requiring safety monitoring of toxic and hazardous substances, explosion prevention, and explosion-proof environments. These include petroleum, chemical processing, environmental protection, metallurgy, refining, gas supply, biochemical pharmaceuticals, agriculture, firefighting, and archaeology. Detection effectively

predicts hazardous gas concentrations, triggering alarms to safeguard personnel from life-threatening risks and prevent damage to production equipment.

This product is designed, manufactured and tested in compliance with the following national standards:

GB3836.1-2010 *Explosive Atmospheres - Part 1: Equipment - General Requirements*

GB3836.4-2010 *Explosive Atmospheres - Part 4: Equipment Protected by Intrinsic Safety 'i'*

GB15322.3-2003 *Portable Detectors for Combustible Gases — Part 3: Portable Detectors for Combustible Gases with a Measuring Range of (0-100) % LEL*

JJG693-2011 *Calibration Procedure for Combustible Gas Detectors and Alarms*

JJG365-2008 *Calibration Procedure for Electrochemical Oxygen Detectors*

JJG695-2003 *Calibration Procedure for Hydrogen Sulphide Gas Detectors*

*JJG915-2008 Calibration Procedure for Carbon Monoxide
Detectors and Alarms*

*JJG695-2003 Calibration Procedure for Hydrogen Sulphide
Gas Detectors*

II. Functional features

2.1 Power-on self-test function, battery low voltage prompt, high-definition LCD display, two levels of triple alarm (sound, light, vibration)

2.2 The advanced ultra-low power microcontroller is used with built-in temperature compensation and automatic calibration, which has the characteristics of high precision, good linearity and anti-interference.

III. Technical characteristics

Conventional gas detection range

Gas types	Range	Low alarm	High alarm	Resolution
EX	0-100) %LEL	20%LEL	50%LEL	1%LEL
H2S	(0-100)PPM	10PPM	20PPM	1PPM
CO	(0-1000)PPM	50PPM	200PPM	1PPM
O2	(0-30)%VOL	19.5%VOL	23.5%VOL	0.1%VOL

For other combination gases, please contact the company

Display error:	$\leq \pm 5\%FS$
Response time :	T<30S
Method of instruction:	LCD displays real-time data and system status, with visual alerts, vibration feedback, and recorded voice prompts (in both Chinese and English).
Working environment	Temperature: -20°C to 50°C; Humidity: <95% RH (condensation-free)
Operating voltage	DC3.7V (Lithium battery capacity 2000mAh)
Charging time:	4h-6h
Standby mode:	It can be used continuously for more than 10 hours on full charge
Sensor life:	2 years

Protection rating:	Ip65
External dimensions:	117.5mm×63mm×30mm
Weight :	175.7g

IV. Structure and function

4.1 Appearance of multi-parameter gas detector



4.2 Appearance of single gas detector



4.3 Button functions

When using the function keys, the function prompt text will appear below the display screen for easy operation.

Key	Function Declaration
	Power on key: Turn off the power on by pressing for 3 seconds Power off key: gas detection interface, press for 3 seconds to turn off Confirm key: Enter menu or confirm current value
	Up key: Flip up the menu directory Add key: The current operation value increases Power key: Check the status. Press to display the power, monitored time and current date and time. Press again to return to the monitoring interface
	Down key: Flip down menu directory Reduce key: Current operation value decreases Mute key: in the alarm state, press to eliminate the sound and light alarm, vibration remains.

V. The menu of operations

5.1 Description of the operation interface

The following figure shows only four conventional gases:

EX	O2
0%VOL	20.9%VOL
H2S	CO
0PPM	0PPM

5.2 Instrument system function menu description

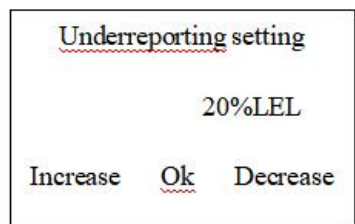
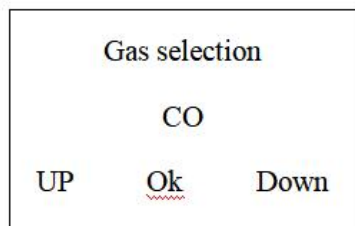
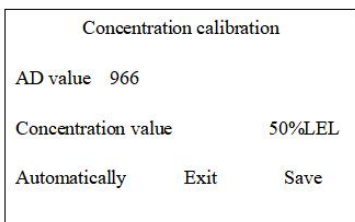
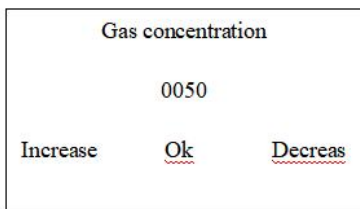
Press the boot  key, enter the correct password to enter the menu

Menu Function List			
1	Alarm records	2	Zero setting
3	Zero point tweaks	4	Gas calibration
5	Low-reporting settings	6	High profile setting
7	Date	8	Language settings
9	Exit menu		

5.3 Menu operations

Display screen parameters	Detailed operation instructions introduction
EX 0%VOL H2S 0PPM O2 20.9%VOL CO 0PPM	Power on: press  and hold for 3 seconds to enter the startup interface; display self-test information, channel information, and normal functions, then enter the normal detection state
	Shut down: In the normal detection  state, press long to enter the shutdown interface, press long for 3S to shut down Note: Due to the key multiplexing function, you can only turn off the power after holding down for more than 3S in the normal display interface
Password verification 0000 Increase OK Decrease	Password authentication: Press  the shortcut to enter the password   authentication  interface as shown in Figure 1. Press or adjust the value size, and the key will shift. After the password is correct, you can enter the menu operation

<table><tr><td>EX</td><td>0</td><td>0</td></tr><tr><td>O2</td><td>0</td><td>0</td></tr><tr><td>H2S</td><td>0</td><td>0</td></tr><tr><td>CO</td><td>0</td><td>0</td></tr></table>	EX	0	0	O2	0	0	H2S	0	0	CO	0	0	1. Alarm Record: After entering the  menu, press the short key  to view the alarm record, press the short key to enter the option menu to delete the alarm record						
EX	0	0																	
O2	0	0																	
H2S	0	0																	
CO	0	0																	
<table><tr><td colspan="3">Zero point setting</td></tr><tr><td colspan="3">AD value</td></tr><tr><td>Saved</td><td colspan="2">Exit</td></tr></table>	Zero point setting			AD value			Saved	Exit		2. Zero setting: Enter the password, select the gas, enter the zero  setting interface, short the button, save the zero; Warning: This operation should be completed in clean air.									
Zero point setting																			
AD value																			
Saved	Exit																		
<table><tr><td colspan="3">Gas selection</td></tr><tr><td colspan="3">CO</td></tr><tr><td>UP</td><td>Ok</td><td>Down</td></tr></table> <table><tr><td colspan="3">Fine-tuning to zero</td></tr><tr><td colspan="3">-1</td></tr><tr><td>Increase</td><td>Ok</td><td>Decrease</td></tr></table>	Gas selection			CO			UP	 Ok	Down	Fine-tuning to zero			-1			Increase	 Ok	Decrease	3.Zero point tweaks : Select gas short  press to confirm   , short  press or adjust the value, short press to confirm and save.
Gas selection																			
CO																			
UP	 Ok	Down																	
Fine-tuning to zero																			
-1																			
Increase	 Ok	Decrease																	



4. Gas calibration:

After entering the menu, select gas, display the current gas concentration , short press or can modify the calibration concentration, short press to confirm, display AD value interface, introduce standard concentration of gas, wait for the value to stabilize, short press to save the calibration result;

Warning: It has been calibrated before leaving the factory. Users should operate it carefully.

5. Low reporting Settings:

After entering the low report setting, first select the gas. After short pressing to enter the selected gas, short press or key to adjust the low report value; short press to confirm, save the low report setting or exit.

Gas selection CO UP <u>Ok</u> Down	6. Overreporting Settings: After entering the high alarm setting, first  select the gas. After short  pressing  to enter the selected  gas, short press or key to adjust the high alarm value; short press to confirm, save the high alarm setting or exit.
Date and Time 2025-01-01 01:07 Increase OK decrease	7. Date: Enter the year, month, day, hour, minute, and second  in order. Press short to save the current date and time.
Language selection > Chinese English Select Save	8. Language Settings: Enter the menu, short  press to open  the language Settings , short press to select the language, short press to save.
	8. Exit menu: Exit the menu to return to the monitoring status

VI. Notes

- ◆ Prevent the machine from falling from a high place or being subjected to violent vibration.
- ◆ In the presence of high concentration of gas, the detector may not work properly.
- ◆ Please operate and use the instrument strictly in accordance with the instructions, otherwise it may lead to inaccurate test results or damage the detector.
- ◆ This product shall not be stored or used in an environment containing corrosive substances (such as high concentration of chlorine, etc.), nor shall it be used or stored in other harsh environments, including high or low temperature, high humidity, electromagnetic field and strong sunlight.
- ◆ If there is dirt on the surface of the detector after long-term use, please gently wipe it with a clean soft cloth dipped in water. Do not use corrosive solvents and hard objects to wipe the surface of the detector, otherwise it may cause scratches or damage to the surface of the detector.
- ◆ In order to ensure the detection accuracy, the detector should be calibrated regularly, and the verification period should not exceed one year.

- ◆ Please remove the lithium battery and sensor of the waste portable gas detector and send it to the designated place or return it to our company. Do not throw it into the garbage can at will.
- ◆ Any fault beyond the description of this manual should or will cause. Please contact our company for solution.
- ◆ In explosive gas environments, batteries cannot be removed or replaced and batteries cannot be charged. In explosive gas environments, non-explosion-proof peripherals and plug-in devices cannot be used and sensors cannot be replaced.
- ◆ This product has obtained the explosion-proof certification, and users are not allowed to replace or change the components or structure that affect the explosion-proof performance at will.

VII.Common faults and troubleshooting

Fault phenomenon	Possible fault causes	Process mode
Can not boot	Voltage below level	Please recharge in time
	System halted	Contact the dealer or manufacturer for repair
	Fault	Contact the dealer or manufacturer for repair
No reaction to the gas being tested	Fault	Contact the dealer or manufacturer for repair
Display is not accurate	Sensors expired	Contact your dealer or manufacturer Change the sensor
	Not calibrated for a long time	Calibrate in time
The time is displayed incorrectly	The battery is completely dead	Charge and reset the time promptly
	Strong electromagnetic	Reset the time

Fault phenomenon	Possible fault causes	Process mode
	interference	
The zero point was not set	The sensor drifts too much	Calibrate or replace the sensor in time
The interface of the instrument is not zero during normal detection (except oxygen)	Sensor drift	Perform zero calibration
When the instrument normal detection interface shows full scale	Sensor malfunction	Contact your dealer or manufacturer Change the sensor

- ◆ If there is oil on the surface of this product, please use a clean soft cloth, dipped in water to gently wipe, do not use corrosive solvent or hard object to wipe the surface of this machine, otherwise it may cause damage to this machine.

VIII. After-sales services

- ◆ The product host is free of charge for 12 months from the date of purchase
- ◆ If the product is out of warranty period, we will charge maintenance

fee as appropriate

- ◆ Damage caused by human damage or improper use is not covered by the warranty
- ◆ Do not enjoy free maintenance if you disassemble this product without permission of our company

IX. Accessories

The supporting detector provides one packing box, one portable gas detector, a set of charger, one manual, one certificate of conformity and one warranty card.

X.Appendix-Sensor selection table

Detected Gas	Detection Range	Optional Range	Resolution	AlarmPoint
combustible gas (Ex)	0-100%LEL	0-100%	1%LEL	Low: 20 Tall: 50
Oxygen (O2)	0-30%VOL	0-30%VOL	0.1%VOL	Low: 19.5% High: 25.3%VOL
Hydrogen sulfide (H2S)	0-100PPM	0-50/200/1000PPM	1PPM	Low: 10 High: 35PPM
carbon monoxide (CO)	0-1000PPM	0-1000/2000/5000PPM	1PPM	Low: 50 High: 150PPM
nitric oxide (NO)	0-250PPM	0-250/500/1000PPM	1PPM	Low: 50 High: 150PPM
Nitrogen dioxide (NO2)	0-20PPM	0-20/100/1000PPM	0.1/1PPM	Low: 5 High: 10PPM
Sulfur dioxide (SO2)	0-20PPM	0-20/100/1000PPM	0.1/1PPM	Low: 5 High: 10PPM
Chlorine gas (CL2)	0-10PPM	0-10/100/1000PPM	0.1/1PPM	Low: 5 High: 10PPM
Hydrogen (H2)	0-1000PPM	0-1000/5000PPM	1ppm	Low: 50 High: 150PPM
Ammonia gas (NH3)	0-100ppm	0-100/1000PPM	1ppm	Low: 20 High: 50PPM
chlorine hydride (HCL)	0-20PPM	0-20/100/1000PPM	0.1/1PPM	Low: 5 High: 10PPM
hydrogen cyanide	0-10PPM	0-10/100PPM	0.1/1PPM	Low: 10 High:

Detected Gas	Detection Range	Optional Range	Resolution	AlarmPoint
(HCN)				20PPM
Ozone (O3)	0-10PPM	0-10/100PPM	0.1/1PPM	Low: 2 High: 5PPM
Formaldehyde (CH2O)	0-100PPM	0-10/100PPM	0.1/1PPM	Low: 5 High: 10PPM
hydrogen fluoride (HF)	0-10PPM	0-10/100PPM	0.1/1PPM	Low: 2 High: 5PPM
Xylene/Toluene	0-100PPM	0-100/1000PPM	1PPM	Low: 5 High: 10PPM

Note: If the gas is not listed, contact the manufacturer

Appendix 2

Maintenance and repair records				
Time	Maintenance and repair content	Maintenance and repair personnel	User acknowledge	Note

Copyright Notice

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