

PGAS-20 Series

Pump-priming Portable Gas Detector Operation Manual



(Please read this introduction carefully before use and installation)

(Rev 1.0)

HENAN ZHIYI SYSTEM ENGINEERING CO., LTD.

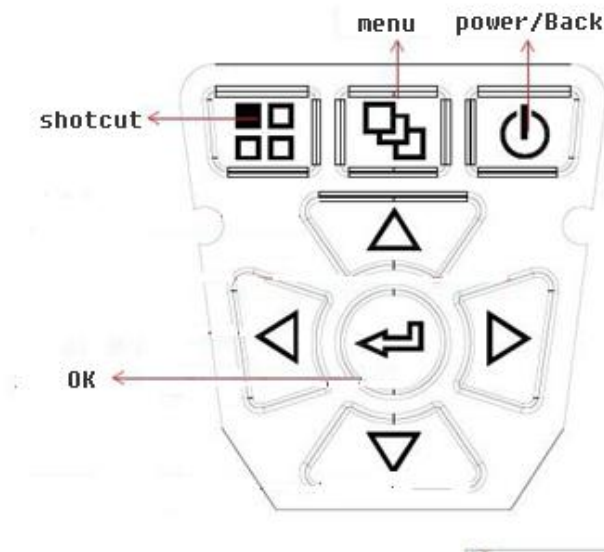
Precautions

Since some steps or improper operation, and ignore certain specific conditions may impair the performance of the instrument, for the safety and measure performance of the instrument, please strictly refer to the following instructions to operate and measurements.

- 1、 Before use this instrument, please read carefully and total understand the content of this manual, strictly follow every stipulate of this manual.
- 2、 Gas detector must be test and maintain by trained technical every three to six month, and write record. Only use Globeinstrument Instrument approved accessory when maintain.
- 3、 The first use instrument must be charged fully, and by matched dedicated charger.
- 4、 Since this instrument have build-in high capacity battery, so please don't test it in high temperature environment.
- 5、 Please test performance before use it, if the instrument can not pass the performance test, can recalibration or restore factory calibration.
- 6、 The vent of sensor must keep clean, Sensor vent blockage or dirt of water network cause reading lower than the actual concentration.
- 7、 The change of atmosphere pressure may cause the reading suddenly change.
- 8、 When detect combustible gas, the concentration of oxygen in air will affect the concentration of combustible gas.
- 9、 This instrument operation temperature is -20-70°, but the different sensor may cause operation temperature range reduce.
- 10、 If there's some unusual condition when use it, please contact our technical support 86-0371-68988008.

I Product Introduction

PGAS-20 handheld pump gas detector is a alarm instrument, can continuous detect combustible gases, oxygen, or toxic gas concentrations and limit of the operating environment, is essential protective equipment for the production of industrial safety. 3.5-inch TFT LCD display, real-time observation of the target gas concentration, the concentration values color will change when the high and lower two level alarm . It applies to toxic gas leak disaster, underground pipe or mines, industrial gas detection, power, petrochemicals, medical equipment, cold storage and furniture workplace environment and other places, can effectively ensure staff safety from abuse, production equipment from damage. With built-in air pump sampling methods, fast response, low noise.




II Function Feature

Audio alarm	<p>For audio, prompt; there are two different frequency and duration for concentration alarms.</p> <p>Lower concentration: 2HZ</p> <p>High concentration: 4HZ</p> <p>Operate failure: 4HZ, ring 2</p> <p>Operate success: 1HZ, ring 1</p> <p>Status indicator: 4HZ, ring every 5 minutes</p> <p>In addition to the oxygen sensor, higher than the low concentration and less than high concentration produce the low concentration alarm, higher than the high concentration produce high concentration alarm.</p>
Vision alarm	<p>If there's lower concentration alarm in test status, the number of indicate concentration value display yellow, if have high concentration alarm will display red typeface.</p> <p>the icon in the status bar also displays alarm status.</p>
USB communication	<p>Instrument have USB communication port, will communicate with computer directly with 9600 byte speed.</p>
Color LCD display	<p>Equipped with a full-color 3.5-inch TFT screen, numeric display and graphics can be displayed simultaneously, so that the test is very intuitive.</p>
Test record	<p>Instrument uses a high-capacity FLASH memory chips, will be able to store a month (in 30 seconds recording) measurement data, and you can view the data with the instrument, you can use a computer to view the data.</p>
Alarm record	<p>Instrument will record recently 4 times alarm time and type.</p>
Calibrate record	<p>Instrument will record recently 4 times calibrate time and calibrate</p>

	range size.
Function menu	calibrate-zero calibrate-range calibrate-restore factory-ADC value-calibrate period alarm-lower value alarm-high value alarm-TWA-STEL-alarm mode Parameter set-gas type-decimal-gas range-gas unit-CFC module (Only when the gas type is TVOC) System set-address-back light brightness-back light brightness-back light time-pump transfer set- turn off time-store alternation-language set Record check-history record-alarm record-calibrate record delete record-store capacity Time set-year-month-date-hour -minute-second

Charge

This Instrument use lithium battery supply power, since no full charge when out from factory, so need fully charge before use it, follow below steps

1. Plug USB cable
2. In start status see if the battery status icon is charge icon. ; If in turn off status plug USB, then charge icon will illumine.
3. It will take about 8 hours to charge full.

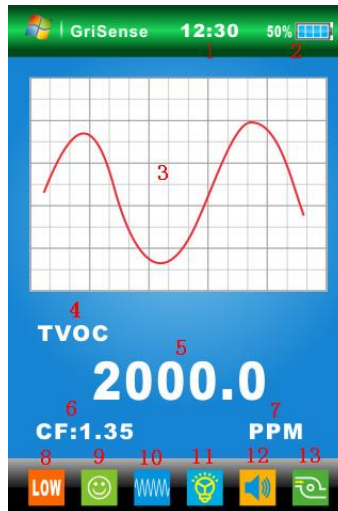
In the top bar can see the icon of different battery ,including percentage of remain battery.



Audio will alarm when instrument battery is less then 2%, will turn off when 0%.

III Basic operation

Instrument turn on interface: instrument will read instrument parameter when turn on, if inner component operate normal, if the battery is normal. Turn off key will shield when turn on.Take the VOC detector interface as the example.



Turn on interface

Main interface









1	Time	8	High lower value alarm
2	The battery area	9	TWA,STEL alarm
3	Curve display area	10	Fault ,error code
4	Gas type	11	Back light grade
5	Measure concentration	12	Alarm mode
6	CFC modulus	13	Pump speed
7	Gas unit		

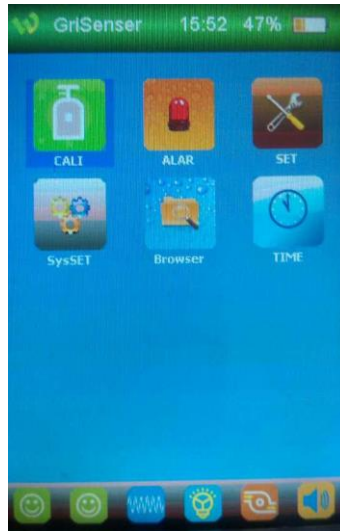
Instrument in the normal state can not only display the concentration with digital but also display the concentration with curve. in the top bar shows the current real time, the current power, In the bottom bar has high and low values alarm icon, TWA, STEL icon, fault, error icon, backlight level icon, alarm mode icon, pump speed icon. These make the user real-time observe the running status of the instrument.

Please know the function of every key before use it

	Long press power turn on or turn off, short press is return key function.
	Menu key: in test interface press menu key into menu set interface.
	Shortcut key: in test interface, press shortcut key into shortcut menu set.
	OK key
	Up key: add function and up move function





▽	Down key: reduce and move down function
◀	Left key: shift function
▶	Right key: shift function

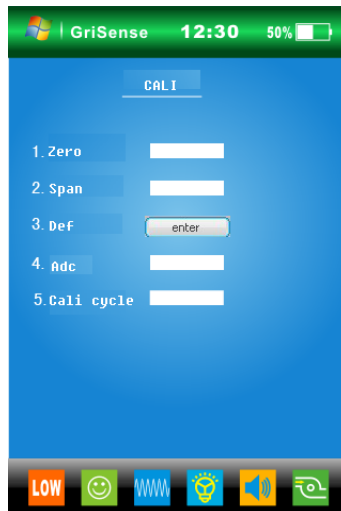
In main menu press  key will into menu main interface, alarm, store record, turn off function will be limited. Before into menu key except  shortcut menu key and  power key, other keys will be shielded and have no function, after go to menu key can press , , ,  into sub menu selection, after selected, press  into operate.












Instrument calibration:

Non-professionals misuse, if misuse may cause tests result not precision; if calibration errors, please re-calibration, or restore the factory default, if still not solved, please return to the factory






When select instrument calibration press , can do zero calibration, range calibration, restore factory default calibration, ADC value, calibrate interval set option, operating person can press ,  key to select sub menu, after selected, press,  into operate.







Zero calibration: after selected zero calibration, press  confirmation key to calibrate, also can press  return key cancel this zero calibration.;

Range calibration: after selected range calibration, press  confirmation key to calibrate, at this time can press ,  key to add or reduce; press ,  key to shift to numbers set, after set, press  confirmation key to finished calibration or press  return key to cancel this calibration;

Restore factory calibration : after selected restore factory calibration press  confirmation key enter, or press  return key cancel this operate.;

Calibrate interval: this operation is to note every types of sensor calibration period, normally, according to factory identification is ok., or press  confirmation key to modify, at this time press ,  key to add or reduce; when finished set, press  confirmation key to finish operation or press  return key to cancel this operation;

Alarm set

When select alarm set, press  to enter, can set lower value alarm, high value alarm, TWA, STEL alarm, alarm sound set, operating person can press ,  key to select sub menu, then press  to operate.



Lower value alarm set: after selected lower value alarm press confirmation key to set, at this time can press , key to add or reduce; press , key to shift to number set, after set press confirmation key to finish operation or press return key to cancel this operation;

High value alarm set: after select high value alarm, press confirmation key to enter set, at this time, can press , key to add or reduce; press , key to shift to number set, after set press confirmation key to finish the operation or press return key to cancel this operation;

TWA alarm set: after select TWA alarm, press confirmation key to enter set, at this item, can press , key to add or reduce; press , key to shift to number set, after set press confirmation key to finish operation or press return key to cancel this operation;

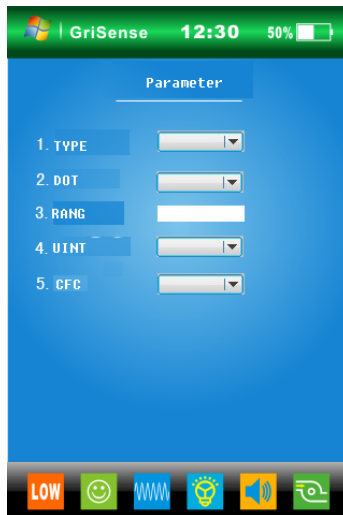
【Note: first set high value alarm, then set lower value alarm,. Otherwise lower value alarm can't be set】

STEL alarm set: after selected STEL alarm press confirmation key to enter set, at this time can press , key to add or reduce; press , key to shift to number set, after set press confirmation key to finish operation or press return key to cancel this operation;

Alarm sound set: after selected sound set, then press confirmation key to enter set, at this time to press , confirmation to select (ON) or (OFF), after set to press confirmation key to finish operation or press return key to cancel this operation;

Parameter set

After selected parameter set, then press to enter, can set gas type, decimal, gas range, gas unit.CFC(only when gas type is TVOC can set) operation person can press , key to select sub menu, after selected to press to enter operation.



Gas type set: after selected gas type, then press confirmation key to enter set, at this time, can press Δ , ∇ key to add or reduce; after set, press confirmation key to finish operation or press return key to cancel this operation;








Decimal set: after select decimal, then press confirmation key to enter set, at this time, can press Δ , ∇ key to add or reduce; after set, then press confirmation key to finish operation or press return key to cancel this operation;






Unit set: after selected gas unit, then press confirmation key to enter set, at this time can press Δ , ∇ key to add or reduce; after set, then press confirmation key to finish operation or press return key to cancel this operation;






System set






After selected system set, then press to enter, can set address, backlight brightness, backlight time, pump speed, turn off set, store time, language set. Operating person can press Δ , ∇ key to select sub menu, after select, then press to enter operate.













Address setting: after selected address, then press  confirmation key to enter set, at this time, can press ,  key to add or reduce; press ,  key to shift to number set, after set, then press  confirmation key to finish operation or press  return key to cancel this operation; (address size is (1-255))






Backlight brightness setting : after selected backlight brightness, then press  confirmation key to enter set, at this time can press ,  key to select (backlight only two grade); after set. Press  confirmation key to finish operation or press  return key to cancel this operation.

Backlight time setting: after selected backlight time, then press  confirmation key to enter setting, at this time, can press ,  key to select (backlight time unit is seconds); after set, press  confirmation key to finish operation or press  return key to cancel this operation.





Pump speed setting after selected pump speed, press  confirmation key to enter setting, at this time, press ,  key to select (pump speed only have three grade); after setting, press  confirmation key to finish operation or press  return key to cancel this operation.

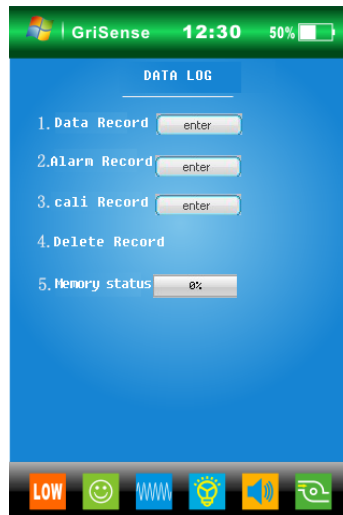
Off time setting: after selected off time, press  confirmation key to enter setting, at this time, can press ,  key to select (off time unit is minutes); after set, press  confirmation key to finish operation or press  return key to cancel this operation.

Store time setting: after selected store time, press  confirmation key to enter setting, at this time, can press ,  key to select (store time unit is second); after set, press  confirmation key to finish operation or press  return key to cancel this operation.

Language setting: after selected language, press  confirmation key to enter setting, at this time, can press ,  key to select. after set, press  confirmation key to finish operation or press  return key to cancel this operation.

Data Log

When selected data log, then press  to enter, can check data record, alarm record, calibration record, delete record, store capacity. Operation person can press ,  key to select sub menu, then press  enter operating check.



Data record check : select history, then press confirmation key to enter to check, at this item, can press , key to turn page to check every page twenty record;

Alarm record check: after selected alarm record, press confirmation key to enter to check, alarm record only keep the latest four alarm record..

Calibration record check: after selected calibration record press confirmation key to enter to check, alarm record only keep the latest four calibration record.






Delete record check: after select delete record, press confirmation key to enter to delete, also can press return key to cancel this operation;






Memory status check: store capacity only check present the percent of store capacity in total capacity.






Time & data













After selected time setting, press to enter, can operate year, month, date, hour, minute, second. Operating person can press , key to select sub menu, then press enter to operate.






Year setting: after selected year setting, then press  confirmation key to set, at this time, can press ,  key to select; after setting, press  confirmation key to finish operation or press  return key cancel this operation;

Month setting after select month, press  confirmation key enter setting, at this time, press ,  key to select; after setting press  confirmation key to finish operation or press  return key cancel this operation;

Day setting: after selected date setting, press  confirmation key to enter setting, at this time ,can press ,  key to select; after setting, press  confirmation key to finish operation or press  return key to cancel this operation;

Time setting: after selected time setting, press  confirmation key to enter setting, then press ,  key to select; after setting, press  confirmation key to finish operation or press  return key to cancel this operation;

Minute setting: after selected minute setting, press  confirmation key to enter setting, then press ,  key to select; after setting, press  confirmation key to finish operation or press  return key to cancel operation;

Second setting: selected second setting, press  confirmation key to enter setting, then press ,  key to select; after setting, press  confirmation key to finish operation or press  return key to cancel operation;

Appendix I: Fault Code Meaning

(Fault) type

Fault code	Fault reason	Introduction	Step
F1	The micro-processor fault	MCU running unusual	Re-start, still unusual, then return to factory to test
F2	Store fault	Store can't storage	Return factory to test
F3	Data invalid	Date in storage is invalid	Return factory to test
F4	Analog circuit unusual	ADC input voltage over normal range	Return factory to test
F5	Out IC fault	Can't read component (including AD、DA、digit potential device、clock、digit humiture sensor etc)	Return factory to test
F6	Probe abnormal	Can't read probe data or probe return abnormal report	Return factory to test
F7	Communication abnormal	Communication with the host computer (like S485、wireless、CAN) abnormal	Check wire road and configure, still abnormal, then return factory to test
F8	Power voltage abnormal	Power voltage too high, too lower or too volatile	Change power supply,still abnormal, then return

			factory to test
F9	Gas pump abnormal	Open circuit or jam	Check or clear gas pump

Warning type

Warn code	Warn reason	measure
D1	Calibration interval expire	Re-calibration
D2	Calibration invalid or no calibration	Re-calibration
D3	Sensor life over	Change new sensor
D4	Measure gas overload	Change large range sensor
D5	Humiture over allowed range	Stop working
D6	Clock set invalid	Re-set
D7	Battery no power or power too lowe	Change battery
D8	Reserved	
D9	Reserved	

Operation error type

Error code	Error reason	Introduction	Measure
E1	Input A1 value error	Input A1 value \geq A2 value	A1 value
E2	Input A2 value error	Input A2 value $>$ range value or \leq A1 value	Input A2 value again
E3	Input range value error	Input range value is 0 or $>$ 50000	Re-input range value
E4	Zero calibration error	Calibration ADC value $\geq 20\%$ max ADC value	Fill N2 zero calibration
E5	Range calibration error	Calibration ADC value $\leq 25\%$ max ADC value	Change high concentration standard gas or sensor
		Input calibration point $\leq 25\%$ range or $\geq 120\%$ range	Re-input calibration value
E6	Input TWA error	Input TWA value $>$ STEL value	Re-input TWA value
E7	Input STEL error	Input STEL value $<$ TWA value	Re-input TWA value
E8	Reserved		
E9	Reserved		

Alarm Tips

Alarm type	Display	Sound, light, vibration	introduction
Lower alarm	Low or A1	Sound lith vibrate , 1HZ(interval 0.5s)continue	
High alarm	High or A2	Sound light vibrate , 2HZ(interval 0.25s)continue	
TWA	TWA	Sound and light, every 10 second one time, every two short (two 0.25s interval 0.25s)	
STEL	STEL	Sound light, every 10 second one time, every time three short (three 0.25s interval two 0.25s)	
warn	D1-D9	sound, light every 20 second one time, every time two long (two 0.5s interval 0.25s),	
fault	F1-F9	sound, every five second one time, every time three long (three 0.5s interval two 0.25s); light always on	
error	E1-E9	sound, every time long ring 0.5 second	
Lower voltage	Low Voltage	Sound , 30 second ring one time, every time two short (two 0.25s interval 5s)	Auto enter to save power mode
Auto off	Auto OFF	Sound light, every two second one time, every time 0.5 second, total five times	
Normal off	Power OFF	Sound light , one time last two second	
Operation done	OK	Sound light , one time last one second	Save successfully
Operation failed	FAIL	Sound light, two times short 0.25 second, interval 0.25 second	
button	no	sound, one time short 0.25 second	

Appendix II Common problems and solutions

1	Can not boot	No battery	Express Mail request battery can not be installed in the instrument, so the battery is removed in the box, install themselves.
		No electricity	Charger to fully charge and then use the detector is recommended for the first time fully charged before use.
2	In the air, the detector shows the concentration exceeds 1PPM, and instability.	Possible sensor loose, poor contact. Causes the internal void of the inputs of the circuit, voltage drift.	Make sure the connection is normal between the sensor and the circuit board
		Around the ventilation or air-conditioning ventilation system is not closed	Please turn off
		Surrounded by high-power interference sources	Keep away from sources of interference instrument
3	Detection of gas no reaction	Not the end of the warm-up	Preheat after the end of the measurement
		Sensor is bad connection	Reconnect sensor
		Sensor failure or circuit failure	Contact our Repairs
4	Exceeds the set alarm value No sound	Check whether the alarm setting mode select full	Check the alarm settings in the sound settings whether the to "ON"
		The buzzer does not work properly	Returned for repair or replacement required
5	Automatic shutdown	Low battery	Please charge re-use, power is less than 2% of the audio alarm, automatic shutdown reaches 0%
		System settings off time is set too short	Prolonged shutdown time or set to automatically shut down 0m
6	Reading instability	Polarization not enough time	Continued polarization
		Sensor failure	Replace sensor
		Circuit fault	Back to the factory for repair
		Surrounded by sources of interference, such as high-power jamming equipment	Move the instrument without interference and keep the area free from vibration
		Airflow around the probe, pressure instability	Holding steady flow and pressure
		AC interference	The instrument power supply circuit access instrumentation, and keep well grounded
		Clogged with dust or probe into the gas chamber	Suction tube or chamber cleaning up dust inside (the latter requires Depot)

NOTE: After equipment failure, please contact our service personnel, and then decide whether to return for repair.

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