Gas Measurement Instruments Ltd

Gasurveyor 500
User Handbook

Issue 8

24/09/15

Part Number: 42153

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Instrument Service / Repair contact details are also provided inside the back cover of this handbook.

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LIABILITY

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MODIFICATION NOTICES

GMI aim to notify customers of relevant changes in the product operation and maintain this manual up to date. In view of the policy of continuous product improvement there may be operational differences between the latest product and this manual.

This Handbook is an important part of the Gasurveyor 500 product. Please note the following points:

- It should be kept with the instrument for the life of the product.
- Amendments should be attached.
- This Handbook should be passed on to any subsequent owner/user of the instrument.
- Although every care is taken in the preparation of this Handbook it does not constitute a specification for the instrument.

SOFTWARE

Software supplied on EPROM or similar device for use in a particular product, may only be used in that product and may not be copied without the written permission of Gas Measurement Instruments Ltd. Reproduction or disassembly of such embodied programmes or algorithms is prohibited. Ownership of such software is not transferable and GMI Ltd does not warrant that the operation of the software will be error free or that the software will meet the customer's requirements.

DISPOSAL ADVICE

When no longer in use, dispose of the instrument carefully and with respect for the environment. GMI will dispose of the instrument without charge if returned to the factory.

SAFETY

- The instrument must be regularly serviced and calibrated by fully trained personnel in a safe area.
- **Batteries:** Alkaline batteries or *Rechargeable battery pack must be exchanged (*and recharged) in a safe area and fitted correctly before use.
  Never use damaged batteries or expose to extreme heat.
  See Section 4 : OPERATOR MAINTENANCE.
- Only GMI replacement parts should be used.
- If the instrument detects gas, follow your own organisation's procedures and operational guidelines.
- The combustion chamber is a flameproof assembly and must not be opened in the presence of a flammable atmosphere.
- Gasurveyor 500 series instruments are certified as EEx iad IIC T4

  ($-20^{o}C \leq Tamb \leq 50^{o}C$). BAS01ATEX2292  II 2 G.

   UL Class 1 Groups A, B, C and D
- This equipment is designed and manufactured to protect against other hazards as defined in paragraph 1.2.7 of Annex II of the ATEX Directive 94/9/EC.

Any right of claim relating to product liability or consequential damage to any third party against GMI is removed if the warnings are not observed.

AREAS OF USE

Exposure to certain chemicals can result in a loss of sensitivity of the flammable sensor. Where such environments are known or suspected it is recommended that more frequent response checks are carried out. The chemical compounds that can cause loss of sensitivity include Silicones, Lead, Halogens and Sulphur. Do not use instrument in potentially hazardous atmospheres containing greater than 21% Oxygen. The enclosure material is polypropylene and must not be exposed to environments which are liable to result in mechanical or thermal degradation or to damage caused by contact with aggressive substances. Additional protection may be required in environments where the instrument enclosure is liable to damage.

STORAGE, HANDLING AND TRANSIT

The batteries in the rechargeable pack contain considerable energy and care should be taken in their handling and disposal. Battery packs should be removed if the instrument is stored for longer than 3 months. The instrument is designed to handle harsh environments. The sensing elements are sealed to IP54 and the rest of the instrument to IP64. If not subject to misuse or malicious damage, the instrument will provide many years of reliable service. The instrument contains electrochemical sensors with a life of 2 years. Under conditions of prolonged storage the sensors should be removed. The sensor contains potentially corrosive liquid and care should be taken when handling or disposing of the sensor, particularly when a leak is suspected.

DECLARATION OF CONFORMITY

Certificate No. 000001

GASURVEYOR 500 SERIES / OXYGAS 500 SERIES

This declaration confirms that the above product, manufactured by

Gas Measurement Instruments Ltd
Inchinnan Business Park
Renfrew
Scotland
PA4 9RG

conforms to all the relevant Standards and Directives and is manufactured in accordance with Standards and Quality Assurance requirements.

The product is in compliance with the following Directives

ATEX	94/9/EC
MED	96/98/EC
EMC	93/68/EEC

The product has been tested to th

ATEX/IECEx	IEC 60079- IEC 60529:
EMC	EN 50270:1
MED	EN 60945:2 EN 50104:2 IEC 60079-

IEC 60533:1999,
1979-0:2007,
IB

The product complies with the following

ATEX	BASD1ATEX2292
IECEx	IECEx SIR 06.0015
UL	Class I, Groups A, B, C and D
CSA	C

Combustible Gas Detector Standard reference (°C22.2 No 152) for Combustible Gas Detectors
Hazardous Location Designation (U.S. for CL. I, Div. 1, Groups A, B, C and D T4

The quality is controlled under an ISO9001:2008 quality system, BS EN 13980 and has product quality assurance surveillance as per the relevant Directives by

BSI	BS EN ISO 9001:2008 - BSI Cert No QD970
SIRA	Module D - SIRA 00 ATEX M077

Gas Measurement Instruments Ltd confirms that the product and its associated manufacturing processes are in compliance with the above Directives and Standards.

Refer to current Declaration of Conformity document Part No. 42907 (supplied with product)

Iain Gillespie
Certification Engineer

P/N 42907 Issue 1

29 May 2013

REVISION RECORD

Date	Issue	Description Of Change
18/08/00	1	New Handbook
09/05/01	2	Revised to reflect generic instrument options and features
06/01/03	3	Revised to include Geiger clarification and effect of CN 2313
17/07/03	4	Revised to include effect of CN 2291
26/07/04	5	Revised to include Appendix C (translations)
08/06/07	6	Revised to include Marine Equipment Directive (MED), Declaration of Conformity and effect of CN 4092, CN4202 and CN4338.
05/06/13	7	Revised to include effect of CN 5017 and CN 6257.
24/09/15	8	Revised to include effect of CN 6519.

CONTENTS

1

INTRODUCTION

The Gasurveyor 500 is a highly flexible, portable gas detector which can be configured from a simple single gas instrument, through to a sophisticated four gas multi-tasking instrument. The instrument is designed to the latest standards and is certified for use in Hazardous Areas.

Figure 1-1 Gasurveyor 500 series Instrument

The Gasurveyor 500 can contain up to six gas ranges with the following ranges being possible:

- LEL, 0 to 100%
- Volume gas, 0 to 100%
- PPM Flammable
- Oxygen, 0 to 25%
- Toxic range 1
- Toxic range 2

This handbook covers all possible measurement ranges and for illustration purposes refers to the instrument as a Gasurveyor 500. The instrument that this manual has been supplied with is part of the Gasurveyor 500 series, e.g. Gasurveyor 521: LEL/Vol ; Oxygen.
Gasurveyor 531: LEL/Vol ; Oxygen ; Hydrogen Sulphide.
Gasurveyor 536: PPM ; LEL/Vol ; Carbon Monoxide ; Hydrogen Sulphide, etc.

As the Gasurveyor 500 series has a wide variety of available user selected options, it would not be possible to provide an operator handbook specific to each possible variation, therefore, what we have provided in the following pages is the standard default of how the instrument would generally be configured, with the possible options detailed in *italic* text.

GMI recommend that you take the time to study your instrument and, where practical and with advice from your company's Purchasing / Management departments, highlight your particular instrument configuration.

The main default features of the instrument are:

- Rugged polypropylene case, sealed to IP54 rating and suitable for outdoor use.
- Four button operation allowing the user access to all features.
- Two operating modes: Confined Space Monitor (CSM) mode and Combustible Gas Indicator (CGI) mode .
- LCD with backlighting which displays the current gas readings (in both digital and analogue forms) together with operational and status information.

- Audible and Visual alarms. Alarm levels are pre-set and when on, a periodic confidence signal is emitted. The confidence audible and confidence visual signals will provide assurance that the instrument is sensing for gas without the need for the operator to constantly view the display. The signals, which consist of an audible ‘beep’ and a visual pulse of the LED approximately every eight seconds, are active in CSM mode and also active in CGI mode (but for the PPM Flammable range only).
- Audible and Visual Geiger indication, enabled in the PPM Flammable range, provides indication of gas concentration increase via the increased rate of sounder and LED pulse.
- Manual and automatic datalogging.
- Directly interfaces with the GMI Auto Test Calibration Systems.

2

GENERAL INFORMATION

Ranges of Operation

LEL, 0 to 100%

The LEL range indicates the explosibility of the flammable gas in the sample. This is displayed as a percentage of the lower explosive limit (LEL) of the gas.

The instrument range is displayed in the top right corner of the display as % LEL. From 0 to 10% LEL the digital display resolves to 0.1% LEL. From 10 to 100% LEL the digital display resolves to 1% LEL. The analogue bar graph follows in 4% steps. An example of the LEL display is shown in Figure 2-1. Autoranging will automatically switch the range to Volume Gas when 100% LEL is reached.

The detection principle for this range is a catalytic reaction.

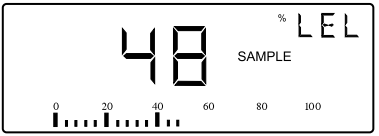


Figure 2-1 LEL Range

Volume Gas, 0 to 100 %

This range displays the total volume of a specific flammable gas with respect to air. The calibration gas is shown on the service label and for the purpose of this handbook is assumed to be methane. Instruments calibrated for methane in air should only be used for measuring such mixtures. To change the calibration gas, e.g. from methane to propane, the instrument must be recalibrated by suitably trained personnel.

On the Volume Gas range the instrument range is displayed in the top right corner of the LCD as GAS. The digital display resolves the signal to 1% GAS with the analogue bar graph following in steps of 4%. Figure 2-2 shows the Volume Gas display. The detection principle for the Volume Gas range is thermal conductivity.

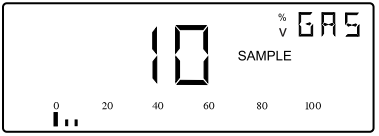


Figure 2-2 Volume Gas Range

ppm Flammable 0 – 1000 ppm

This range is used to measure very low levels of gas and indicates the parts per million concentration of the gas in air (1000 ppm is equivalent to 0.1% Volume Gas).

The digital display reading resolves to 5 ppm with the analogue bargraph following in steps of 40 ppm. The ppm range is more sensitive than LEL and Volume ranges and takes longer to stabilise. The detection principle is a catalytic reaction with the sensitivity of the sensors, greatly enhanced compared to the LEL range. Digital signal

correction techniques are used to minimise drift. The ppm range includes a manual zeroing procedure.

The ppm range has the option of using a 'threshold'. By this, we mean that we can display either a blank screen or simply a zero (0) on the display, up to a pre-set level.

This allows small readings, which may not be due to the gas we wish to find or very small amounts of gas, to be ignored if they fall below any pre-set action levels. This allows the operator to react only to significant levels.

The ppm range has no threshold set by default. If your instrument has a threshold, write the level here:

.....

The ppm range has the Confidence Audible and Confidence Visual options active, that is, they will provide assurance that the instrument is sensing for gas without the need for the operator to constantly view the display.

The Confidence Audible can be disabled, and the Confidence Visual can be disabled.

The ppm range has the audible and visual Geiger indication configured which provides indication of gas concentration increase via the increased rate of sounder and LED pulse.

The display changes between PPM and Aud as shown in Figure 2-3.

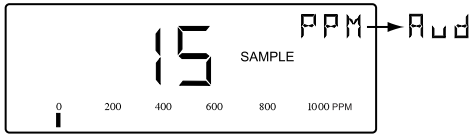


Figure 2-3 PPM Range

When the instrument is switched on, the visual Geiger indication is operational. To activate the audible Geiger indication, press and hold Switch Four ( ).

Threshold Display Options

The ppm range will by default, if a threshold is selected, display below the threshold as zero (0) on the screen. *The option is to display a blank screen for levels below the threshold, as shown in Figure 2-4.*

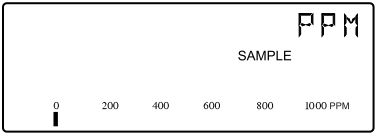


Figure 2-4 Threshold Display Option

Oxygen, 0 – 25%

This range displays the percentage Oxygen content of the sample. The instrument range is displayed in the top right corner of the display as % O_2. From 0 to 21% O_2 the digital display resolves to 0.1% O_2. From 21 to 25% O_2 the digital display resolves to 1% O_2. The analogue bar graph follows in 4% steps.

The gas level is determined using an electrochemical cell, which like toxic sensors is sensitive to pressure transients. The oxygen cell has an expected life of two years.

Toxic Ranges

Two toxic ranges are possible on the Gasurveyor 500 series of instruments. The toxic ranges measure on the ppm scale. The toxic sensors are subject to the effect of pressure transients and should be operated at normal atmospheric pressure conditions. The sensors have a normal operating life of two years.

For the purposes of this manual the toxic ranges are referred to as Toxic 1 and Toxic 2.

Alarms

The Gasurveyor 500, by default, has both audible and visual alarms active when operating in Confined Space Monitor Mode; see Confined Space Monitor (CSM) Operation in Section 3. The audible alarm is rated up to 85 dB(A). The visual alarm is a red LED indicator which protrudes from the instrument top plate, allowing viewing from any angle above the top plate.

The instrument, by default, will have alarm levels for the Flammable LEL, Oxygen, and Toxic gases pre-set.

The Gasurveyor 500 series has the facility to have two (2) instantaneous alarm levels for each range in the instrument. These are described as *LOW* and HIGH. By default, only the high instantaneous is activated.

When both instantaneous alarms are set, the *LOW* audible and visual alarm cycle will be activated for 0.5 seconds on and 0.5 seconds off. The HIGH audible and visual alarm cycle will be activated for 0.25 seconds on and 0.25 seconds off.

The option is to have all or some instantaneous alarms deactivated.

When operating in Confined Space Monitor (CSM) mode, the instrument has two (2) toxic monitoring alarm levels set by default. These are the STEL (Short Term TWA) and LTEL (Long Term TWA). *The option is to have these two alarm levels disabled*.

It is the responsibility of the user to ensure that the alarm levels, where set in the instrument, are appropriate for the safe operation and legal requirements for the country / industry in which the unit is being used.

Alarm Functions

For each range in the instrument, the alarm function default is that the alarms will be latching and both the audible and visual functions will operate. That is, where an alarm level is exceeded, the instrument LED flashes and the sounder pulses rapidly. Latching alarms are cleared manually, by a double press of Switch Four ( ), after the detected gas level has fallen below the alarm limit.

Each alarm has to be acknowledged individually, e.g. If both *LOW* (10%) and HIGH (20%) instantaneous alarms have been set, then both would have to be acknowledged individually if LEL is greater than 20%. If the audible and/ or visual indicators are set to off then the display alarm function would need to be acknowledged in the same way. Alarm display example is shown in Figure 2-5.

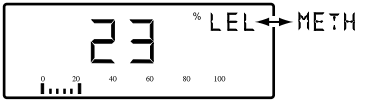


Figure 2-5 LEL Alarm Display Example

The option for this is to allow the alarms to be non-latching. These clear automatically when the gas levels fall below the alarm limit. The audible and visual functions can also be either ON or OFF independent of each other.

Where the instrument has an Oxygen cell fitted, it should be noted that the instantaneous alarms are termed falling and rising. That is, one detects dangerously low Oxygen levels and one detects high Oxygen levels.

When an alarm limit for any gas range is exceeded the LCD automatically displays the range in alarm. If more than one alarm is active the highest priority alarm is displayed. From highest to lowest the alarm priorities are Oxygen, Volume Gas, LEL, Toxic Ranges. When a toxic alarm is raised the priorities are: Instantaneous, Short Term TWA (STEL), Long Term TWA (LTEL).

Geiger Indication

Where the Gasurveyor 500 has PPM Flammable range selected then, by default, the visual Geiger indication will be enabled. To activate the audible Geiger indication, press and hold Switch Four (). This means that, as the gas concentration increases, the sounder (if activated) and the LED, pulse at an increasing rate.

Datalogging

The Gasurveyor 500 series memory can store up to 1000 logged entries which are dependent on number of Gas ranges and duration of each ON / OFF session. The memory will overwrite entries in the event of an overflow. (If required, overwriting can be disabled by GMI).

CSM Mode

The Gasurveyor 500 instruments, by default, have automatic and manual datalogging enabled when operating in CSM mode.

During automatic datalogging the instrument stores the values of all gas ranges together with the current time and date at 60 second intervals. *This interval can be altered to between 2 seconds and 60 minutes.*

The manual datalogging allows the user to store a snapshot reading at any point, by a single press of Switch Three ()

The option on datalogging is for the automatic and manual datalogging to be disabled when operating in CSM mode.

CGI Mode

When the instrument is operating in CGI mode, the datalogging is only by manual operation of Switch Three (). There is no automatic datalogging.

This function can be disabled in CGI mode.

Construction

The instrument is housed in a tough, impact resistant, moulded case made of polypropylene.

The top panel is protected by a stainless steel top plate covering a toughened glass LCD cover.

The battery pack is sealed and attached to the main instrument body by means of 2 stainless steel hexagonal screws.

The instrument is sealed against dust and water to IP54 standard. The sensors are protected from dust and water by membrane and cotton filters.

Batteries

Disposable Alkaline (LR20) Dry Cell Batteries

Alkaline batteries provide approximately 15 hours operational life at ambient temperature of 20°C (68°F). When the batteries are low or exhausted it is necessary to fit 4 new batteries. Do not mix old and new batteries.

An indication of the battery condition is displayed after power on and during warm-up, with status shown as either OK or LO. If LO condition is displayed, a maximum battery operational life of 120 minutes remains. During operation the 'BAT' alarm flag is displayed when approximately 60 minutes of operating time remains at normal temperature. The instrument may continue to be used until it switches off automatically.

Rechargeable (NiCd) Battery Pack

The GMI rechargeable battery pack provides approximately nine hours operational life, from fully charged, at ambient temperature of 20°C (68°F). An indication of the battery condition is displayed after power on and during warm-up, with status shown as either OK or LO. If LO condition is displayed, a maximum battery operational life of 90 minutes remains. During operation the 'BAT' flag is displayed when approximately 30 minutes operating time is left at normal temperatures. The instrument will then turn off.

There are three GMI Battery Chargers: a Standard Charger, a Flatbed Charger and a Smart Charger. The Smart Charger has both slow and fast charge options as well as a serial link for communications with the instrument. See Rechargeable Battery Pack in Section 4 OPERATOR MAINTENANCE.

Filters

A number of different filter types are available from GMI. The minimum recommendation is a cotton particulate filter and a hydrophobic filter which are incorporated in the probe handle assembly, available as an accessory. Filters must be checked at frequent intervals and where appropriate changed to ensure a clean sample path. If water is drawn into the instrument any filter which has been contaminated must be cleaned or replaced. See Filter Replacement in Section 4 OPERATOR MAINTENANCE.

Liquid Crystal Display (LCD)

The LCD shows the current gas readings in both analogue and digital form together with operational and status information. The display is protected by a toughened glass cover. Backlighting is provided to enable the display to be seen under low ambient light conditions.

Before Use Checks

The following checks should be carried out before using the instrument on site:

- The instrument is clean and in good condition.
- The batteries have sufficient power left in them for the intended use of the instrument.
- Any filters are clean and in good condition.
- The sample line and any other accessories are in good condition and leak free.
- All gas ranges are operational and zeroed correctly.
- The calibration is still valid.

3

OPERATING INSTRUCTIONS

Operating Modes

The Gasurveyor 500 is a dual configuration instrument. It operates as a Confined Space Monitor (CSM) or as a Combustible Gas Indicator (CGI) depending on the button used to switch it on.

For Confined Space Monitor operation the instrument must be switched on by pressing and holding Switch One ( ) for approximately one second. During warm-up in CSM mode the instrument displays the preset alarm levels.

For Combustible Gas Indicator operation the instrument must be switched on by pressing and holding Switch Two ( ) for approximately one second.

Figure 3-1 shows the four operating switches.

Figure 3-1 Instrument Front Plate

Confined Space Monitor (CSM) Operation

In this mode the instrument operates as a safety monitor for use when entering confined spaces which may contain hazardous gas mixtures (flammable, toxic and/or asphyxiant). The instrument samples the ambient atmosphere to which the operator is exposed and generates alarms for low oxygen, high oxygen, high flammable gas, high toxic gas, Short Term TWA (STEL) and Long Term TWA (LTEL).

Switching On in CSM Mode

Pressing and holding Switch One () turns the instrument on in CSM mode and switches on the pump. This initiates the instrument's warm up cycle, an example of which is shown in Figure 3-2. The display of alarm levels after the warm up sequence may be cancelled by a single press of any switch.

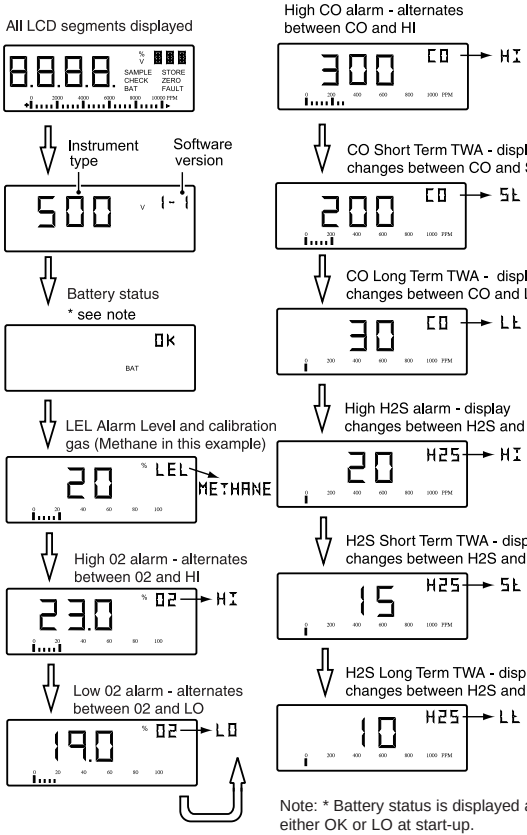


Figure 3-2 CSM Warm Up

Calibration Date Features

At the end of warm-up and before the Gasurveyor 500 instrument is ready for measuring, the instrument will indicate on the display when the next calibration is due. This will be displayed as month and year, as in Figure 3-3:

Figure 3-3 Calibration Date

The re-calibration interval pre-set for all Gasurveyor 500 instruments is twelve (12) months.

This period can be altered as an option, however, you should ensure that the instrument is always within its calibration period prior to use.

An option which ensures that an 'out of calibration instrument' is not used, is the automatic switch-off when overdue.

Switching Off

A double press of Switch One ( ) turns the instrument off.

Changing Gas Range

Each single press of Switch Two ( ) changes the range selected. The display cycles through the ranges in the order LEL/GAS – O_2 – Toxic 1 – Toxic 2 – LEL/GAS, etc.

Note: As the default, the instrument auto-ranges between LEL and Volume Gas.

Datalogging (Default)

A single press of Switch Three () initiates a manual datalog. This is confirmed by the buzzer sounding and, *if auto datalogging is disabled, the STORE flag being displayed for 1 second.*

A double press of Switch Three () toggles automatic datalogging on and off. When automatic datalogging is on, the STORE flag is permanently displayed.

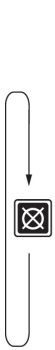
Cycling Through the Display Options

The Gasurveyor 500 instruments can be enabled to allow the user to view the minimum and maximum readings for each range during the instrument's operation since switch on.

The instrument automatically stores the highest and lowest gas reading, together with STEL and LTEL (where appropriate).

The instrument will not show Min. / Max. readings as standard, as this requires to be pre-selected.

Table 3-4 shows the readings stored for each range. Each press of Switch Four ( *) scrolls through the available readings for the current range. Pressing Switch Two (*  *) selects the next gas range.*



Display Option	LEL/ GAS	O_2	Toxic 1	Toxic 2
Gas Values	✓	✓	✓	✓
Maximum Value (MAX)	✓	✓	✓	✓
Calibration Gas	✓	N	N	N
Minimum Value (MIN)	N	✓	N	N
Short Term TWA (St)	N	N	✓	✓
Long Term TWA (Lt)	N	N	✓	✓

✓ = Available N = Not Available

Table 3-4 Display Options

Clearing Alarms

A double press of Switch Four ( ) will clear an alarm if latching, *or acknowledge the alarm for 60 seconds if non-latching.*

Double pressing will only cancel the alarm when the gas level is below the threshold set in the instrument. If more than one gas alarm threshold has been exceeded a double press of Switch Four ( ) will clear each alarm in order of priority.

Notes on (default) CSM mode:

- Alarms are always active in CSM mode.
- The pump cannot be switched off in CSM mode.
- In CSM mode the instrument does not switch off automatically.
- In CSM mode automatic datalogging is enabled by default.
- The PPM range is not available in CSM mode.

Summary of (default) CSM Button Operation

CSM Mode	Single Press	Double Press	Press and Hold
Switch 1 	–	Switches Off Instrument	Switches On Instrument
Switch 2 	Next Range	–	–
Switch 3 	Manual Data Log	Toggles Auto Data Logging	–
Switch 4 	–	Cancel Alarm	–

Combustible Gas Indicator (CGI) Operation

In this mode the instrument operates as a gas indicator drawing a sample via a probe from points where gas is suspected to be present. Alarms, by default, are disabled in CGI mode, as the instrument is generally used for measuring gas levels rather than monitoring for the presence of gas.

Switching On in CGI Mode

Pressing and holding Switch Two ( ) turns the instrument on in CGI mode. This initiates the instruments warm up cycle and switches on the pump. Figure 3-5 gives an example of the warm up cycle for a Gasurveyor 500.

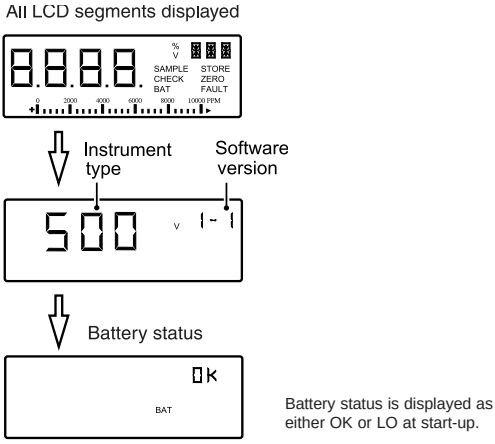


Figure 3-5 CGI Warm Up

Calibration Date Features

At the end of warm-up and before the Gasurveyor 500 instrument is ready for measuring, the instrument will indicate on the display when the next calibration is due. This will be displayed as month and year, as shown in Figure 3-6:

Figure 3-6 Calibration Date

The re-calibration interval pre-set for all Gasurveyor 500 instruments is twelve (12) months.

This period can be altered as an option, however, you should ensure that the instrument is always within its calibration period prior to use.

An option which ensures that an 'out of calibration instrument' is not used, is the automatic switch-off when overdue.

This is disabled as standard.

Switching Off the Instrument Pump

A single press of Switch One (⏻) when the pump is running turns the pump off and stops sampling. Pressing switch one again turns the pump back on.

Switching Off

A double press of Switch One (⏻) turns the instrument off.

Changing Range

Each single press of Switch Two ( ) changes the gas range selected. The display cycles through the available ranges in the order PPM/LEL/GAS – O_2 – Toxic 1 – Toxic 2 – PPM/LEL/GAS etc.

Note: The instrument auto-ranges between ppm, LEL and Volume Gas.

Activate the Audible Geiger Indication (PPM range)

The audible Geiger indication can be activated by pressing and holding Switch Four ( ). A further press and hold of Switch Four mutes the indication.

Zeroing the PPM Range

A double press of Switch Two ( ) zeroes the current range. This should be carried out in fresh air and may take a few minutes to reach the optimum zero stability. The display in Figure 3-7 occurs if a large adjustment is needed to reach the zero point.

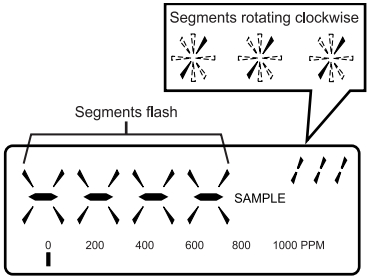


Figure 3-7 Zeroing Range

Manual Datalogging (Default)

A single press of Switch Three () performs a manual datalog. This is confirmed by the STORE flag being displayed for 1 second and the buzzer sounding.

Notes on CGI mode (Default):

- Alarms do not operate in CGI mode.
- Logged readings can be stored manually in CGI mode (using Switch 3 as described before).
- In CGI mode the instrument switches off automatically after 30 minutes. 'OFF' is shown in the top right hand corner of the display. Pressing any button cancels this automatic switch-off. The instrument will then allow another 30 minutes of use.

  This 30 minute period is set as a default.

  The switch off time may be altered to any time between 1 and 1000 minutes

Summary of CGI Button Operation

CGI Mode	Single Press	Double Press	Press and Hold
Switch 1	Toggles Pump On/Off	Switches Off Instrument	–
Switch 2	Next Range	Zeroes Current Range (ppm)	Switches On Instrument
Switch 3	Manual Data Log	–	–
Switch 4	–	–	Activates / Mutes Audible Geiger Indication

Operator Messages / Fault Flags

Various messages can appear on the LCD screen to indicate instrument status.

'SAMPLE'

This indicates that the pump is running and the instrument is sampling.

'OFF'

This indicates that the instrument is about to switch off. This command can be cancelled by a single press of any switch.

'SAMPLE FAULT'

This indicates a problem with the instrument's flow due to the sample path being blocked, water ingress, a blocked filter or pump failure.

In CGI mode the pump stops automatically. The sample line, filters etc. should be checked for water ingress or blockage and Switch One should then be used to restart the pump.

In CSM mode the instrument will alarm and the pump will continue to run. The sample path should be checked and Switch One pressed to clear sample fault.

'CHECK ZERO'

This indicates that there may have been a zero shift due to the presence of gas. Switch off the instrument and switch on again in fresh air.

'ZERO FAULT'

This indicates that the zero is outwith its calibration limits. Switch the instrument off and then on again in fresh air. If the fault does not clear, leave the instrument on for a period of 30 minutes then switch off and on again. If the fault still does not clear, return the instrument for servicing.

'BAT'

This indicates that the batteries will soon require replacement. At this point there will be approximately 60 minutes operation left in a set of alkaline batteries, although this figure will vary depending on battery manufacturer, temperature conditions, usage etc. With rechargeable batteries the 'BAT' flag indicates approximately 30 minutes operation left.

As the battery power continues to fall, the LCD flashes a 'BAT FAULT' message. Subsequently the LCD displays 'OFF' and the instrument automatically switches off. The batteries should be replaced immediately.

'BAT FAULT'

This indicates that the batteries require replacing.

'STORE'

This flag is displayed when the instrument is in auto datalogging mode and during manual datalogging (for approximately one second duration).

'EEEE'

'EEEE' is displayed if the measurement in the toxic ranges rises above 999 (instrument over range). The ppm range auto-ranges to LEL/Volume gas and hence does not show this message.

The message is also displayed if the measurement falls below -99 (incorrect zero setting) in either ppm or the toxic ranges.

‘1’

This message which can also appear after power on, indicates that a calibration data error has been detected. The instrument should be returned for servicing.

4

OPERATOR MAINTENANCE

Rechargeable Battery Pack

Three battery chargers are available from GMI, a Standard Charger, a Flatbed Charger and a Smart Charger.

Standard Charger

The GMI Standard Charger takes approximately 14 hours to charge a flat battery.

Flatbed Charger

The GMI Flatbed Charger allows the Gasurveyor's battery pack to be charged in NORMAL mode, which takes approximately 14 hours to charge a flat battery. The Mode Select Switch can then be set to STAND-BY, where a trickle charge will maintain the battery in a fully charged state of readiness.

Smart Charger

The GMI Smart Charger provides both fast and standard charging facilities and can charge an instrument and spare

battery pack simultaneously. Using the standard charging option, a battery pack can be recharged in 12 hours from a fully discharged state. Using the fast charge option a battery pack can be 90% recharged in approximately 60 minutes and fully recharged in 120 minutes. To ensure optimum life length, the rechargeable pack should be fully discharged and charged on a regular basis of, at least, every three months. The Smart Charger has the option of switching to discharge and fast charge cycle to provide this facility.

Replacing the Battery Pack

The following procedure should be carried out in a safe area:

1) Loosen the two instrument base screws (4mm hex) using the special tool provided.

2) Remove the battery pack.
3) Insert new battery pack.
4) Fasten base screws.
5) Check that instrument switches on and works to specification.

Recharging the Battery Pack

The battery pack should be recharged in the following situations:

The BAT or BAT FAULT message is displayed.

The instrument will not switch on.

The pump will not switch on.

It is recommended that the battery pack is fully discharged on a regular basis (once every three months). This can be done by running the instrument continuously or using the battery conditioning facility on the Smart Charger. The batteries can be charged on the instrument but the instrument itself should be switched off. Regular complete discharge will keep the battery pack in good condition.

Replacing Alkaline (LR20) Dry Cell Batteries

All four batteries should be replaced at any one time and in a safe area. GMI only recommend the use of Energiser or Duracell batteries.

1) Loosen the two instrument base screws (4mm hex) using the special tool provided.

2) Remove battery cover.

3) Remove the old batteries.

4) Check battery compartment for damage to spring contacts or corrosion on springs.

Caution: Under no circumstances should rechargeable batteries be fitted in place of Alkaline batteries.

---

5) Insert four new batteries observing correct polarity indication in battery compartment base.

6) Replace battery cover and fasten base screws.

7) Check that the instrument switches on and works to specification.

Filter Replacement

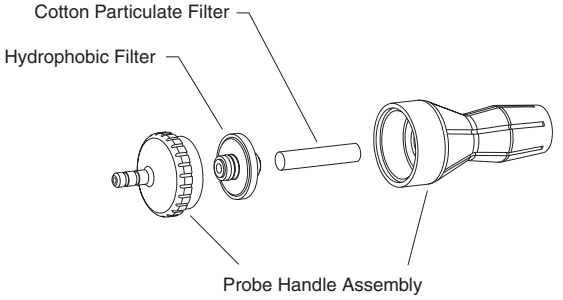
Hydrophobic and cotton particulate filters in the probe handle minimise the danger of water and dust ingress.

Caution: The instrument should never be switched on without suitable filters installed.

If a blockage occurs the ‘SAMPLE FAULT’ indicator is displayed. Check the sample line and probe handle for blockage. Press Switch One () to clear the ‘SAMPLE FAULT’ message. Replace the filter(s) if the message does not clear.

To replace the filter(s) shown below, proceed as follows:

1) Unscrew the probe handle assembly.



2) Remove the cotton particulate filter and discard.
3) Remove the hydrophobic filter.
4) Clean the probe handle to make sure that it is free from dirt and water.
5) Fit a new cotton particulate filter.
6) Fit the hydrophobic filter. The yellow label on the filter fits against the yellow label on the probe handle.
7) Reassemble the probe handle assembly.

5

CALIBRATION

The instrument has been calibrated for a particular flammable gas mixture. Where any doubt exists the instrument should be returned to GMI or an authorised distributor for calibration.

Four methods of calibration are possible:

- Field Calibration. See APPENDIX B, FIELD CALIBRATION for further details.
- Manual Calibration. The instrument can be linked to a PC running GMI Manual Calibration software.
- Automatic Calibration. The GMI Auto Test Calibration System allows calibration without manually changing gas cylinders. The system links to a PC running GMI Workshop software.
- The GMI Instrument Management System (IMS) provides all the facilities of the Auto Test Calibration System with the added feature of instrument database management.

Note: The calibration systems above (hardware and software) are manufactured by GMI. For more details contact GMI or an authorised distributor.

Calibration Validity

Calibration validity is the responsibility of the user. Under normal operating conditions a 12 month period can be expected. This is no guarantee, however, as the precise application of the product is unknown to GMI. Individual codes of practice may dictate shorter periods.

Regular checking establishes a pattern of reliability and enables the calibration check period to be modified in line with operational experience. The higher the risk, the more frequently calibration should be checked.

ACCESSORIES

Accessories for the Gasurveyor 500 Series Instrument

Part Number	Description
13844	Standard Charger c/w Universal Power Supply
13179	Standard Charger excl. Power Supply
12988	12v Car Charger Lead - Standard Charger Only
13163	5-Way Lead for Multi-Charging - Standard Charger Only
42744	Flatbed Charger c/w Universal Power Supply
42124	Flatbed Charger excl. Power Supply
12444	Universal Power Supply - Standard / Flatbed Charger
42110	Flatbed Charger Strap
13100	Smart Charger c/w 240V Power Supply (UK Plug)
13440	Smart Charger c/w 220V Power Supply (Euro Plug)
13340	Smart Charger c/w 110V Power Supply (USA Plug)
12890	Smart Charger c/w 220V Power Supply (Australian Plug)
42114	Spare Rechargeable Battery Pack
12481	Probe Handle c/w Filters
12395	Probe Handle c/w Sample Line & Filters

12393	Plastic Probe - Solid End 80cm. (2ft.6ins.) approx.
12394	Flexible Probe - Open End (Leak Tracing) 35cm. (1ft.2ins.) approx.
12480	Plastic Probe - Solid End (General Leak Detection) 35cm. (1ft.2ins.) approx.
13427	Plastic Probe - Open End (General Leak Detection) 35cm. (1ft.2ins.) approx.
13413	Stainless Steel Probe - Open End (High Temp. Applications) 35cm. (1ft.2ins.) approx.
12229	Stainless Steel Probe - Closed End (High Temp. Applications) 80cm. (2ft.6ins.) approx.
12287	Stainless Steel Probe - Open End (High Temp. Applications) 50cm. (1ft.8ins.) approx.
12688	Sample Line Adaptor
12895	Barbed Probe - Solid End (General Survey) 69cm. (2ft.3ins.) approx.
12894	Barbed Probe - Open End (General Survey) 69cm. (2ft.3ins.) approx.
12365	In-Line Hydrophobic Filter Holder
13535	Carpet (Trolley) Probe
13301	Extenda Probe
42400	Flexible Sampling Probe c/w Handle Assy. (Restricted Access)
12712	Clear Sample Line (per metre)
12358	Hydrophobic Filter (use with 12481)
10077	Cotton Particulate Filters (Box of 10) x 2 (Use with 12481)
13937	Charcoal Filters (Box of 5)
16091	hydrophobic Filter Holder
13503	Water Trap Filter (Use with 10336)

10336	End Cap (Use with 16091)
800027	Balston Disposable Water Filter
42215	Coalescing Filter Assy.
75174	Filter (Use with 42215)
13776	Sampling Connector (Connects Instrument Harness to 15m / 35m Sample Line)
13777	Filter Probe Assy. (Sampling Connector, 1m Conductive Sample Line and Probe)
13774	15m (48ft.9ins.) Conductive Sample Line c/w Sampling Connector & Filters
13792	35m (113ft.9ins.) Conductive Sample Line c/w Sampling Connector & Filters
12370/2	Shoulder Harness
12371	30mm Waist Belt
12451	4mm Hex. Driver (for Base Screws)
42153	User Handbook

Note: For other sampling probes and accessories, and for calibration gases, contact GMI Ltd.

7

ADDITIONAL INFORMATION

Training

Training courses are available on all our products. Contact our Marketing Department for further details:

Tel: +44 (0) 141 812 3211

Fax: +44 (0) 141 812 7820

e-mail: sales@gmiuk.com

World Wide Web

Visit our web site at www.gmiuk.com

TYPICAL OPERATING PARAMETERS

Typical operating parameters are as follows:

Gas Range	Range	Resolution	Zero Stability	Accuracy
ppm	0 to 1000 ppm	5 ppm	+/- 30 ppm	5% +/- 25 ppm
LEL	0 to 10% 10 to 100%	0.1% 1%	+/- 0.5% N/A	 2% +/- 1% LEL
Volume Gas	0 to 100%	1%	+/- 2%	1% +/- 1% Gas
Oxygen	0 to 21% 21 to 25%	0.1% 1%	+/- 0.5% N/A	+/- 0.5% + 3% reading +/- 0.5% + 3% reading
Hydrogen Sulphide	0 to 200 ppm	1 ppm H_2S	+/- 2 ppm	+/-2 ppm + 10% reading
Carbon Monoxide	0 to 1000 ppm	1 ppm CO	+/- 15 ppm	+/-15 ppm + 5% reading

Notes:

All the values above are at normal temperature and pressure.
Humidity is between 0% and 95% RH (non-condensing).
Pressure changes at the inlet and exhaust are minimised as they may cause transient changes in reading.

Size
180mm (7.08”) x 95mm (3.74”) x 105mm (4.13”)

Weight
1.7kg (3.75lbs.) with alkaline batteries

Operating Temperature
-20 °C to 50 °C (-4 °F to 122 °F)

Humidity
0 – 95% RH

Construction
Moulded polypropylene case protected to IP54

Display
LCD containing:

Analogue display scaled 0-10, 0-100, 0-1000 or 0-10000

4 digit digital display

3 character range indication

Operational flags

Sampling System
Integral pump with flow fail sensor. Nominal flow rate is 0.5 to 0.7 litres per minute. Typical flow fail rate is 0.1 to 0.2 litres per minute.

The sample path is protected by the hydrophobic filter and automatic pump switch off. Automatic pump switch off is disabled in Confined Space Monitor (CSM) Mode.

Response Time (O2)
Typical Oxygen (t90) response time is 12 seconds.

This apparatus conforms to standard EN 50104.

Power Source

4 ‘D’ size alkaline cells providing approximately 15 hours runtime at 20 °C (68 °F)..

Rechargeble (NiCd) battery pack providing approximately 9 hours runtime at 20 °C (68 °F).

B

FIELD CALIBRATION

Field calibration allows simple calibration to be carried out in the field without the use of additional test equipment. Other calibration procedures require the use of the GMI Manual Calibration software or the Workshop System.

There are fundementals, in terms of instrument calibration, that should be noted:

- The gas should be of known traceable quality and have total analysis.
- The gas should be applied in the same manner as the instrument is used, e.g. at a known pressure which is constant and around, or slightly above, normal atmospheric pressure.
- The use of demand type regulators is not recommended on instruments with Oxygen or Toxic cells since these are affected by pressure pulses.

In Field Calibration Mode (FCM) the switches perform the functions indicated in Figure B-1.

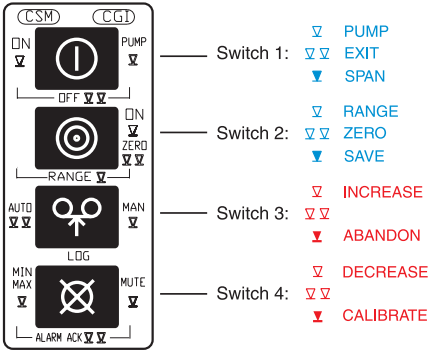


Figure B-1 Switch Functions

To simplify switch operation when calibrating the instrument, an overlay card, shown in Figure B-2, is available and can be placed over the top face of the instrument to identify calibration switch functions. Contact GMI for details.

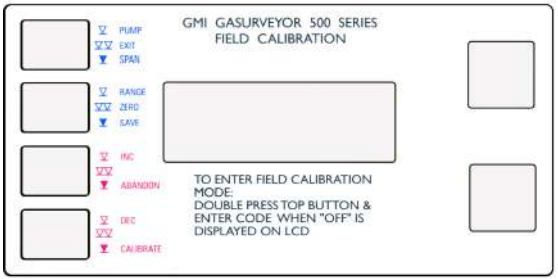


Figure B-2 Instrument Overlay Card

Selectable Ranges in FCM

When in FCM the following ranges are manually selectable by pressing Switch Two ( ) : PPM, LEL, Volume GAS, Oxygen, Toxic Range 1, Toxic Range 2.

Cal Due Date can also be edited in FCM.

Entering FCM

1) Switch the instrument on and allow it to complete its warm-up checks.

2) Double press Switch One ( ) to initiate instrument switch off. While OFF is displayed in the LCD and before the instrument actually switches off, enter the four switch access code.

Note: Allow at least one second between switch presses when entering the four switch sequence. The default (factory set) entry code is switch sequence 1,2,3,4. Alternative codes are user selectable.

When the instrument is in FCM, the “CAL” message alternates on the display with the currently selected range. An example of the display is shown in Figure B-3.

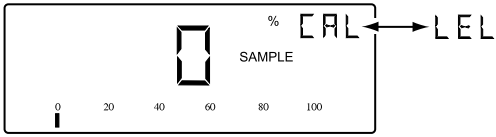


Figure B-3 Field Calibration Display

In CAL mode, the instrument switches have the functions shown in Figure B-4.

	Single Press	Double Press	Press and Hold
Switch 1	Toggle Pump On / Off	Exit CAL Mode	Enter SPAN Mode
Switch 2	Next Range / Cal Due Date	Zero Current Range	Save CAL Data
Switch 3	Increase Set Point / Date	–	Exit SPAN Without CAL
Switch 4	Decrease Set Point / Date	–	Exit SPAN With CAL

Figure B-4 FCM Switch Functions

Zeroing the Instrument

1) Enter FCM. See the previous section ENTERING FCM.

2) Double press Switch Two ( ) to zero the current gas range.

3) Press Switch Two ( ) to select the next gas range.

Note: Each press of Switch Two ( ) selects the next gas range to be zeroed until finally the Cal Due Date is displayed. Editing the Cal Due Date feature is explained later in this procedure.

4) Repeat steps 2 and 3 until all gas ranges have been zeroed.

5) Proceed to FIELD CALIBRATION PROCEDURE to calibrate the instrument.

Field Calibration Procedure

1) Zero gas ranges before attempting calibration. See previous section ZEROING THE INSTRUMENT for details.

2) Make sure that the instrument pump is running and the gas range selected is compatible with the calibration gas.

Note: A single press of Switch One ( ) toggles the pump Off / On.

3) Remove the cap from calibration gas cylinder. Make sure that the regulator valve is in the fully closed position (Off) then connect the gas regulator to the gas cylinder (push down gently and tighten clockwise, hand tight). See Figure B-5 for details.

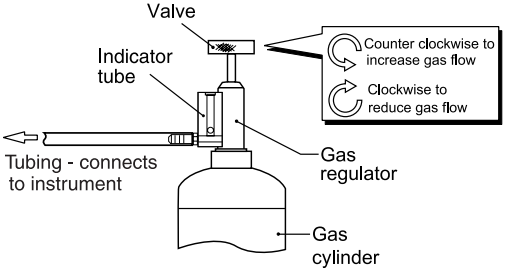


Figure B-5 Connecting Gas

4) Turn the regulator valve counter clockwise to open the valve slightly. Make sure that the gas is flowing before connecting the sample tubing to the instrument, otherwise an instrument sample fault may occur.

5) Connect tubing from regulator to instrument inlet then adjust the regulator valve to maintain a constant flow of gas (counter clockwise to increase flow and clockwise to decrease).. The correct flow rate is achieved when the ball in the indicator tube floats just above its resting position.

6) Wait for the instrument gas reading to settle.

7) If the displayed reading corresponds to the concentration of calibration gas, i.e. 50% LEL (2.5% Methane in Air), proceed to paragraph 10.

8) If the displayed reading does not correspond to the concentration of calibration gas, i.e. 50% LEL (2.5% Methane in Air), press and hold Switch One () to enter SPAN mode.

   SPAN mode is indicated by the selected range, in this case LEL, and SPN alternating in the display as shown in Figure B-6.

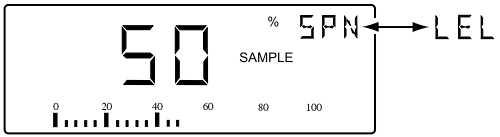


Figure B-6 SPAN Mode Display

8a) A single press of Switch Three ( ) will produce small incremental changes to increase display reading, or a single press of Switch Four ( ) will produce small decremental changes to decrease display reading, until the displayed gas value corresponds to the concentration of the calibration gas.

8b) When required reading has been reached, press and hold Switch Four ( ) to exit SPAN mode with calibration. The display may jump above and below required reading momentarily as the instrument performs the calibration.

Note: If for any reason you require to exit SPAN mode without calibration of the instrument. press and hold Switch Three ( ).

9) The instrument display will now return to CAL mode display as shown in Figure B-7.

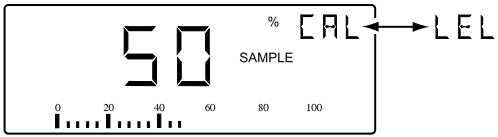


Figure B-7 50% LEL Display

10) Make sure that correct reading is displayed before disconnecting the calibration gas then disconnect tubing from instrument inlet and turn regulator valve on calibration gas cylinder in a clockwise direction to turn off gas flow.

11) Make sure that the regulator valve is in the fully closed position (Off) then disconnect the regulator from the gas cylinder (turn regulator body in a counter clockwise direction).

12) Replace the cap on the calibration gas cylinder.

13) Repeat steps 1 to 12 for each range to be calibrated otherwise edit Cal Due Date then Quit FCM as detailed in the following paragraphs.

Edit Cal Due Date

1) After successful zero / calibration of all ranges, press Switch Two (), repeatedly if required, until DUE date is displayed, alternating with CAL as shown in Figure B-8.

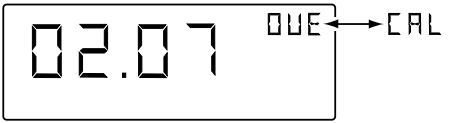


Figure B-8 CAL

2) Press and hold Switch One () to enter SPAN mode for adjusting displayed date. SPAN mode is indicated by the DUE date alternating with SPN as shown in Fig. B-9.

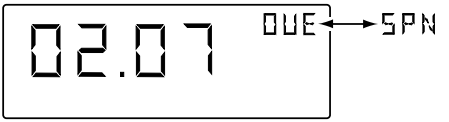


Figure B-9 SPN

3) Each single press of Switch Three () will increase date, and each single press of Switch Four () will decrease date, until the required Cal Due Date is displayed.

4) When required Cal Due Date is displayed, press and hold Switch Four () to exit SPAN mode.

Note: If for any reason you require to exit SPAN mode without changing Cal Due Date, press and hold Switch Three ().

5) The instrument display will now show revised DUE date alternating with CAL.

Quit And Save Changes

1) Press and hold Switch Two () to save CAL data.

2) Double press Switch One () to exit FCM.

Quit Without Saving Changes

1) Double press Switch One () to exit FCM.

Note: When you exit the FCM without saving the new CAL data, the old calibration data remains in the instrument memory.

QUICK OPERATING INSTRUCTIONS

The following multi-language instructions provide the user with a quick operation guide for the . .

Gasurveyor 500 series instrument.

Each language and pages reference is as follows:

- **English** - pages C-2 to C-5
- **L'italiano** (Italian) - pages C-6 to C-9
- **Español** (Spanish) - pages C-10 to C-13
- **Svensk** (Swedish) - pages C-14 to C-17
- **Dansk** (Danish) - pages C-18 to C-21
- **Nederlands** (Dutch) - pages pages C-22 to C-25

CHECKLIST

1. Check the instrument has no obvious faults.
2. Check accessories.
3. Read and understand handbook before use.
4. Switch ON (see overleaf)
5. Check battery levels.
6. Check “ZERO” in fresh air.

SAFETY

- The instrument must be regularly serviced and calibrated by fully trained personnel in a safe area.
- **Batteries:** Alkaline batteries or *Rechargeable battery pack must be exchanged (*and recharged) in a safe area and fitted correctly before use. Never use damaged batteries or expose to extreme heat.
- Only GMI replacement parts should be used.
- If the instrument detects gas, follow your own organisation’s procedures and operational guidelines.
- The combustion chamber is a flameproof assembly and must not be opened in the presence of a flammable atmosphere.
- Gasurveyor 500 series instruments are certified as

  EEx iad IIC T4 (-20°C ≤ Tamb ≤ 50°C).

  BAS01ATEX2292  II 2 G.

   UL Class 1 Groups A, B, C and D.
- This equipment is designed and manufactured to protect against other hazards as defined in paragraph 1.2.7 of Annex II of the ATEX Directive 94/9/EC

Any right of claim relating to product liability or consequential damage to any third party against GMI is removed if the warnings are not observed.

AREAS OF USE

Exposure to certain chemicals can result in a loss of sensitivity of the flammable sensor. Where such environments are known or suspected it is recommended that more frequent response checks are carried out. The chemical compounds that can cause loss of sensitivity include Silicones, Lead, Halogens and Sulphur. Do not use instrument in potentially hazardous atmospheres containing greater than 21% Oxygen. The enclosure material is polypropylene and must not be exposed to environments which are liable to result in mechanical or thermal degradation or to damage caused by contact with aggressive substances. Additional protection may be required in environments where the instrument enclosure is liable to damage.

OPERATOR MESSAGES / FAULT FLAGS

Various messages can appear on the LCD screen to indicate instrument status.

'SAMPLE' Indication that the pump is running and the instrument is sampling.

'OFF' Indication that the instrument is about to switch off. This command can be cancelled by a single press of any button.

'SAMPLE FAULT' Indication of a problem with the instrument's flow due to the sample path being blocked, water ingress, a blocked filter or pump failure.

In CSM mode the instrument will alarm and the pump will continue to run. The sample path should be checked and Switch One pressed to clear sample fault.

In CGI mode the pump stops automatically. The sample line, filters etc. should be checked for water ingress or blockage and Switch One should then be used to restart the pump.

'CHECK ZERO' Indication that there may have been a zero shift due to the presence of gas. Switch off the instrument and switch on again in fresh air.

'ZERO FAULT' Indication that the zero is outwith its calibration limits. Switch the instrument off and then on again in fresh air. If the fault does not clear, return the instrument for servicing.

'BAT' Indication that the batteries will soon require replacement. At this point there will be approximately 60 minutes left in a set of alkaline batteries, although this figure will vary depending on battery manufacturer, temperature conditions, usage etc.

With rechargeable batteries the 'BAT' flag indicates approximately 30 minutes operation left.

As the battery power continues to fall, the LCD flashes a 'BAT FAULT' message. Subsequently the LCD displays 'OFF' and the instrument automatically switches off. The batteries should be replaced immediately.

'BAT FAULT' Indication that the batteries should be replaced immediately.

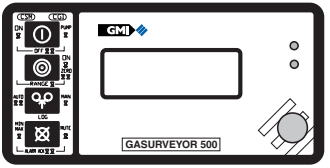
'STORE' This flag is displayed when the instrument is in auto datalogging mode and during manual datalogging (for approximately one second duration).

'EEEE' Indication that the measurement in the toxic ranges has risen above 999 (instrument over range). The ppm range autoranges to LEL / Volume Gas and hence does not show this message. The message is also displayed if the measurement falls below -99 (incorrect zero setting) in either the ppm or toxic ranges.

'1' Indication, which can also appear after power on, that a calibration data error has been detected. The instrument should be returned for servicing.

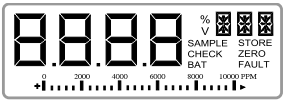
OPERATION

SWITCH 1
SWITCH 2
SWITCH 3
SWITCH 4



Switch ON in CSM Mode

Press and Hold Switch One to switch instrument and pump On. This initiates the instrument's warm-up cycle:

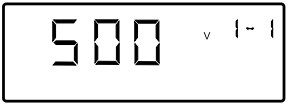


All LCD segments are displayed

Switch ON in CGI Mode

Press and Hold Switch Two to switch instrument and pump On. This initiates the instrument's warm-up cycle:

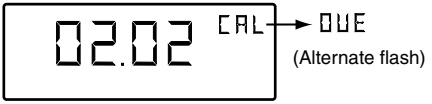
followed by instrument type and software version,



. . then battery status, as shown:

If the instrument is switched on in CSM mode, all default alarm levels are then displayed.

Next the instrument indicates, as month and year, when the next calibration is due.



This display screen is followed by the current gas detection reading.

Change Range (CSM only)

Each single press of Switch Two  changes the range. The ranges available are LEL/GAS – O_2 – Toxic 1 – Toxic 2 – LEL/GAS, etc.

Change Range (CGI only)

Each single press of Switch Two  changes the range. The ranges available are PPM/LEL/GAS – O_2 – Toxic 1 – Toxic 2 – PPM/LEL/GAS, etc.

Pump ON / OFF (CGI only)

A single press of Switch One  , when the pump is running, turns the pump off and stops sampling. A further press turns the pump back on.

Zero PPM Range (CGI only)

With ppm range selected, double press Switch Two  to zero. This should be carried out in fresh air.

Manual Datalogging

A single press of Switch Three  performs a manual datalog. Confirmation is via the STORE flag being displayed briefly and the buzzer sounding.

Automatic Datalogging (CSM only)

A double press of Switch Three  toggles automatic datalogging On and Off. When ON, the STORE flag is permanently displayed.

Clearing Alarms (CSM only)

A double press of Switch Four  will clear an alarm if latching. Double pressing will only cancel the alarm when the gas level falls below the threshold set in the instrument. If more than one gas alarm threshold has been exceeded a double press of Switch Four  will clear each alarm in order of priority.

Activate Audible Geiger (CGI only)

To activate the audible Geiger (in PPM range only) press and hold Switch Four  . Press and hold again to mute the indication.

Switch OFF

A double press of Switch One turns the instrument Off.

PRIMA DELL'USO

1. Verificare che lo strumento non abbia guasti.
3. Verificare gli accessori.
4. Leggere il manuale d'uso.
5. Accendere lo strumento (vedi retro)
6. Verifica della carica della batteria.
7. Verificare lo Zero in aria pulita.

SICUREZZA

- Lo strumento deve essere regolarmente calibrato da personale istruito in un'area sicura.
- **Batterie:** Le batteria Alkaline o il * pacco batteria ricaricabile, devono essere sostituite (*ricaricata) in un'area sicura e fissate correttamente allo strumento prima dell'uso. Mai utilizzare batterie danneggiate oppure sottoporle ad un'alta temperatura.
- Utilizzare solamente ricambi GMI.
- Se lo strumento rivelasse del gas, seguire le procedure organizzative e le indicazioni operative del caso.
- La camera di combustione è a prova di fiamma e non deve essere aperta in presenza di gas infiammabile nell'atmosfera.
- La serie Gasurveyor 500 è certificato come
  EEx iad IIC T4 (-20^{o}C < Tamb < 50^{o}C).

  BAS01ATEX2292  II 2 G.

   UL Class 1 Groups A, B, C and D.
- Questo equipaggiamento è progettato e costruito per proteggere contro altri pericoli come descritto nel paragrafo 1.2.7 of Annex II of the ATEX Directive 94/9/EC

Ogni diritto di reclamo, relativo alla responsabilità del prodotto o a danni verso terzi, contro GMI si rimuove se non vengono rispettate le norme di sicurezza.

AREE D'USO

L'esposizione dello strumento ad agenti chimici condiziona la sensibilità del sensore del gas. Quando tali ambienti sono conosciuti o sospettati è raccomandabile una verifica più frequente della misura. I componenti che possono causare la perdita di sensibilità sono a base di silicone, piombo, alogeno e solfuri. Lo strumento non deve essere utilizzato in una area potenzialmente pericolosa contenente più del 21% di Ossigeno. La scocca è in polipropilene, non deve essere esposta in ambienti che possono essere responsabili di una degradazione meccanica, termica oppure a

contatto con sostanze corrosive. Una protezione aggiuntiva può essere richiesta se lo strumento debba includere la possibilità di essere danneggiato.

MESSAGGI OPERATIVI/GUASTO

Vari messaggi possono comparire sul display dello strumento per indicarne lo stato.

'SAMPLE' Indica che la pompa è in funzione, quindi lo strumento sta campionando.

'OFF' Indica la fase di spegnimento. Il comando può essere interrotto premendo un un qualsiasi pulsante della tastiera.

'SAMPLE FAULT' Indica un problema con il flusso dell'aria campionata dovuto a una ostruzione nel campionamento, ingresso d'acqua, filtro in cotone intasato o la pompa guasta. In modalità CSM verrà visualizzato l'allarme ma la pompa continua a lavorare. Verificare la linea di campionamento e i filtri quindi per cancellare il messaggio premere il pulsante 1. In modalità CGI la pompa si ferma automaticamente. Verificare la linea di campionamento, i filtri quindi per cancellare il messaggio e rimettere in funzione la pompa premere il pulsante 1.

'CHECK ZERO' Indica che potrebbe esserci uno spostamento dello zero, dovuto alla presenza di gas nell'aria. Spegnere e riaccendere lo strumento in aria pulita.

'ZERO FAULT' Indica che lo zero è fuori calibrazione. Lo strumento deve essere spento e riacceso in aria pulita. Se il guato permane inviarlo al Servizio Assistenza.

'BAT' Indica che le batterie dovrebbero al più presto essere sostituite. A questo punto le batterie Alkaline potranno approsimativamente durare 60 minuti, benchè questa condizione dipenda dal fabbricante, dalle condizioni ambientali ecc. Con il pacco batteria ricaricabile il messaggio 'BAT' indica circa 30 minuti di autonomia operativa. Quando la carica della batteria è insufficiente, il display visualizza il messaggio 'BAT FAULT'. Successivamente la pompa si spegne e compare la scritta 'OFF', lo strumento si spegne in automatico. Le batterie devono essere sostituite immediatamente.

'BAT FAULT' Le batterie devono essere sostituite immediatamente.

'STORE' Questo messaggio viene visualizzato quando lo strumento è in datalogging automatico oppure durante il datalogging manuale (per approsimativamente 1 secondo).

'EEEE' Indica che la lettura nella scala del gas tossico è più alta di 999 (lo strumento è sul fondo scala). L'autorange tra la scala del LEL/Volume Gas non dovrebbe far visualizzare questo messaggio. Questo messaggio può anche comparire se la lettura cade al di sotto di '-99' (zero dello strumento non corretto) sia per il PPM che per la scala del gas tossico.

'1' Questo messaggio, che può comparire durante la fase d'accensione, indica che è stato rilevato un errore di calibrazione. Inviare lo strumento al Servizio Assistenza.

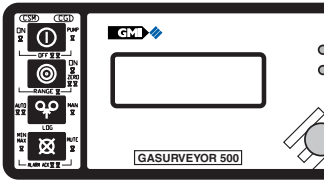
OPERAZIONI

TASTO 1

TASTO 2

TASTO 3

TASTO 4



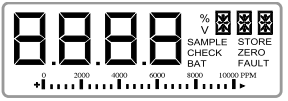
Accensione in modalità CSM

Tenere premuto il tasto uno per accendere lo strumento e la pompa. Questo darà inizio al ciclo di riscaldamento dello strumento:

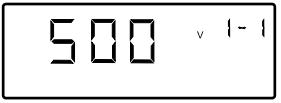
Accensione in modalità CGI

Tenere premuto il pulsante due per per accendere lo strumento e la pompa.

Questo darà inzio al ciclo di riscaldamento:



Tutti i segmanti del LCD si illuminano segue sul Display LCD il tipo di strumento e la versione del Software,



. . poi lo stato delle batterie, come vedi:

Se lo strumento viene acceso in modalità CSM, tutti livelli d'allarme vengono visualizzate sul display.

Dopo lo strumento indica il mese e l'anno della prossima calibrazione dovuta.

Quindi il display segue con la lettura corrente del gas.

Cambio Scala (solo per la modalità CSM)

Con ogni pressione del tasto due  si cambia la scala. Le scale disponIbili sono LEL/GAS – O2 – Toxic 1 – Toxic 2 – LEL/GAS, ecc.

Cambio Scala (solo per la modalità CGI)

Con ogni pressione del tasto due  si cambia la scala. Le scale disponIbili sono PPM/LEL/GAS – O2 – Toxic 1 – Toxic 2 – PPM/LEL/GAS, ecc.

Pompa ON / OFF (solo per modalità CGI)

Una pressione del tasto uno  , quando la pompa è in funzione, permette di fermare il campionamento. Un'ulteriore pressione la aziona nuovamente.

Azzerare la Scala del PPM (quando disponibile in modalità CGI)

Quando la scala del PPM è selezionata, una doppia pressione sul tasto due  azzera la scala. Questa operazione deve essere fatta in aria pulita.

Datalogging Manuale

Una singola pressione del tasto tre  permette il datalogging manuale. La conferma è il messaggio STORE sul display e un bip acustico.

Datalogging Automatico (solo per la modalità CSM)

Una doppia pressione del tasto tre  permette di attivare o disattivare il datalogging automatico. Quando attivo compare il messaggio STORE.

Cancellare gli Allarmi (solo per la modalità CSM)

Una doppia pressione del tasto quattro  cancella gli allarmi se di tipo latching. La doppia pressione cancellerà solo gli allarmi nei quali il gas e sceso al di sotto della soglia impostata. Se più di un allarme è attivo contemporaneamente la doppia pressione del tasto quattro  cancellera ogni allarme in ordine di priorità.

Allarme Geiger sulla scala del PPM (solo per la modalità CGI)

Per attivare l'allarme Geiger (solo sulla scala PPM) tenere premuto il tasto quattro  . Tenere premuto ancora se si vuole disabilitare l'indicazione.

Spegnimento

Una doppia pressione del tasto uno spegne lo strumento.

LISTA DE COMPROBACIONES

1. Compruebe que el instrumento no tenga fallos obvios.
2. Compruebe accesorios.
3. Lea y entienda el manual antes de usar.
4. Encienda el equipo (véase al dorso).
5. Compruebe el nivel de batería.
6. Compruebe el “Cero” en aire limpio.

SEGURIDAD

- Es necesario un servicio de mantenimiento y de calibración regular por personal competente en una área segura.
- Baterías: Pilas alcalinas y baterías recargables deben cambiarse (*cargarse) sólo en una zona segura y colocarlas correctamente antes de usarlas. Nunca use baterías dañadas. Nunca exponga las baterías a temperaturas muy altas.
- Sólo se deben usar recambios de GMI.
- Si el instrumento detecta gas, siga las instrucciones de su organización y las instrucciones de uso del manual.
- La cámara de combustión es un montaje inflamable y no se debe abrir en presencia de una atmósfera explosiva.
- Los instrumentos Gasurveyor 500 cumplen con:

  EEx iad llC T4 (-20^{o}C $\leq$ Tamb $\leq$ 50^{o}C).

  BAS01ATEX2292 Ex Ex II 2 G

  UL Class 1 Groups A, B, C y D.
- Este equipo ha sido diseñado y producido para proteger contra otros peligros definidos en párrafo 1.2.7 del Anexo II de la directiva ATEX 94/9/EC.

Cualquier derecho de reclamación referente a la responsabilidad por la fabricación de un producto o del daño consecuente con terceros contra GMI será revocado si el usuario no hace caso a las precauciones de seguridad.

ÁREAS DE USO

La exposición a ciertos productos químicos puede dar lugar a una pérdida de sensibilidad del sensor inflamable. Donde se sepa o se sospeche de tales ambientes, se recomienda que se compruebe más a menudo.
Los compuestos químicos que pueden causar la pérdida de sensibilidad incluyen Siliconas, Plomo, Halógenos y Sulfuros. No utilice el instrumento en atmósferas potencialmente peligrosas que contengan oxígeno con una concentración mayor del 21%.

El material de la carcasa del equipo es polipropileno y no debe exponerse a ambientes que puedan resultar en degradación mecánica o térmica o puedan causar algún daño en contacto con substancias agresivas. Se puede requerir una protección adicional en ambientes donde el instrumento pueda ser dañado

ALARMAS DE ERROR

Varios mensajes pueden aparecer en la pantalla LCD para indicar el estado del instrumento.

'SAMPLE' (Muestra) Indicación que la bomba está funcionando y el instrumento está mostrando.

'OFF' (Apagar) Indicación que el instrumento está a punto de apagarse. Esto se puede cancelar pulsando cualquier botón.

'SAMPLE FAULT' (Error de muestra) Indicación de un problema con el caudal del instrumento causado por un bloqueo, entrada de agua, filtro bloqueado o fallo de la bomba. En el modo CSM sonará una alarma y la bomba seguirá operando. Debería comprobar la línea de muestra y pulsar el botón uno una vez para eliminar el aviso. En el modo CGI la bomba se para automáticamente. Compruebe la línea de muestra, filtros, etc. Por si hubiera entrado agua o si hubiera algún bloqueo y pulse una vez el botón uno para reiniciar la bomba.

'CHECK ZERO' (Compruebe cero) Indicación que podría mostrar el display al producirse un cambio del cero causado por presencia de gas. Apague el equipo y reinicie en aire limpio.

'ZERO FAULT' (Error cero) Indicación donde el cero está fuera de los límites de calibración. Apague el instrumento y reinicie en aire limpio. Si el error no desaparece, devuelva el equipo para su revisión.

'BAT' (Bat) Indicación de un cambio de baterías. En este momento quedan aproximadamente 60 minutos con pilas alcalinas, aunque este valor depende mucho depende del fabricante, las condiciones de temperatura, uso, etc.Con baterías recargables quedan aproximadamente 30 minutos de funcionamiento.

Si la batería sigue fallando, el display muestra un mensaje "Bat fault" parpadeando. Entonces el display muestra "Off" y el aparato se apaga automáticamente. Se debe cambiar la batería de inmediato.

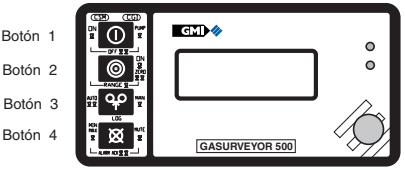
'BAT FAULT' (Error de batería) Indicación donde las baterías deben ser reemplazadas inmediatamente.

'STORE' (Guardar) Este símbolo indica que el instrumento esta grabando automáticamente los datos y durante el datalogging manual (durante aproximadamente un segundo).

'EEEE' Indicación que la medida de los rangos tóxicos ha pasado 999 (fuera de escala del instrumento). El rango ppm cambia automáticamente a LEL/Vol y no muestra este mensaje. El mensaje también aparece cuando la medida baja de –99 (cero incorrecto) en la escala ppm o tóxico.

'1' Indicación, que también puede aparecer después el inicio, donde se detecta un error de calibración. Se debe devolver el instrumento para su revisión.

Operación



Encendido en modo CSM

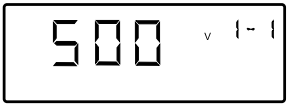
Mantenga pulsado el botón una [picture] vez [picture] para encender el instrumento y la bomba. Esto inicia el ciclo de “warm-up”:

Encendido en modo CGI

Mantenga pulsado el botón dos veces [picture] para encender el instrumento y la bomba. Esto inicia el ciclo de “warm-up”:

Todos los elementos se mostrarán en el display.

Seguido por el modelo del instrumento y la versión del software,



..entonces se muestra el estado de la batería, como se indicada en la figura:

Si el instrumento está encendido en modo CSM, todos los niveles de alarma se muestran en pantalla.

Después el instrumento indica la fecha de calibración, mes y año.

A esta pantalla le sigue la lectura de la detección del gas.

Cambio de rango (sólo CSM)

Pulsando el Botón Dos  se cambia el rango. Los rangos disponibles son LEL/GAS – O2 – Tóxico 1 – Tóxico 2 – LEL/GAS, etc.

Cambio del rango (sólo CGI)

Pulsando el Botón Dos se cambia el rango. Los rangos disponibles son PPM/LEL/GAS – O2 – Tóxico 1 – Tóxico 2 – PPM/LEL/GAS, etc.

Bomba on/off (sólo CGI)

Pulsando el Botón Uno  , cuando la bomba esté en marcha, se apaga la bomba y se para el muestreo. Pulsar otra vez para poner la bomba en marcha de nuevo.

Cero rango PPM (sölo CGI)

Con el rango ppm seleccionado, pulse dos veces el Botón Dos para hacer un cero. Esto se debe hacer en aire limpio.

Dataloggging manual (sólo CSM)

Pulse el Botón Tres para guardar la medida manualmente. Confirmación a través de la señal STORE y la sirena suena.

Datalogging automático (sólo CSM)

Pulse el Botón Tres dos veces para activar o desactivar el datalogging. Si está activado, aparece la señal STORE permanente en pantalla.

Cancelar alarmas (sólo CSM)

Pulse el Botón Cuatro dos veces para cancelar una alarma. Pulsando dos veces sólo cancelará una alarma si el nivel del gas está en los límites configurados. Si más de un gas ha pasado su limite de alarma, pulsando dos veces el botón cuatro cancelará cada alarma en orden de prioridad.

Activar Geiger acústico (sólo CGI)

Para activar el Geiger acústico (sólo en rango de ppm) mantenga pulsado el botón cuatro . Mantenga pulsado otra vez para silenciar la indicación.

Apagar

Pulse dos veces el botón uno para apagar el instrumento.

CHECKLISTA

1. Kontrollera att instrumentet ej har några synliga fel.
2. Kontrollera samtliga tillbehör.
3. Läs och förstå instruktionsboken innan Du använder instrumentet
4. Slå på instrumentet (se nedanstående)
5. Kontrollera batteriets kapacitet.
6. Kontrollera “Nollan” I frisk luft.

SÄKERHET

- Instrumentet skall regelbundet kontrolleras och kalibreras av kunnig personal I härför avsedd miljö.
- **Batterier:** Alkaline batterier eller *Laddningsbara batteripaket måste laddas eller bytas utanför Ex-klassat område och monteras på rätt sätt Använd aldrig skadat batteri Det får ej heller utsättas för höga temperaturer.
- Endast GMI-orginaldelar får användas.
- Om instrumentet reagerar för gas skall Ert företags normala rutiner följas.
- Mätkammaren för brännbar gas är en Ex-klassad enhet och får ej öppnas då risk för sådan gas föreligger.
- Gasurveyor serie 500-instrument är klassat enligt

  ”EEx iad IIC T4” (-20^{o}C $\leq$ Tamb $\leq$ 50^{o}C).

  BAS01 “ATEX2292 Ex II 2 G”.

  UL “Class 1 Groups A, B, C and D”.
- Denna utrustning är konstruerad och tillverkad för att skydda mot andra risker än definitionen I paragraf 1.2.7 i Annex II i ATEX Direktivet 94/9/EC

All rätt till skadestånd med hänvisning till produktansvar eller skada hos tredje man gentemot GMI upphör om denna varning ej beaktas.

ANVÄNDNINGSOMRÅDE

Exponering för vissa kemikalier kan resultera I att sensorn för brännbara gaser skadas. I sådan atmosfär rekommenderas att ofta kontrollera instrumentets känslighet. De kemiska substanser som kan orsaka försämrad reaktion är bl.a. Silikoner, Bly, Halogener and Sulfider. Använd inte instrumentet där oxygenhalten kan överskrida 21vol%. Instrumenthuset är tillverkat av

polypropylen och får ej utsättas för eller komma I kontakt med vissa kemikalier. En ytterligare skyddsväska kan vara nödvändigt då instrumentet används i speciella miljöer.

MEDDELANDEN / TECKEN I DISPLAYEN

Olika besked visas I displayen för att indikera instrumentets status.

'SAMPLE' Betyder att pumpen går och instrumentet suger.

'OFF' Betyder att instrumentet håller på att stängas av. Detta kommando kan avbrytas genom att trycka på någon knapp.

'SAMPLE FAULT' Betyder att flödet inte är korrekt. Detta kan bero på att sondslangen är blockerad, vätska har sugits in i instrumentet, filtret är igensatt eller fel på pumpen. När instrumentet körs i Measure- eller Purge-läge stanna pumpen automatiskt.

Sondslang och filter skall kontrolleras varefter knapp "1" trycks ner och återstartar pumpen.

'CHECK ZERO' Betyder att nolljusteringen ej kunnat utföras på grund av närvaro av gas. Stäng av instrumentet och återstarta det i ren luft..

'ZERO FAULT' Betyder att "nollan" ligger utanför sin gräns. Stäng av instrumentet och återstarta det i ren luft. Om felet ej försvinner lämnas instrumentet för service till kvalificerad personal.

'BAT' Betyder att batteriet snart behöver bytas. Då detta meddelande visa är den återstående drifttiden med alkalinebatterier ca. 60 minuter. Denna tid kan dock variera mycket beroende på fabrikat, temperatur m.m.

Med laddningsbart batteri visas 'BAT' när det återstår ca. 30 minuter.

Vartefter batterispänningen fortsätter att sjunka blinker 'BAT FAULT'. Slutligen visas 'OFF' och instrumentet stänger av sig automatiskt.

Batteriet skall omedelbart bytas eller laddas.

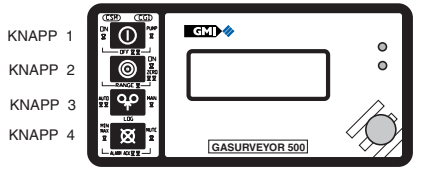
'BAT FAULT' Betyder att batteriet skall bytas omedelbart.

"**STORE"**Indikerar att instrumentet automatiskt loggar eller vid manuell loggning (denna varar i ca. 1 sek.)

"EEEE" Betyder att vid mätning av brännbara gaser i ppm-området eller kolmonoxid är koncentrationen mer än 999 ppm. Denna indikering syns även om mätaren går under -99 (felaktig nollpunkt) vid mätning av kolmonoxid.

'I' Betyder även efter att instrumentet satts I gång att informationen angående kalibrering är felaktig Instrumentet skall lämnas för service.

BRUKSANVISNING



Slå på i CSM-läge

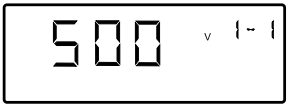
Tryck och håll nere knapp “1” för att sätta på instrumentet och pumpen. Detta startar en automatisk kontroll och uppvärmning av instrumentet:

Slå på i CGI-läge

Tryck och håll nere knapp ”2” för att sätta på instrumentet och pumpen. Detta startar en automatisk kontroll och uppvärmning av instrumentet:

Alla tecken visas i displayen

och åtföljs av Instrumentets beteckning,



mjukvaruversion och batteristatus.

Startas instrumentet i CSM-läge visas alla larmnivåer.

Därefter visas datumet för nästa kalibrering.

Dessa meddelande följs av den aktuella gaskoncentrationen.

Byte av mätområde (endast i CSM-läge)

Ett tryck på knapp ”2”  ändrar mätområdet

Displayen går igenom områdena enligt %LEL / vol%GAS – Oxygen - Tox. Gas 1 – Tox. Gas 2 - %LEL / vol%GAS etc.

Byte av mätområde (endast i CGI-läge)

Ett tryck på knapp ”2” ändrar mätområdet

Displayen går igenom områdena enligt PPM / %LEL / vol%GAS – Oxygen - Tox. Gas 1 - Tox. Gas 2 – PPM / %LEL / vol%GAS etc.

Pump AV / PÅ (endast CGI-läge)

Ett tryck på knapp “1”  då pumpen går stoppar pumpen. Med ytterligare ett tryck startar pumpen igen.

Nollställ ppm (endast CGI-läge)

När ppm-området valts dubbeltryck på knapp ”2”  för att nollställa mätområdet (måste utföras i ren luft)

Manuell dataloggning

Ett tryck på knapp ”3”  ger en manuell loggning av mätvärdet. Detta bekräftas av ”STORE”-indikering och en kort ljudsignal.

Automatisk dataloggning (endast i CSM-läge)

Dubbeltryck på knapp ”3”  startar/stoppar automatisk loggning av mätvärdena. ”STORE”-indikering visar att loggning sker.

Kvittering av larm(endast i CSM-läge)

Dubbeltryck på knapp ”4”  kvitterar larm om det är hållande. Larmen återgår automatiskt så snart gaskoncentrationen understiger inställd larmnivå.. Om fler än en larmnivå överskridits kvitterar dubbeltrycket dem i prioriteringsordning.

Aktivering av ”Tick-Tack” (Geigerfunktion)

För att aktivera ”Geigerfunktionen” (i PPM- eller Läcksökningsläge) tryck och håll nere knapp ”4”  . Tryck och håll nere ytterligare en gång för att stoppa funktionen.

Stäng av

Ett dubbeltryck på knapp “1”  stänger av instrumentet. (”Off ” visas i displayen och instrumentet går igenom en ”avstängningssekvens” under ca. 5 sek.).

Tjek liste

1. Tjek at instrumentet ikke har nogle åbenlyse fejl.
2. Tjek tilbehør.
3. Læs og forstå burger manualen før brug.
4. Tænd instrumentet
5. Tjek batteriet level.
6. Tænd altid og nulstil i frisk luft.

Sikkerhed

- Instrumentet skal regelmæssigt serviceres og kalibreres af autoriseret personale.
- Opladning af batterier skal ske i et sikkert rum.
- Tjek batteriet sidder rigtigt fast på instrumentet før brug.
- Udsæt aldrig batteri eller instrumentet for ekstrem varme.
- Brug kun GMI reserve dele til instrumentet.
- Hvis instrumentet konstatere gas, følg da de procedure som din organisation har foreskrevet.
- Forbrændings kammer er brandsikker tilbehør, og må ikke åbnes i almindelig atmosfære.

  Ethvert krav i forbindelse med produkt ansvar eller følge skade på tredje part imod GMI, er fjernet hvis de ovenstående forskrivelser ikke håndhæves.
- Gasurveyor 500 serien instrument er certificeret ifølge:

  EEx iad IIC T4" ($-20^{o}C \leq Tamb \leq 50^{o}C$).

  BAS01 "ATEX2292 Ex Ex II 2 G".

  UL "Class 1 Groups A, B, C and D".

Bruger områder

Afdækning af bestemte kemikalier kan resultere i tab af følsomheden i LEL sensoren. Hvor disse omgivelser er kendte eller mistænkt, anbefales det at foretage målinger oftere. Den kemiske sammensætning som kan resultere i tab af følsomhed, inkludere silikoner, bly, halogen og svovl. Brug ikke instrumentet ved potentiel farlig atmosfære, der indeholder mere end 21 % ilt.

Bruger beskeder og fejl

Forskellige beskeder/tegn forekomme på displayet under brug.

'SAMPLE' fortæller at pumpen kører, og at instrumentet optager prøver.

'OFF' Indikerer at instrumentet er ved at slukke. Denne kommando kan afbrydes ved et tryk på en anden knap.

'SAMPLE FAULT' Fortæller at der er et problem under prøve sugning, som kan være følgende: opsugning af skidt, vand, filter blokering eller eb fejl i pumpen. Under måling og "purge" stopper pumpen automatisk. Tjek for disse fejl, og tryk på knap 1 for at genstarte pumpen.

'CHECK ZERO' Indikerer at der måske har været en fejl under måling. Sluk instrumentet og tænd igen i frisk luft.

'ZERO FAULT' Indikerer at nul grænsen er uden for kalibrerings området. Sluk instrumentet og tænd igen i frisk luft. Hvis fejlen ikke er væk, send instrumentet til service.

'BAT' Fortæller at batteriet snart løber tør for strøm. Alt efter kvaliteten at Alkaline batterier, vil der ca. vil være 60 minutter tilbage. Med genopladelige batterier er der ca. 30 minutter tilbage. Efter strømmen her fra falder, begynder `BAT FAULT` at blikke. Efter noget tid slukkes instrumentet automatisk.

'BAT FAULT' Fortæller at batteriet straks skal skiftes.

'STORE' Indikerer at instrumentet er på automatisk datalog.

'EEEE' Indikerer at målingen af gift er oversteget 999 (som er højeste måling). PPM måling skifter automatisk over til LEL/vol gas, og viser derfor ikke denne besked.

Denne besked vises også hvis målingen falder under -99.

'1' Kan fremkomme efter opstart, betyder at der er en kalibrering fejl. Instrumentet skal sendes til service.

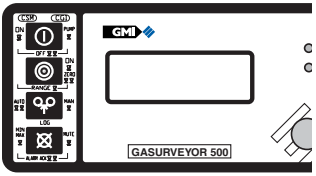
Bruger muligheder

KNAP 1

KNAP 2

KNAP 3

KNAP 4

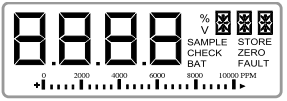


Tænd for CSM tilstand

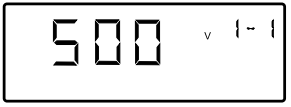
Tryk og hold nede den knap 1, så startes opvarmnings processen og pumpen.

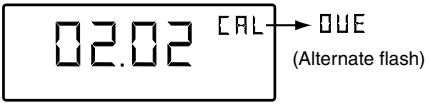
Tænd for CGI tilstand)

Tryk og hold nede den knap 2, så startes opvarmnings processen og pumpen.



Under opvarmning identificeres model, serienummer, software version, batteristatus, kalibrerings måned og år.





Herefter vil displayet begynde at vise målinger.

Skift måling (SCM)
Hvert tryk på knap 2, skifter måling. Følgende er mulig: LEL/gas – ilt – Gift 1 – gift 2 – LEL/gas, ect.

Skift måling (CGI)
Hvert tryk på knap 2, skifter måling. Følgende er mulig: PPM/LEL/ gas – ilt – Gift 1 – gift 2 – PPM/LEL/gas, ect.

Tænd/sluk pumpe (CGI)
Et tryk på knap 1, når pumpen kører, stopper pumpen. Et tryk mere starter pumpen igen.

Nulstille PPM måling (CGI)
Når PPM måling er valgt, tryk 2 gange. Tryk på knap 2 til den nulstiller. (Bør gøres i frisk luft)

Manuel datalogging
Et tryk på knap 3, starter datalogging. ”STORE” vises på displayet, og en summe lyd lyder.

Automatisk datalogging (CSM)
2 tryk på knap 3, starter/stopper automatisk datalogging. Når den er tændt vises ”STORE” på displayet.

Slukning af alarm (CSM)
Tryk 2 gange på knap 4, stopper en latching alarm. 2 gange tryk vil kun stoppe alarmen, hvis gas niveauet falder under det tillade. Hvis mere end en gas alarm er fundet, vil 2 tryk på knap 4, stoppe alarmerne.

Aktivere hørlig geiger (CGI)
Tryk og hold ned på knap 4 (kun PPM), skifter måling. Tryk og hold ned knap 4 for at afbryde igen.

Skift måling (SCM)
Hvert tryk på knap 2, skifter måling. Følgende er mulig: LEL/gas – ilt – Gift 1 – gift 2 – LEL/gas, ect.

Sluk instrumentetSwitch OFF
Tryk 2 gange på knap 1.

CHECKLIST

1. Kijk na of het instrument geen zichtbare fouten vertoont.
2. Kijk de accessoires na.
3. Lees en begrijp het handboek voor gebruik.
4. Schakel het toestel aan (zie volgende bladzijde).
5. Kijk het batterijniveau na.
6. Controleer “NUL” in open lucht.

VEILIGHEID

- De instrumenten moeten regelmatig nagekeken en gekalibreerd worden door daartoe opgeleid personeel in een veilig lokaal.
- **Batterijen:** Alkaline batterijen en herlaadbare batterijen moeten vervangen en heropgeladen worden in een veilige omgeving en moeten precies passen voor gebruik. Gebruik nooit beschadigde batterijen of stel ze niet aan extreme hitte bloot.
- Alleen GMI wisselstukken mogen gebruikt worden.
- Indien het instrument gas detecteert, volg dan uw eigen bedrijfsprocedure en gebruiksaanwijzing.
- De verbrandingskamer is een brandvrij onderdeel en mag niet geopend worden in een ontvlambare atmosfeer.
- Gasurveyor 500 series instrumenten zijn gecertifieerd zoals EEx iad IIC T4 (-20°C ≤ Tamb ≤ 50°C).

  BAS01ATEX2292 Ex Ex II 2 G.

  UL Klasse 1 Groepen A, B, C en D.
- Dit toestel is ontwikkeld en gemaakt om ons te beschermen tegen voorvallen zoals beschreven in paragraaf 1.2.7 van Annex II van de ATEX 94/9/EC

Elke recht op een claim met betrekking tot de betrouwbaarheid of de daardoor veroorzaakte schade van welke derde partij dan ook aan GMI zal verworpen worden indien de waarschuwingen genegeerd zijn.

PLAATSEN VAN GEBRUIK

Blootstelling aan bepaalde chemicaliën kan resulteren in een verlies van gevoeligheid van de brandsensor. Indien deze omgevingen bekend zijn of vermoed worden, is het aanbevolen om meer frequente check-ups uit te voeren. Chemische stoffen die een verlies van gevoeligheid kunnen veroorzaken zijn siliconen, lood, halogenen en zwavel. Gebruik het instrument niet in een schadelijke atmosfeer met meer dan 21 % zuurstof. Het omhullende materiaal is polypropyleen en dit mag niet blootgesteld worden aan omgevingen die waarschijnlijk resulteren in mechanische of thermische degradatie of schade

veroorzaakt door contact met aggressieve substanties. Bijkomende bescherming kan nodig zijn in omgevingen waar het omhulsel van het instrument onderhavig kan zijn aan schade.

GEBRUIKSBOODSCHAPPEN / FOUTMELDINGEN

Verschillende boodschappen kunnen op het LCD scherm verschijnen om de status van het instrument aan te duiden.

'SAMPLE' Indicatie dat de pomp draait en dat het instrument meet.

'OFF' Indicatie dat het instrument bijna gaat uitschakelen. Dit kan geannuleerd worden door een enkele druk op eendert welke knop.

'SAMPLE FAULT' Indicatie van een probleem met de instroom van het instrument doordat de invoer geblokkeerd is, door waterinsijpeling, een verstopte filter of falen van de pomp. Bij CSM geeft het instrument een alarm en de pomp blijft draaien. De invoer moet geontroleerd worden en knop 1 één maal ingedrukt om de fout te verwijderen. Bij CGI stopt de pomp automatisch. De invoer, filters etc. moeten gecontroleerd worden op waterinsijpeling of verstopping en knop één moet dan ingeduwd worden om de pomp te herstarten.

'CHECK ZERO' Indicatie dat het nulpunt gewijzigd kan zijn door de aanwezigheid van gas. Schakel het instrument uit en opnieuw aan in frisse lucht.

'ZERO FAULT' Indicatie dat het nulpunt buiten de kalibratielimieten valt. Schakel het instrument uit en opnieuw aan in frisse lucht. Indien de foutmelding niet verdwijnt, breng het toestel terug voor onderhoud.

'BAT' Indicatie dat de batterijen weldra aan vervanging toe zijn. Nu resten er nog ongeveer 60 minuten met alkaline batterijen, alhoewel dit erg afhankelijk is van de batterijenproducent, temperatuur, gebruik etc. Met herlaadbare batterijen duidt 'BAT' nog ongeveer 30 minuten resterende gebruiksduur aan. Naarmate de batterijkracht daalt, knippert op het LCD scherm 'BAT FAULT'. Daarna zal de LCD automatisch 'OFF' vertonen en schakelt het toestel zelf uit. De batterijen moeten dan onmiddellijk vervangen worden.

'BAT FAULT' Indicatie dat de batterijen onmiddellijk moeten vervangen worden.

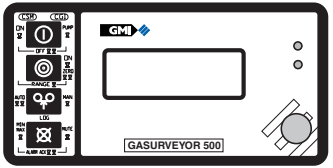
'STORE' Deze boodschap wordt getoond indien het instrument in "auto datalogging" staat en gedurende manuele "datalogging" (gedurende ongeveer 1 seconde).

'EEEE' Indicatie dat de meting in het toxisch bereik boven 999 is gestegen (instrument buiten bereik). Het ppm bereik autobereik van LEL / Volume Gas toont daardoor deze boodschap niet. De boodschap wordt ook getoond indien de meting onder –99 gaat (niet-correcte nul instelling) in de ppm of toxische bereiken.

'1' Indicatie, die ook na aanschakelen van de stroom kan verschijnen, dat een kalibratiegegevensfout werd opgespoord. Het instrument moet binnen voor onderhoud.

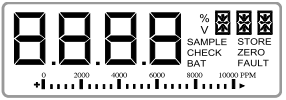
GEBRUIK

KNOP 1
KNOP 2
KNOP 3
KNOP 4



Schakel AAN in CSM

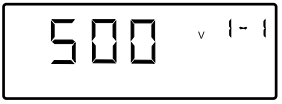
Druk op knop 1 [①] en houdt ingedrukt om instrument en pomp aan te schakelen. Dit zorgt voor opwarming:



Alle LCD segmenten worden

Schakel AAN in CGI

Druk op knop 2 [◎] en houdt ingedrukt om instrument en pomp aan te schakelen. Dit zorgt voor opwarming:



getoond gevolgd door het instument type en de software versie,

en daarna de batterij status, zoals getoond:

Indien het instrument aangeschakeld wordt in CSM, worden alle standaard alarmniveau's getoond.

Dan toont het instrument, met maand en jaar, wanneer de volgende kalibratie moet plaatsvinden.

De display wordt gevolgd door het lezen van de huidige gasdetectie.

Wijzig bereik (enkel CSM)

Elke enkele druk op knop 2  wijzigt het bereik. De beschikbare bereiken zijn LEL/GAS – O**2** – Toxisch 1 – Toxisch 2 – LEL/GAS, etc.

Wijzig bereik (enkel CGI)

Elke enkele druk op knop 2  wijzigt het bereik. De beschikbare bereiken zijn PPM/LEL/GAS – O**2** – Toxisch 1 – Toxisch 2 – PPM/LEL/GAS, etc.

Pomp AAN / UIT

Een enkele druk op knop 1  , wanneer de pomp draait, schakelt de pomp uit en stopt het meten. Een volgende druk op knop 1 schakelt de pomp weer aan.

Nul PPM Bereik (enkel CGI)

Met ppm bereik geselecteerd, druk tweemaal op knop 2  tot nul. Dit moet in open lucht gebeuren.

Manele Datalogging

Een enkele druk op knop 3  voert een manuele datalog uit. De confirmatie wordt door de STORE boodschap kort getoond en de buzzer maakt lawaai.

Automatische Datalogging (enkel CSM)

Een dubbele druk op knop 3  zet de automatische datalogging Aan en UIT. Indien AAN wordt de STORE boodschap permanent getoond.

Alarmen verwijderen (enkel CSM)

Een dubbele druk op knop 4  zal het “latching” alarm uitschakelen. Dubbele druk zal enkel het alarm uitschakelen indien het alarm beneden de ingestelde waarde van het instrument komt. Indien er meerdere alarmen afgaan, zal een dubbele druk op knop 4  alle alarmen in orde van belangrijkheid uitschakelen.

Activeer Hoorbare Geiger (enkel CGI)

Om de hoorbare Geiger te activeren (enkel in PPM bereik) druk op knop 4  en houdt deze ingedrukt. Druk en houdt opnieuw ingedrukt om de indicatie te verminderen.

Schakel UIT

Een dubbele druk op knop 1  schakelt het instrument uit.

Index

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