

Volume

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SCHAUENBURG FLEXADUX (PTY) LTD

Gas Detection Instrumentation (GDI)

ViroCap Instrumentation Users Guide

GAS DETECTION INSTRUMENTATION

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Introduction

This manual contains information on the working operation of the gas-measuring instrument that must be understood and adhered to. The reliability and safe working operation of the instrument is dependant on the correct handling and care taken.

GDI instruments have adequate protection against dust, moisture, shock and sensor poisoning vapours.

All GDI instruments are submitted for batch testing after a type test was passed. The working and intrinsic safety of the instrument is evaluated and on passing a certificate of compliance is issued. Any modification to the instrument is prohibited as this invalidates the "IS" certification.

All users of GDI equipment must be trained and/or educated on the use and service of the OEM (Original Equipment Manufacturer) supplied instruments.

The safety of the person using the instrument is dependant on the condition and serviceability of the instrument.

TAKE CARE WHEN HANDLING INSTRUMENTS, THEY SAVE LIVES.

Usually the ViroCap instrument is fitted to the lamp cable so that the instrument is settled at the back of the safety helmet. The instrument can provide up to 2 gas monitoring and alarm indication on preset levels.

Specification

Gas Types	Flammable	Toxic
Sensors and measuring ranges	CH ₄ = 0-100% LEL	CO = 0-1000 ppm
Measuring principal	Catalytic Combustion	Electro-chemical
Calibration gasses	% = up to 50% full-scale	ppm = 100-500
Response time T90	Less than 15 seconds	Less than 35 seconds
Resolution	0.1%	1 ppm
Long term drift	± 0.2%	<2% Full scale / month
Min & max pressure	- 10 KPa to + 50 KPa	Ambient ± 10%
Max relative humidity	95 % Non condensing	
Sample velocity	20-40 litres per hour	
Operating temperature	-10 to + 40°C	
Storage temperature	0 – 20°C	
Power source	3.4 Volt <> 4.8 Volt 1.8 A/Hour for 12 Hour operation.	
Operational time	> than 12 hours (Depends on power source)	
Dimensions	74 x 72 x 40 (mm)	
Weight	128 g	
Housing	Polycarbonate	
Warranty	* 1 (one) year on all electronic parts and workmanship * 6 (six) months on sensors fitted by OEM	
Approval	SANS IEC 60079 Part 0: 2000 SANS IEC 60079 Part 11: 1999 SANS 1515: 2002	

Instrument functionality

Start-up sequence

While the caplamp is on charge the unit will switch to the charging mode. Meaning: - The Power indication led is will be on, the methane sensor will be switched off and unit will not respond to any gas concentrations.

Remove the caplamp from its charging rack and switch on the lamp. The ViroCap instrument will detect this state change (Charging to Discharging) and go into start-up mode. The Power indication led will start flashing indicating that the state change has been detected. The start-up complete beep tone, CO and methane alarm indication leds will be switched on +/- 20 seconds later. In this period avoid exposing the unit to any gas concentrations, as this will interfere with the zero settling of the sensors. The unit is now ready for normal operational use and/or functional test and/or calibration.

NOTE: If the unit switches on either of the LED's after being removed from charge the calibration sequence has previously failed or the flammable sensor does not function properly. (FAULT CONDITION).

Normal operation

With a fully charged battery the ViroCap instrument will function for at least 12 hours.

As an indication to the user that the unit is functional the Power led will flash continuously. If the instrument is not exposed to a test gas higher than the first alarm level the methane and CO led's will flash every 15 to 20 seconds indicating that the test was not performed successfully.

In normal mode the instrument will at all times monitor all sensors fitted, and switch on the alarm condition if a reading above the pre-programmed alarm level is measured. The alarm indication will consist of flashing the lamp and appropriate led and sounding the buzzer.

If the ViroCap instrument at any time measures a flammable reading of more than 5% the sensor will be switched off. The instrument will indicate this condition by switching the CH₄ indication led on permanently (over range) and indicating an alarm condition.

This condition can **ONLY** be reset in an acceptable area where it is known to be safe for the user, as resetting in an area where this has happened could result in a sensor that is totally out of calibration and/or an explosion. Switch the cap lamp off for at least 10 seconds and then on again to reset the ViroCap. If a high level of flammable gas was measured, re-calibrate instrument as soon as possible.

If the methane sensor becomes faulty for any reason the methane led's will be switched on permanently while the instrument is in normal operational mode.

When the battery is depleted the instrument will switch of the methane sensor. The Power indication led will also be switched off. In this state no gas measurement is possible.

Instrument Calibration

Calibration procedure

1. Only make use of the approved Calibration/Test station when the calibration procedure for any sensor is attempted. Only competent personnel trained in the calibration procedure of the ViroCap instrument, should execute the calibration of any sensor.
2. Remove the caplamp with ViroCap instrument from the charger, and wait until the start-up complete beep tone is generated.
3. Follow the calibration procedures as described in the appropriate ViroCap Calibration/Test station manual.
4. During the actual calibration do not remove the instrument from the calibration/test mask as this will result in an erroneous calibration.
5. Depending on the software that is programmed into your ViroCap unit the calibration procedure will follow either method 5.1 or method 5.2.
 - 5.1 Upon successful calibration of a sensor the instrument will return to normal operational mode as soon as the user switch the lamp on if it was switched off. If the lamp was switched on during calibration switch the lamp off for 10 seconds and then switch back on. The unit will generate the start-up complete beep tone when ready.
 - 5.2 Upon successful calibration the instrument will automatically return to normal operational mode. If gas is still present in the mask the instrument will alarm if higher than the preset alarm levels. The instrument can now not be returned to the calibration mask for +/- 60 seconds.
6. If the unit has failed the calibration, at start up the unit will continuously switch on the led's indicating that the unit is not functional. Return unit to an OEM approved technician for repair.

Instrument Settings

Alarm levels

The unit has 3 flammable alarms. (2 settable and OR is fixed)

- 1) The first alarm is a pre-warning and will only flash the red led.
- 2) The second alarm is a warning that the flammable level is now critical and the red led will flash with the main lamp and the buzzer will sound.

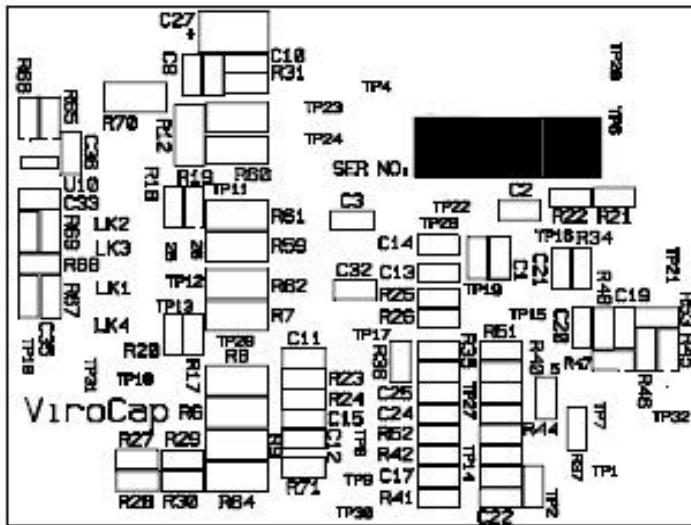
- 3) The over range alarm is a latching alarm and the user have to reset this alarm in a safe area. Red led will remain on.

The unit also has settable 2 toxic alarms if the unit is fitted with a toxic sensor.

Option select links

The ViroCap instrument can be configured for different operational responses to the environment is operating in.

For these reason the instrument has 4 solder links that control the options.



LK1 if soldered will enable the Flammable sensor.

LK2 unused at this time.

LK3 if soldered the ViroCap will not flash the lamp if a toxic gas is measured.

LK4 if soldered will enable the Toxic sensor.