

Clip SGD

Portable single Gas Detector



User manual

M07716
Issue 1
October 2017

WARNING

- Clip SGD is a hazardous area certified gas detector and as such must be operated and maintained in strict accordance with the instructions, warnings and label information included in the manual.
- Before operating this device, please read carefully and understand all instructions in the manual.
- Understand the screen display and alarm warnings prior to use.
- Before use, please check the activation date, and if the activation date has expired please do not use the device.
- Before use ensure that the device is in good condition and the enclosure, the display window, alarm LED windows and sounder aperture are undamaged and clear from contaminants.
- Before use perform the self-test of the LED's, sounder and vibrator.
- Bump test the device regularly by applying a gas concentration exceeding the alarm set point. It is recommended that a bump test is performed at least every 90 days.
- For the O₂ detector perform a calibration every 30 days in a fresh air environment.
- If the device fails a bump test, calibration or self-test please do not use the device.
- Do not disassemble or substitute components, or operate beyond the intended range of use as this may impair intrinsic safety, invalidate safety certification and will void the warranty.
- Do not attempt to replace the battery or sensor as the Clip SGD is designed to be maintenance free and disposable. Changing the battery or sensor may impair intrinsic safety, invalidate safety certification and will void the warranty.
- Use IR communications only in a safe area that is free from hazardous gases
- To prevent the generation of static electricity do not clean or rub the LCD screen of the device with a dry cloth or hands in a hazardous area environment
- Perform cleaning and maintenance of the device in a safe area only that is free from hazardous gases.
- The Clip SGD is shipped with default alarm level settings. It is the users responsibility to ensure the alarm level settings are appropriate for the specific application; these can be changed as required via the IR_Link_PC Software.
- Gas concentration measurements by the sensor can vary based on the environment (temperature, pressure and humidity). Therefore calibration of Clip SGD should be performed in the same (or similar) environment of the device's actual use.
- Severe vibration or shock to the device may cause a sudden gas reading change. Please use Clip SGD after the value of gas concentration has stabilized.
- Excessive shock to Clip SGD can cause the device and/or sensor to malfunction.
- If the temperature changes sharply during use of the device (for example moving from indoors to outdoors), the value of the measured gas concentration can suddenly change. Please use the Clip SGD after the gas concentration value has stabilized.
- The device is intended for use in normal atmospheric conditions, pressure 80 kPa (0.8 bar) to 110 kPa (1.1 bar); and air with normal oxygen content, typically 21 % v/v (volume/volume).

⚠ CAUTION

- This device is not a measurement device, but a gas detector.
- Clean detectors with a soft cloth and do not use chemical substances for cleaning.
- To ensure a 24 months battery life is attained it is important to avoid the following activities as this will deplete the battery lifetime to less than 24 months.
 1. Allowing the detector to be in gas alarm frequently or for prolonged periods
(Normal Alarm Use: No more than 4 minutes alarm time per day)
 2. Operating the detector user button frequently.
 3. Connecting the detector with the Clip SGD IR Link frequently, except for regular bump testing.
- View a serial number on the label at the back side of the device. (ex, 20170101)
 1. The serial number indicates below.

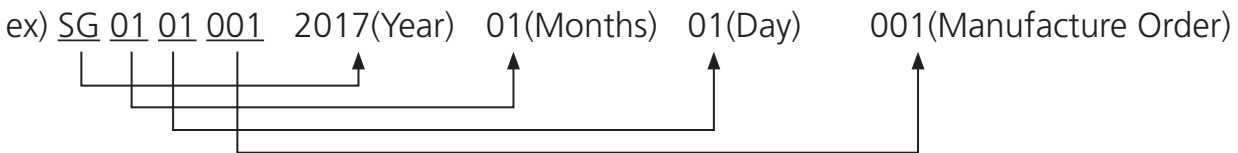


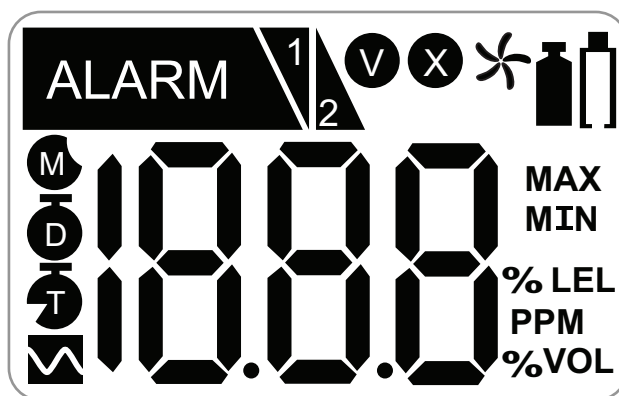
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1. Diagram and LCD



1. IR Port
2. LCD display
3. Alarm LED
4. Buzzer
5. Button
6. Gas sensor
7. Gas Type



LCD display symbols

ALARM	Alarm condition	M	Months remaining
1	Low alarm	D	Days remaining
2	High alarm	T	Time remaining (hours)
V	Test success	MAX	Maximum peak value
X	Test failure	MIN	Minimum peak value
Fan icon	Fresh air calibration	% LEL PPM %VOL	Measurement Unit
Battery icon	Standard gas calibration	Battery icon	Low battery life (Less than 30 days)

2. Activation

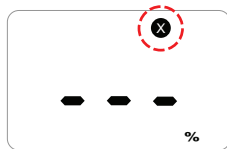
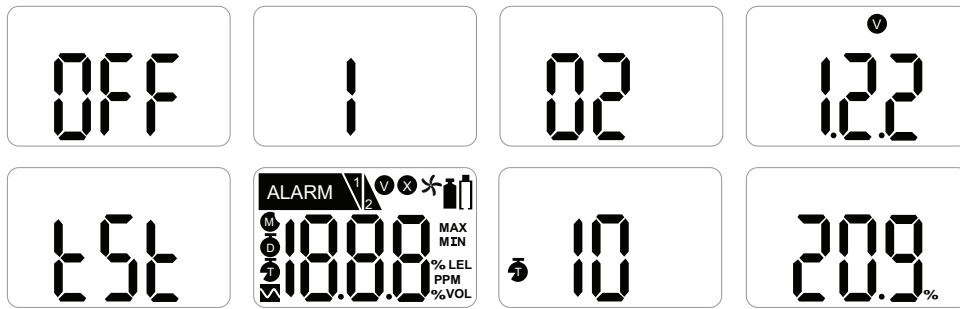
⚠ CAUTION

Before use, check the activate by date on the box. If the activation date is past, do not activate the device.

Shelf Life within 6 months from manufacture.

Only activate in a safe environment. Press the button for 3 secs; gas type and firmware version (e.g. v2.2) will be displayed. Following the 10 secs countdown, the device will be fully activated, the **V** icon will flash on the display screen and the device will be in Gas Measurement mode.

After turning on the device, the remaining life is displayed; 23 months originally. After the remaining life reaches 1 month, 30 days remaining is displayed. When 1 day is left, 24 hours(T) remaining is displayed.



In the event that activation of the device fails, the **X** icon will appear on the display and Gas Measurement mode will not be entered. In this case, perform calibration or contact authorized reseller or Crowcon Detection Instruments customer support at +44 (0) 1235 557711 for repair/return information.

⚠ CAUTION

Appropriate calibration of the device is required prior to operation. Always ensure that the device responds correctly to the relevant gas. Verify that foreign materials that could interfere with the detection of gas are not blocking the sensor.

3. Mode

3.1 Gas Measurement Mode

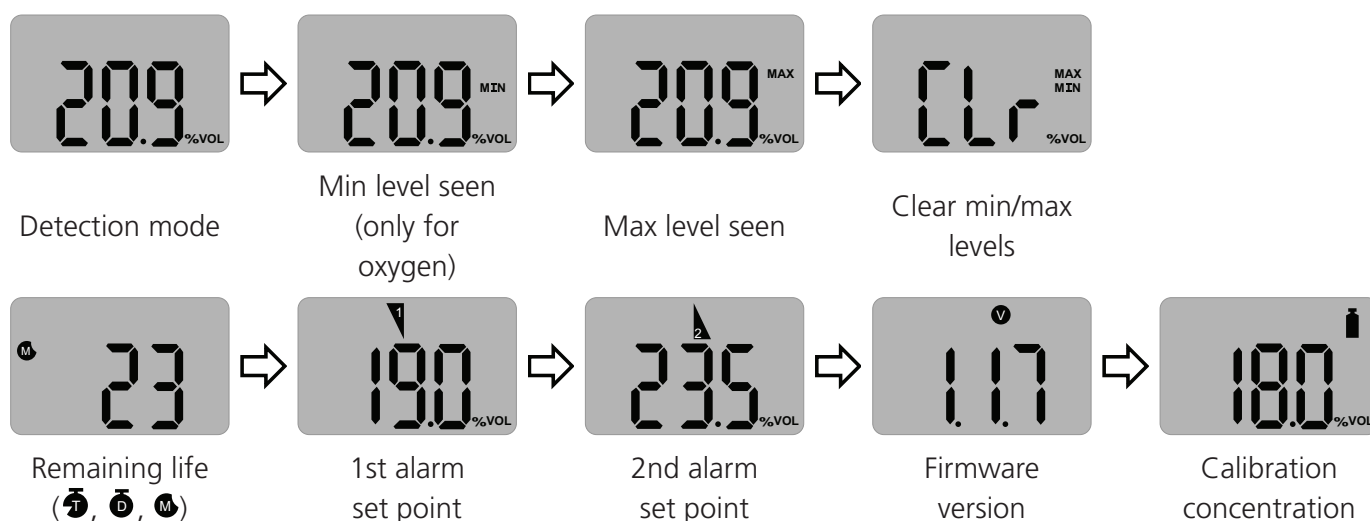


Following activation the device will operate in Gas Measurement Mode. The remaining sensor life (default setting) or gas concentration (configurable option) will be displayed on the screen.

Oxygen concentration is displayed in percent by volume (%Vol) and toxic concentration is displayed in parts per million (PPM).

3.2 Display Device Settings

In Gas Measurement Mode to view the device settings press the button to cycle through the settings. The settings will be displayed in the following order upon each button press.















At the last step the device will return to Gas Measurement Mode.

3.3 Alarms and Alerts

When a gas concentration exceeds the configured alarm set points, or will be displayed on the screen, the device will vibrate, alarm LEDs will flash, and the buzzer will sound. The alarms will stop when the device is moved to a clean air environment.

The table below shows the 'alarms' and 'alerts' that may be shown on the display during operation.

Alarm	Alarm Standard	Shown on LCD Display	Alarm and Vibration Display
Low Alarm	Exceeds 1st Alarm set point	 icon & concentration	 Buzzer, LED Vibration 
High Alarm	Exceeds 2nd Alarm set point	 icon & concentration	 Buzzer, LED Vibration 
Remaining life	Below 30 days	 icon	
Lifetime expiration	Past 24 months		Service life is over (Replace with a new Clip SGD)
Test failure	Failure of sensor test / calibration	Display  icon with beeping	
Battery test	Low power		
Bump test	Bump test period		Press the push button to turn off the alarm
Calibration	Calibration period		Press the push button to turn off the alarm

⚠ CAUTION

Default alarm set points are based on common international standards. It is user responsibility to ensure the configured alarm set points are in accordance with local regulations and site procedures.

Default Alarm Set Point

Gas Type	CO			H₂S			O₂	
Part Number	CL-C-25	CL-C-30	CL-C-35	CL-H-2	CL-H-5	CL-H-10	CL-O-19	CL-O-19.5
Lower Alarm Level	25ppm	30ppm	35ppm	2ppm	5ppm	10ppm	19%	19.5%
Upper Alarm Level	50ppm	100ppm	50ppm	5ppm	10ppm	15ppm	23.5%	23.5%

4. Event Log

The last 30 events are stored on a device. Once 30 events are stored, the log events are removed automatically in the order starting at Event 1. The stored log events can be downloaded using the IR Link or the Docking Station (refer to Appendix 1 and 2). Each alarm event records the following:

- Alarm type (1st or 2nd)
- Alarm concentration in ppm or %
- Peak concentration

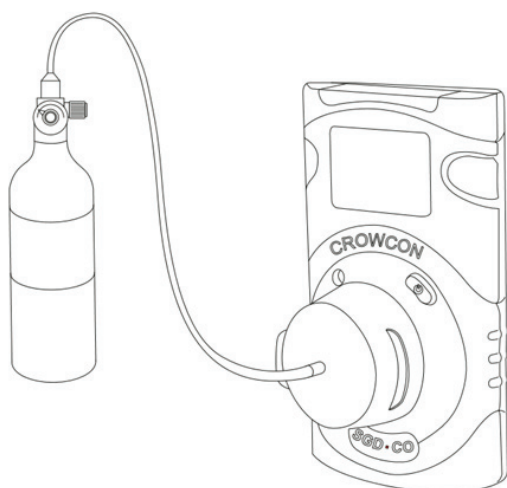
Log Time	21/09/2017 11:50							
Docking Serial Number	DSCR17082400							
F/W Version	0.7.8							
H/W Version	1.0.0							
Place	DevLab							
Gas Expiration Date	2018.8.9							
Gas Bottle Lot	2340286							
Bay Num	Model	Gas Type	Test Type	Test Result	Serial Num	F/W Version	H/W Version	User ID
1	Clip SGD	O2	Bump	SUCCESS	SH0608201	1.1.6	1.1.0	
2	Clip SGD	CO	Bump	SUCCESS	SH0608143	1.1.6	1.1.0	
3	Clip SGD	H2S	Bump	SUCCESS	SH0608162	1.1.6	1.1.0	
4	Clip SGD	H2S	Bump	SUCCESS	SH0608142	1.1.6	1.1.0	
Log Time	21/09/2017 11:50							
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2	SGT	CO	Calibration	SUCCESS	SH0608143	1.1.6	1.1.0	
3	SGT	H2S	Calibration	SUCCESS	SH0608162	1.1.6	1.1.0	
4	SGT	H2S	Calibration	SUCCESS	SH0608142	1.1.6	1.1.0	

Event log

5. Calibration

⚠ CAUTION

For O₂ units only. Initial calibration is performed on all devices prior to shipment. Once received, calibration should be performed monthly (or quarterly) depending on frequency of use.



20.9%

CAL ✖

Fresh Air Calibration

CAL ⓘ

Standard Gas Calibration

5.1 Fresh Air Calibration

⚠ CAUTION

Calibration should be performed in a fresh-air environment that is free from the influence of other gases (calibration is assumed to be performed in an environment with a concentration of 20.9% oxygen). It is also recommended that calibration should not be performed in a confined space.

To perform a Fresh Air Calibration press the button to navigate to Calibration Mode, the calibration icon will be displayed on the screen ⓘ.

- Press and hold the button for 5 seconds, 'CAL' and the fresh air calibration icon will be seen on the screen ✖.
- Press and hold the button for 3 seconds to initiate the Fresh Air Calibration.

When the calibration begins, a countdown (starting at 10) will be displayed on the screen.

18.0%VOL ⓘ

CAL ✖

10 ✖

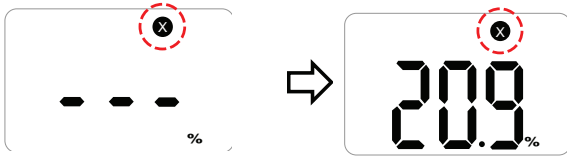
1 ✖

CAL ⓘ



20.9%




Press ESC to show Gas Measurement mode.
Once completed, ⓘ icon will appear on the LCD.

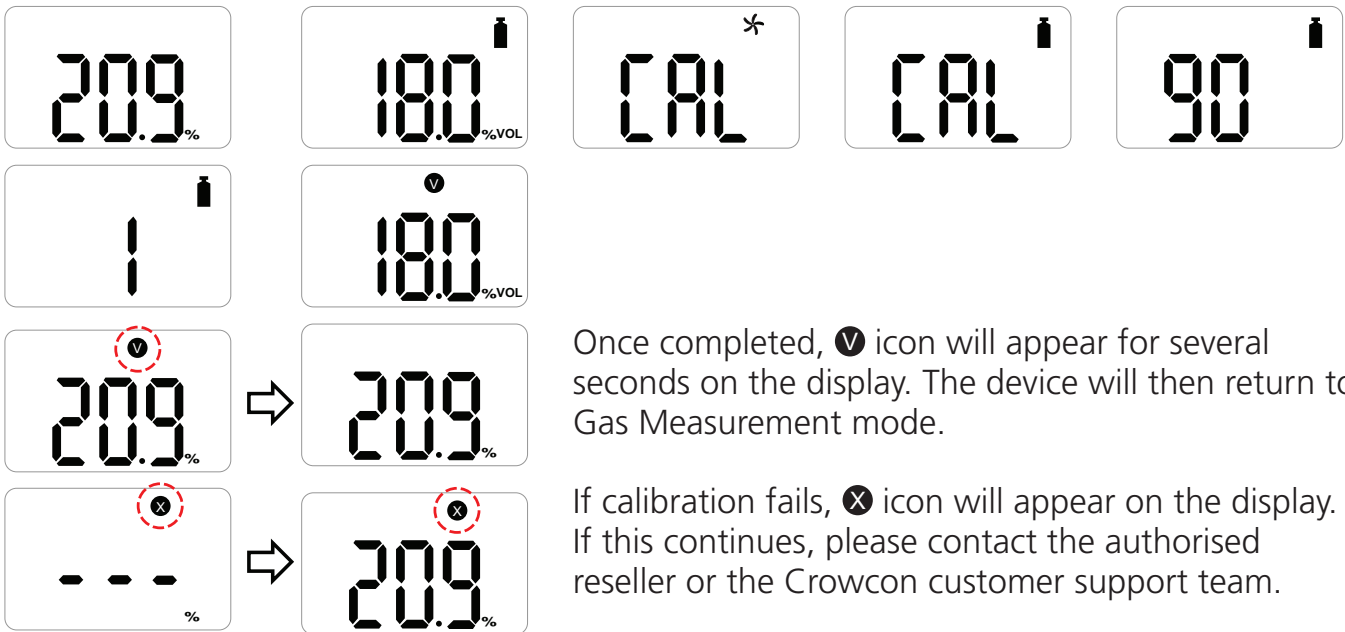


If calibration fails, **X** icon will appear on the display. If this continues, please contact the sales representative or Crowcon customer support.

5.2 Standard Gas Calibration

To perform a Standard Gas Calibration, using the supplied calibration cap connect the appropriate gas cylinder to the device.

- Press the button to navigate to Calibration Mode, the calibration icon will be shown, .
- Press and hold the button for 5 seconds, 'CAL' and the fresh air calibration icon will be displayed on the screen, .
- Press the button once until the calibration icon is shown, .
- Press and hold the button for 3 seconds to initiate the Standard Calibration. When the calibration begins, a countdown (60 seconds or more depending on the gas type) will appear on the screen.



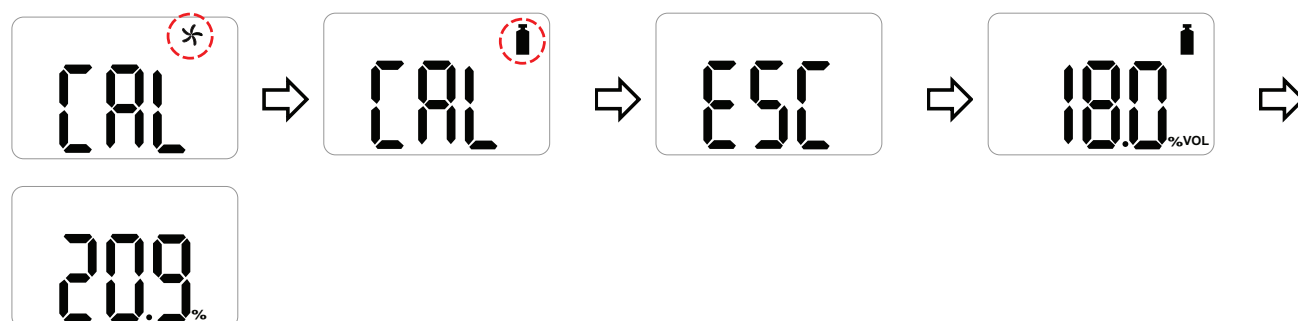
Once completed, **V** icon will appear for several seconds on the display. The device will then return to Gas Measurement mode.

If calibration fails, **X** icon will appear on the display. If this continues, please contact the authorised reseller or the Crowcon customer support team.

5.3 Return to Gas Measurement Mode

To return to Gas Measurement Mode from Calibration Mode, press the button to cycle through the Fresh Air Calibration ✱ and Standard Calibration ⓘ screens until 'ESC' is shown on the display.

Whilst 'ESC' is shown on the display press and hold the button for 3 seconds, the device will return to the Gas Measurement screen.



Calibration concentration.

Gas	O ₂	CO	H ₂ S
Concentration	18%Vol	100ppm	25ppm

6. Specification

Model	Clip SGD		
Measure Gas	O ₂	CO	H ₂ S
Sensor range	0-30%Vol	0-300ppm	0-100ppm
Sensor Type	Electrochemical		
Measurement	Diffusion type		
Display	LCD display		
Audible	90dB at 10cm		
Warning Lamp	Red Flashing LEDs (Light-Emitting Diode)		
Vibration	Vibration Alarm		
Battery	Manufacture: Vitzrocell / P/N: SB-AA02(P) / System: Lithium Primary Battery Nominal voltage: 3.6V / Nominal capacity: 1.2Ah		
Temperature & Humidity	-40°C to +50°C (for Toxic) / -35°C to +50°C (for O ₂) 5% to 95% RH (non-condensing)		
Ingress protection	IP65 and IP67		
Case	Rubber Enclosure		
Accessories	Calibration cap, manual, calibration and test certificate		
Option	IR Link, Docking Station		
Size & Weight	Size: 54mm(W) x 91mm(H) x 32mm(D) Weight: 93g (Toxic), 104g (O ₂) (Battery, clip included)		
Operating Life	24 months, based on 4 minutes of alarm per day (>2900 Alarm minutes)		
Event Log	Recent 30 alarms		
Approval	See Certification on page 16		

7. Self Test and Bump Test

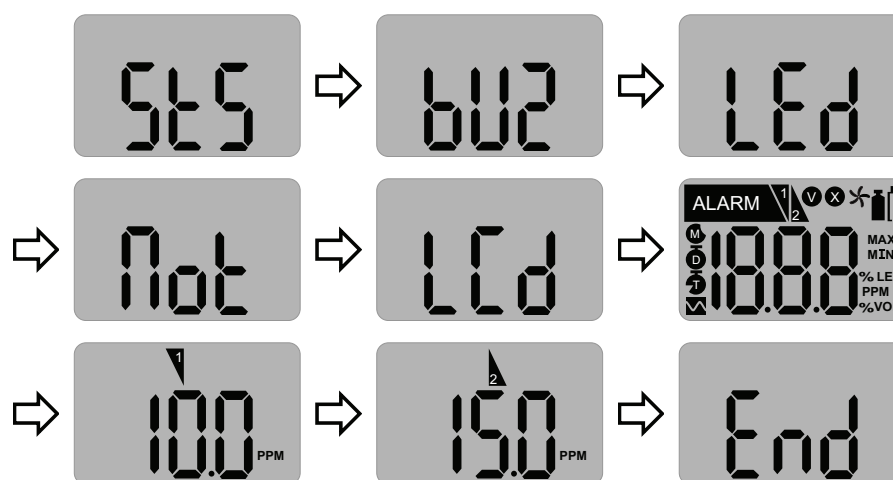
7.1 Self Test

The Clip SGD provides a Self Test function.

The default interval of the Self Test reminder is 20hrs.

Use the IR Link or Docking Station to configure the interval between 1hr and 20hrs, or set to "off".

When the configured Self Test is due, "STS" will flash on the screen (the message will continue to flash until the user performs a successful Self Test).



- Press the button to initiate the Self Test function.

The device will perform a self test by operating the buzzer, LED's, vibrator and LCD. It will also show the configured low and high alarm set points on the display.

After the test is completed, "END" will be displayed on the screen. (The user is required to check that the items operated in the self test, performed as expected).

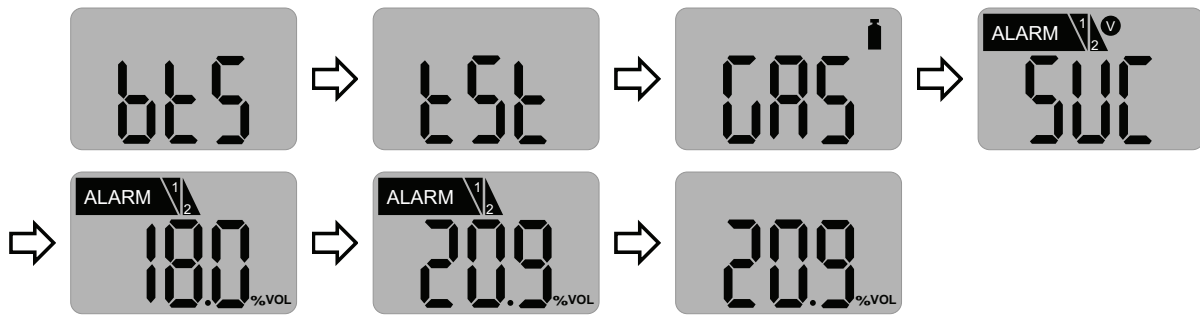
7.2 Bump Test

The device can be configured to provide an on screen Bump Test reminder.


The default setting for the Bump Test reminder is "off", no Bump Test reminder will be displayed.

If a Bump Test reminder interval is required it can be configured using the IR Link or Docking Station. The interval can be configured from 1 day to 365 days.

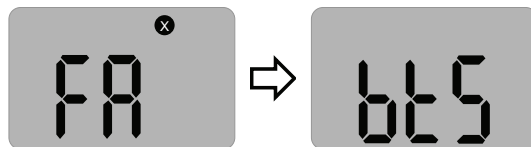
When configured and a Bump Test is due, the "bts" message be displayed and will flash on the screen.



- Press and hold the button for 3 seconds, and the "tst" message will be displayed for 45 seconds (to cancel, press the button for one second).
- Apply the gas using the calibration cap and gas tube within the 45 second period. If a Bump Test is not undertaken within this period the "bts" message will flash until a successful test is conducted.



After the selected gas is applied and if the test is successful, the "SUC" message with the  icon will be displayed for 3 seconds then immediately return to Gas Measurement Mode. The calibration cap and gas tube can then be removed.

If the test fails, the "FA" message with  icon will be displayed and "bts" message will flash until a successful test is conducted.



8. Certificates

The SGD Clip meets the following certifications and standards

IECEX:	Ex ia IIC T4 Ga ① ② ③ ④ ⑤	1: Explosion protected 2: Protection Concept 3: Gas Group 4: Temperature Classification 5: Equipment protection level
	Ex ia IIC T4 Ga Class I, Zone 0, AEx ia IIC T4 Ga Class I, Division 1, Groups A, B, C, D, T4	
ATEX:	 II 1 G Ex ia IIC T4 Ga KRH 17 ATEX 0013 Directive 2014/34/EU	
Standards	The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards: IEC 60079-0:2011 Ed6 IEC 60079-11:2011 Ed6 UL 61010-1,Ed. 3 UL 913, Ed. 8 UL 60079-0, Ed. 6 UL 60079-11, Ed. 6 C22.2 No. 60079-0:2015 C22.2 No. 60079-11:2014 C22.2 No. 61010-1-12:2012 EN 60079-0:2012+A11:2013 EN60079-11:2012	
Compliance	Electromagnetic Compatibility Directive 2014/30/EU	
Manufacturing Approval:	The detector manufacturer is certified compliant with ISO 9001:2000 provisions	

Appendix 1

Clip SGD Docking Station

User Manual



Clip SGD Docking Station Configuration

Users can change settings, upgrade firmware, and download log events through the Docking Station IR link (see Appendix 2).

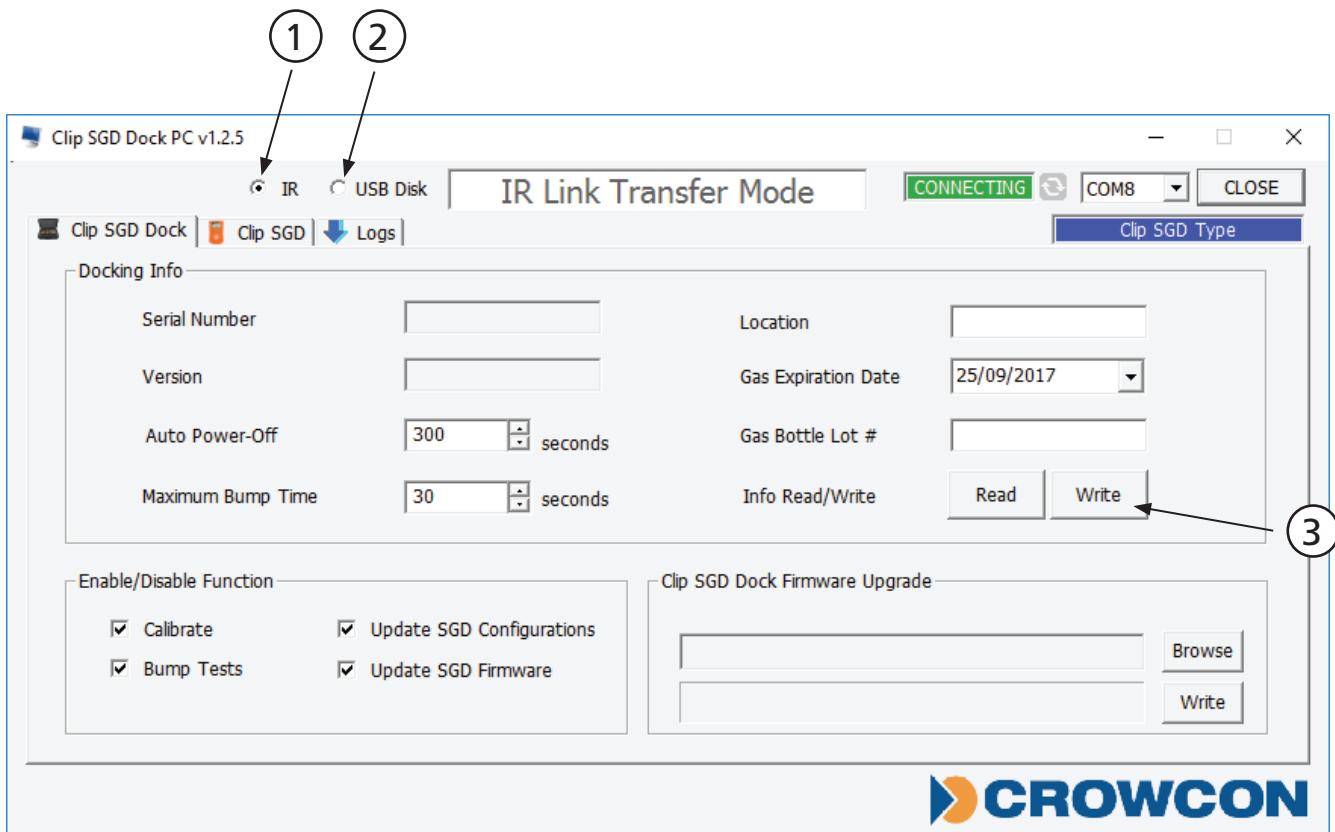


Figure 1: Clip SGD Dock PC Application

IR / USB Disk

Chose either IR Link or USB Stick to transfer configuration to and from Docking Station.

- Click 'IR' ① to configure Docking Station via the Clip SGD IR Link.
- Click 'USB Disk' ② to select USB Stick connected to PC and transfer configuration to the USB Stick – this can then be inserted into the Docking Station and the configuration uploaded.
- Info Read/Write: Select to 'Read' or 'Write' configuration ③ to Docking Station via IR link or to USB Stick

Docking Station

The layout of the Clip SGD Dock PC Application is shown above Figure 1.

- To interact with Docking Station via the Clip SGD IR Link, it must be turned on.
- Ensure the PC has the Clip SGD Dock PC Application installed and connect the Clip SGD IR Link to the PC.
- Place the topside of the Clip SGD IR Link face down in detector bay labelled "Unit 1".

N.B.: The IR link only interacts with detector bay labelled "Unit 1".

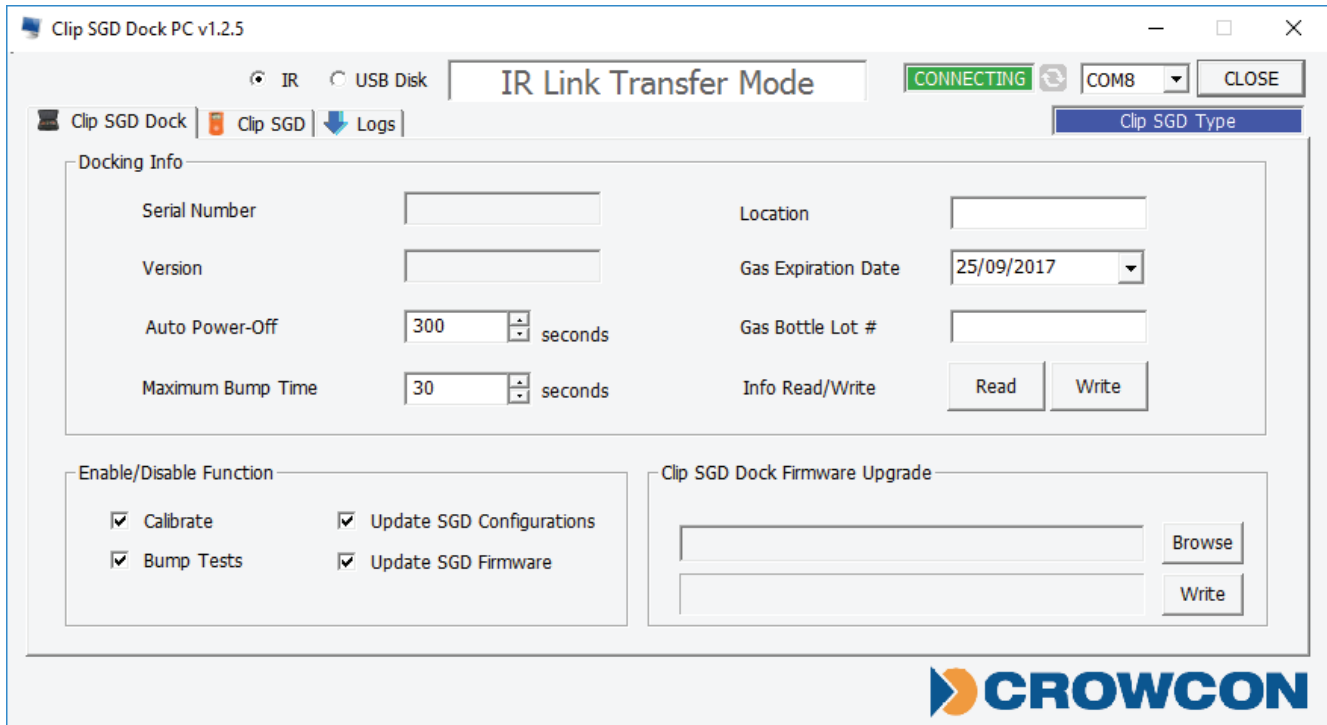


Figure 2

Docking Info

- Serial S/N: Factory serial number
- Version: Docking Station firmware version
- Auto Power-Off : Docking Station automatic power-off time (Max 3600 seconds)
- Maximum Bump Time: Bump test time (seconds) – Default: 30 / Min: 20 / Max: 120
- Location: Configure the installed location
- Gas Expiration Date: Enter the expiration date of the gas cylinder.
- Gas Bottle Lot #: Enter the lot number of the gas cylinder.
- Info Read/Write: Retrieve or write settings from Docking Station

Enable/Disable Function

Check box to enable or disable functions; a tick means enabled.

- Calibrate: enables/disables Docking Station 'Calibration' button.
- Bump test: enables/disables Docking Station 'Bump Test' button.
- Update SGD Configuration: enables/disables Clip SGD configuration updates during bump test or calibration.
- Update SGD Firmware: enables/disables Clip SGD firmware update during bump test or calibration.

Docking Firmware Upgrade

- Allows Docking Station firmware to be upgraded – click 'Browse' to navigate to file.
- Click 'Write' to download file.

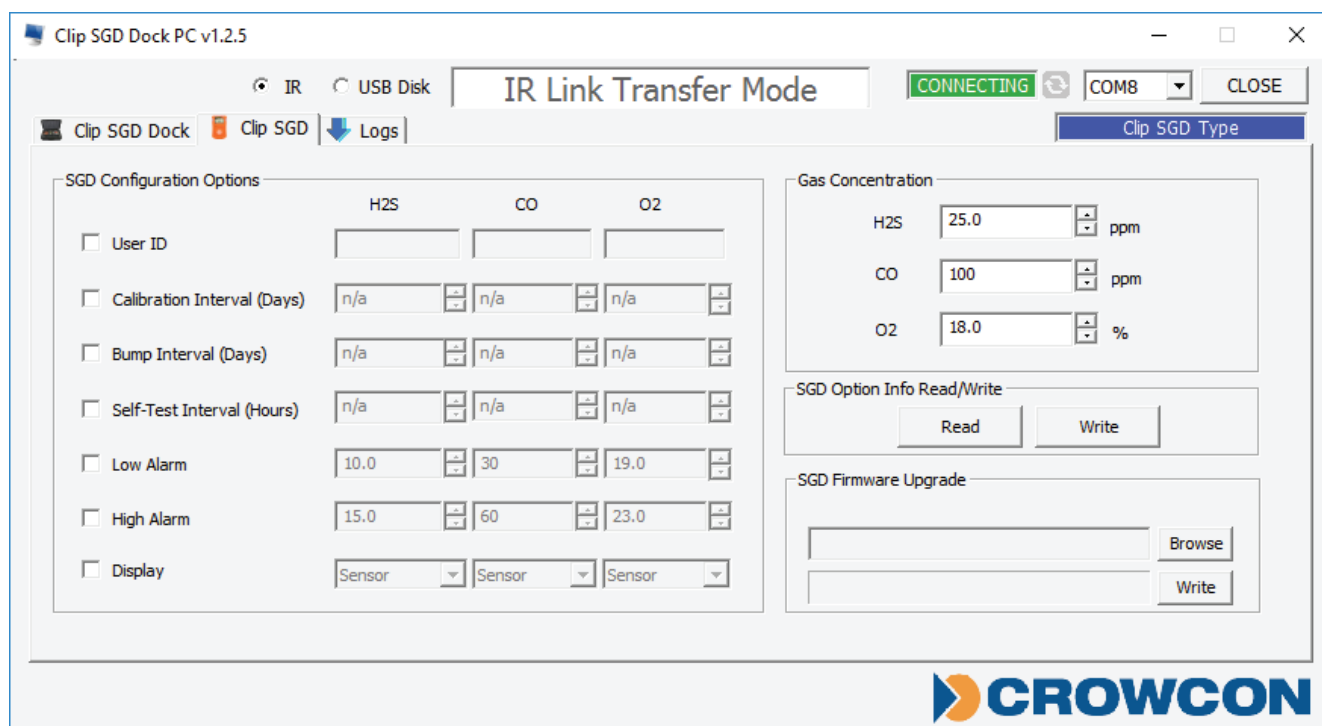


Figure 3

SGD Configuration Options

Allows the configuration of the Clip SGD to be modified whilst the Docking Station performs a bump test or a calibration.

- User ID: Enter a user ID if required
- Calibration Interval (0-365 days): Set the interval of the calibration alert
- Bump Interval (0-365 days): Set the interval of the bump test alert
- Self Test Interval (0-24 hours): Set the interval of the self test reminder.
- Low Alarm and High Alarm: Set the required low and high level gas alarms.
- Display: Choose for Clip SGD to display either gas reading ("Sensor") or instrument life remaining ("Life")

SGD Options Info Read/Write

- Read: Retrieve the stored settings from Clip SGD Docking Station
- Write: Write the adjusted settings to the Clip SGD Docking Station

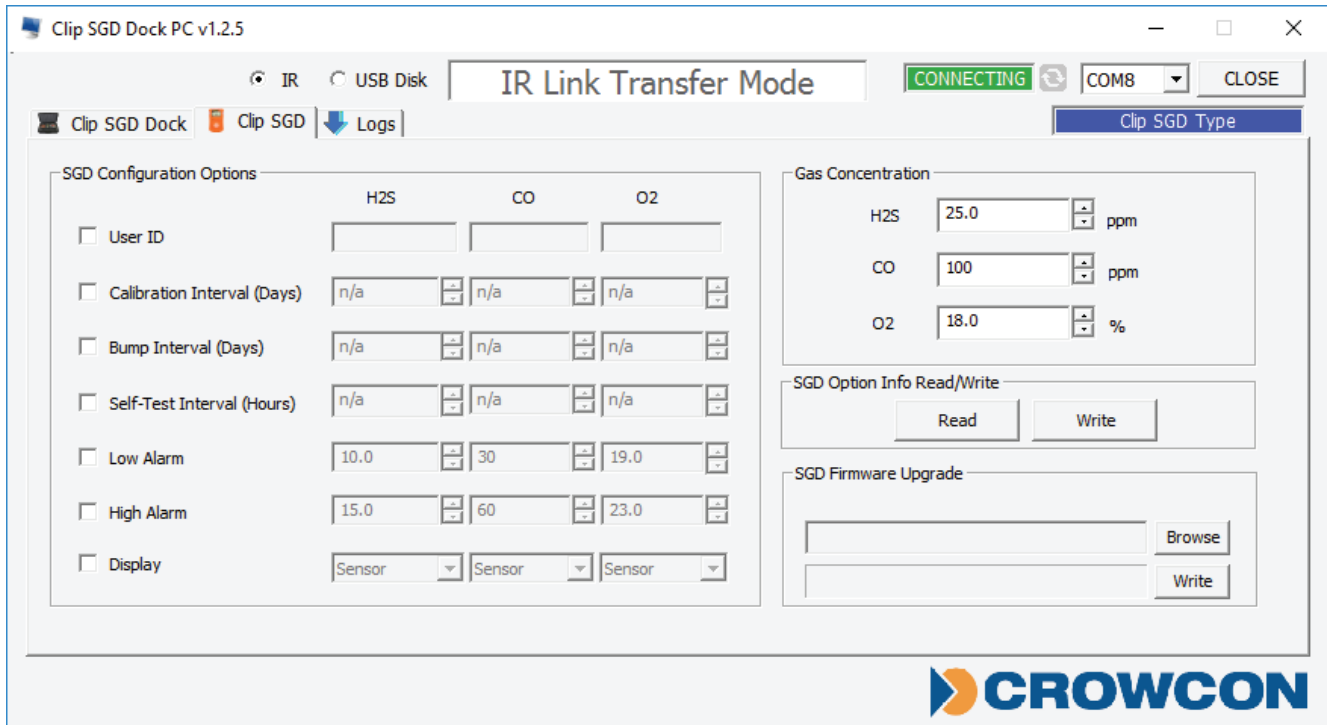


Figure 4

Gas Concentration

Allows the gas levels in the cylinder connected to the Clip SGD Docking Station to be entered

- Choose gas concentration required for calibration, default settings are as follows:
H₂S: 25ppm, CO: 100ppm, O₂: 18%Vol

SGD Firmware Upgrade

- Allows the Clip SGD firmware upgrade file to be specified – click 'Browse' to navigate to file.
- Click 'Write' to download file.

IR / USB Disk

Chose either IR Link or USB Stick to transfer configuration to and from Docking station

- Click 'IR' to configure docking station via the Clip SGD IR Link.
- Click 'USB Disk' to select USB Stick connected to PC and transfer configuration to the USB Stick – this can then be inserted into the Docking Station and the configuration uploaded.
- SGD Option Info Read/Write: Select to 'Read' or 'Write' configuration to Docking Station via IR link or to USB Stick

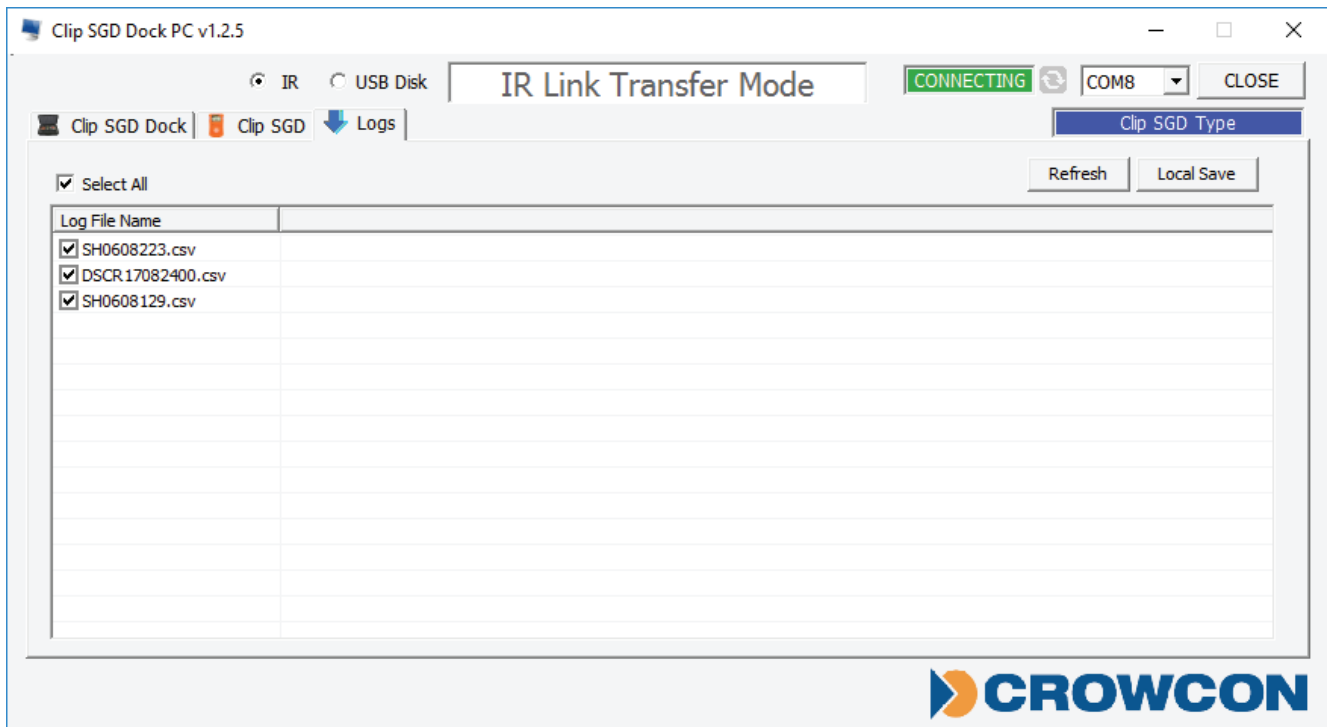


Figure 5

Logs

- Refresh: View available log files from docking station
- Select All: Select all log files available in the docking station
- Local Store: Save selected log files to PC – the log file name will be saved based on the serial number

Clip SGD

Log Time	21/09/2017 11:50							
Docking Serial Number	DSCR17082400							
F/W Version	0.7.8							
H/W Version	1.0.0							
Place	DevLab							
Gas Expiration Date	2018.8.9							
Gas Bottle Lot	2340286							
Bay Num	Model	Gas Type	Test Type	Test Result	Serial Num	F/W Version	H/W Version	User ID
	1 Clip SGD	O2	Bump	SUCCESS	SH0608201	1.1.6	1.1.0	
	2 Clip SGD	CO	Bump	SUCCESS	SH0608143	1.1.6	1.1.0	
	3 Clip SGD	H2S	Bump	SUCCESS	SH0608162	1.1.6	1.1.0	
	4 Clip SGD	H2S	Bump	SUCCESS	SH0608142	1.1.6	1.1.0	
Log Time	21/09/2017 11:50							
Docking Serial Number	DSCR17082400							
F/W Version	0.7.8							
H/W Version	1.0.0							
Place	DevLab							
Gas Expiration Date	2018.8.9							
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Bay Num	Model	Gas Type	Test Type	Test Result	Serial Num	F/W Version	H/W Version	User ID
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	3 SGT	H2S	Calibration	SUCCESS	SH0608162	1.1.6	1.1.0	
	4 SGT	H2S	Calibration	SUCCESS	SH0608142	1.1.6	1.1.0	

Figure 6 Docking Station Log

Product Name	Clip SGD					
Serial Number	SH0608151					
Version	1.1.6					
Life Remaining	21 months 7 days					
Total Number of Events	30					
Duration of Events	00:52:53					
Zero Cal Time	28/07/2017					08:40:54
Span Cal Time	21/09/2017					09:36:39
Low Alarm	10					
High Alarm	15					
GAS Type	H2S					
Event Date	Event Time	Bump Test	Duration(s)	Sensor Reading		Alarm
2017.07.20	13:40:54	No	00:00:28	9.5		LOW Alarm
2017.07.20	13:42:25	No	00:01:27	89.9		HIGH Alarm
2017.07.20	13:45:03	No	00:00:12	2.3		LOW Alarm
2017.07.20	14:01:39	No	00:03:45	94.9		HIGH Alarm
2017.07.20	15:21:58	No	00:05:00	99.1		HIGH Alarm
2017.07.20	15:29:26	No	00:00:38	10.5		LOW Alarm
2017.07.20	15:31:44	No	00:00:30	82.7		HIGH Alarm
2017.07.20	15:33:30	No	00:00:52	97.2		HIGH Alarm
2017.07.20	15:37:06	No	00:01:34	97.6		HIGH Alarm
2017.07.25	09:38:19	No	00:02:55	52.9		HIGH Alarm
2017.07.25	10:24:02	No	00:02:40	52.9		HIGH Alarm
2017.07.25	11:26:37	No	00:03:18	53.2		HIGH Alarm
2017.07.27	11:54:34	No	00:00:15	15.9		HIGH Alarm
2017.07.28	10:31:38	No	00:03:24	48.9		HIGH Alarm
2017.07.28	10:35:27	No	00:03:56	94.3		HIGH Alarm
2017.07.28	11:43:54	No	00:02:49	48.5		HIGH Alarm
2017.07.28	11:47:51	No	00:02:49	93.7		HIGH Alarm

Figure 7 Clip SGD Event Log

Appendix 2

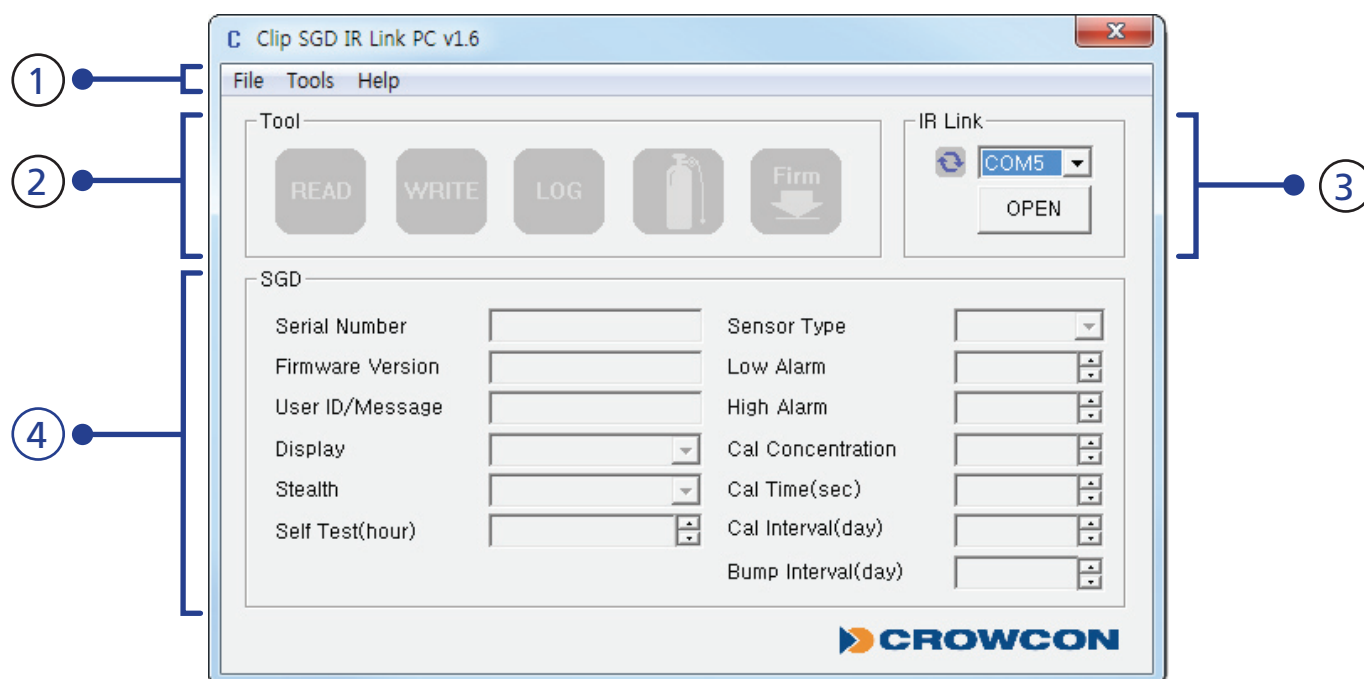
IR Link User Guide



Use IR Link to change settings, upgrade firmware, download log events, and perform calibration

Getting started

To interact with Clip SGD, the software must be installed on your computer. Plug in the IR Link cable. Then, place the topside of the SGD face down to the IR Link LCD.



Software overview

1 Tab menus

File

- Load: Open the installed settings. (*.cfg)
- Save: Save the current settings. (*.cfg)
- Exit: Close the program.

Tools

- Calibration: Perform the ZERO/SPAN calibration.
- Log Read: Retrieve the log events.
- Log Erase: Erase log events.
- Self Test: Test if LED, LCD, Buzzer, vibration, battery and temperature work properly.
- Firmware Upgrade: For the latest firmware version, go to www.crowcon.com or contact your local service agent. After a firmware update, the detector **MUST** be recalibrated.
- Factory Default: Remove all data and restore the initial factory settings. After factory settings are restored, the detector must be recalibrated.

Help

- About: Display a brief company profile.

2 Tool Interface

- READ: Retrieve settings
- WRITE: Update and adjust settings.
- LOG: Display the saved log events.
- CALIBRATION: Perform the ZERO and SPAN calibration
- FIRMWARE UPGRADE: Upgrade firmware.

3 IR Link Interface

- In order to interact with the Clip SGD using the IR Link, click "OPEN". When the Clip SGD settings have been successfully retrieved users will see "Read Complete".

4 Clip SGD Interface

- Serial Number: Display a preset serial number.
- Firmware Version: Display a firmware version.
- User ID/Message: Users can program a desired message/ID.
- Display: Users can choose to display either the real time "Sensor Reading" or "Sensor Life Remaining"
- Stealth (Option): Users can turn off the buzzer, LED, and vibration.

- Self Test (Hour): Set an interval of the Self Test alert.
- Sensor Type: Display the sensor type of the device.
- Low Alarm: Adjust the low alarm set point in compliance with international or local standards.
- High Alarm: Adjust the high alarm set point in compliance with international or local standards
- Cal Concentration: Set a standard calibration value.
- Cal Time (sec): Set a standard calibration time.
- Cal Interval (day): Set an interval of the calibration alert.
- Bump Interval (day): Set an interval of the bump test alert.

Warranty

1.1. Limited Warranty

Crowcon warrants this product to be free from defects in material and workmanship under normal use and service for a period of two years beginning upon the date of activation for all Clip SGD products. This warranty is valid only if the personal monitor is activated by the 'activate by' date on the external packaging. This warranty extends only to the sale of new and unused products to the original buyer. Should the battery deplete prior to the 24 months of activation, this will demonstrate that the monitor(s) have experienced >2900 alarm minutes and will therefore be classed as outside warranty.

Warranty Procedure

To facilitate efficient processing of any claim, contact your local Crowcon agent/distributor, a Crowcon regional office or our global customer support team (English working language) on +44 (0)1235 557711 or customersupport@crowcon.com to obtain a returns form for identification and traceability purposes. This form may be downloaded from our website 'crowconsupport.com' and requires the following information:

- Your company name, contact name, phone number and email address.
- Description and quantity of goods being returned, including any accessories.
- Instrument serial number(s).
- Reason for return.

Products will not be accepted for warranty without a Crowcon Returns Number (CRN). It is essential that the address label is securely attached to the outer packaging of the returned goods. The guarantee will be rendered invalid if the instrument is found to have been altered, incorrectly stored, modified, dismantled, tampered with, or has not used Crowcon spares for replacement parts (including sensors) or has been serviced or repaired by any party not authorised and certified by Crowcon to do so. The warranty does not cover misuse or abuse of the unit including use outside of specified limits.

1.2. Warranty Disclaimer

Crowcon accept no liability for consequential or indirect loss or damage howsoever arising (including any loss or damage arising out of the use of the instrument) and all liability in respect of any third party is expressly excluded. This warranty does not cover the accuracy of the calibration of the unit or the cosmetic finish of the product. The unit must be maintained in accordance with the instructions in this manual. The warranty on replacement consumable items supplied under warranty to replace faulty items, will be limited to the unexpired warranty of the original supplied item. Crowcon reserves the right to determine a reduced warranty period, or decline a warranty period for any sensor supplied for use in an environment or for an application known to carry risk of degradation or damage to the

sensor. Our liability in respect of defective equipment shall be limited to the obligations set out in the guarantee and any extended warranty, condition or statement, express or implied statutory or otherwise as to the merchantable quality of our equipment or its fitness for any particular purpose is excluded except as prohibited by statute. This guarantee shall not affect a customer's statutory rights.

Crowcon reserves the right to apply a handling and carriage charge whereby units returned as faulty, are found to require only normal calibration or servicing, which the customer then declines to proceed with.

For warranty and technical support enquiries please contact:

Customer Support

Tel: +44 (0) 1235 557711

Fax: +44 (0) 1235 557722

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Contact/ www.crowcon.com / customersupport@crowcon.com / 44(0)1235-557711