Odalog L2 Series
User Manual

ODA10-1000 January 2024

Gas Logger

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The sole purpose of this document is to assist in the operation of the OdaLog® portable gas logger.

We do not convey any right to use this information for any purpose other than in the operation or maintenance of the OdaLog® portable gas logger.

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GENERAL DISCLAIMER

This Manual summarises our knowledge of the OdaLog® portable gas logger, including how to use it based on the information available at the time. You should read this Manual carefully and consider the information in the context of how the instrument will be used.

The OdaLog® portable gas logger is sold subject to our standard terms and conditions of sale and any written warranty given by Thermo Fisher. Thermo Fisher does not accept any other liability, either directly or indirectly, for any losses suffered in connection with the use and application of the OdaLog® portable gas logger, whether or not in accordance with any advice, specification, recommendation, or information given by it or as a result of any errors or omissions in this manual.

Revision History

Revision	Date	Description
A	29th September 2008	Initial version
B	6th May 2010	Update the contents
C	7th October 2014	Inclusion of certificate as the content to Rev B
D		Update the contents
E		Update to include the Bluetooth circuit
F	16th July 2020	Inclusion of certificate as the content to Rev E
G	19th January 2024	Update the design and contents, and remove obsolete models.

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1.   CERTIFICATION / CONFORMITY
1.1.   Certification & Performance Conformity
The following Authorities have granted intrinsic safety approval to the OdaLog® Logger (Type L2):

Table I: Compliance Information

Authority	Certificate Number	Code
ITACS	IECEx ITA 08.0010X	Ex ia IIC T4 Ga (-20°C≤Ta≤50°C) IP66/68
NEMKO	Nemko 08ATEX1270	II 2 G, Ex ia IIC T4 IP66/68

1.2.   Conditions of Safe Use
⊙ FOR SAFETY REASONS, THIS EQUIPMENT MUST BE OPERATED AND SERVICED BY QUALIFIED PERSONNEL ONLY. READ THE INSTRUCTION MANUAL, UNDERSTAND, AND ADHERE TO THE MANUFACTURER'S LIVE MAINTENANCE PROCEDURES BEFORE OPERATING OR SERVICING.
⊙ TO AVOID BUILD-UP OF ELECTROSTATIC CHARGE, THE ODALOG TYPE L2 SHALL BE USED OR PLACED WHERE IT WILL BE PROTECTED FROM INADVERTENT RUBBING AND SHALL ONLY BE CLEANED OR WIPED WITH A DAMP CLOTH WHEN USED IN EXPLOSIVE ATMOSPHERES CLASSIFIED AS GROUP IIC.
⊙ THE JTAG PORT IS NOT MEANT FOR USE BY THE USER.
⊙ THE BATTERY SHALL NOT BE REPLACED BY THE USER

1.3.   Electromagnetic compatibility (EMC) – Compliance Statement
The OdaLog® Type L2 and accessories comply with the emissions and immunity requirements of:

Table II: Compliance Statement

Standard Number	Title	Compliance
BS EN 502070: 1999	Electrical Magnetic Compatibility – Electrical apparatus for the detection and measurement of combustible gases, toxic gases, or oxygen	Fully

1.4.   FCC Statement
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

⊙ Reorient or relocate the receiving antenna.
⊙ Increase the separation between the equipment and the receiver.
⊙ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
⊙ Consult the dealer or an experienced radio/ TV technician for help.

1.5. Quality Statement

Thermo Fisher Scientific Pty Ltd produces this product in accordance with our accredited AS/NZ ISO 9001 and ISO/IEC 80079-34 Quality System.

2.   WARNINGS AND CAUTIONS

- ⊙ DO NOT USE SOLVENTS TO CLEAN THE ODALOG® GAS LOGGER (A DAMP CLOTH WILL SUFFICE).
- ⊙ DO NOT INSERT OBJECTS (INCLUDING FINGER) INTO THE GAS INLET AS THE FILTER MAY BE DAMAGED
- ⊙ DO NOT ATTEMPT TO DISASSEMBLE SENSORS, AS THEY ARE POTENTIALLY CORROSIVE.
- ⊙ THE USE OF LITHIUM BATTERIES OTHER THAN THE LITHIUM BATTERIES LISTED IN TABLE II WILL INVALIDATE THE INTRINSIC SAFETY APPROVAL.
- ⊙ BEFORE EACH DAY'S USE, SENSITIVITY MUST BE TESTED ON A KNOWN CONCENTRATION OF TEST GAS (TO MATCH THE SENSOR TYPE) EQUIVALENT TO 20…50 PERCENT OF FULL-SCALE CONCENTRATION. ACCURACY MUST BE WITHIN ±10% OF ACTUAL CONCENTRATION OR ±5% OF FULL SCALE. ACCURACY MAY BE CORRECTED BY CALIBRATION AS DESCRIBED IN THE "CALIBRATING THE ODALOG" SECTION.
- ⊙ THE ODALOG® GAS LOGGER IS NOT DESIGNED TO OPERATE AS A SAFETY DEVICE. WHEN ENTERING CONFINED SPACES AND TOXIC-HAZARD ENVIRONMENTS, ALL APPROPRIATE REGULATIONS AND OCCUPATIONAL HEALTH AND SAFETY PRECAUTIONS SHOULD BE STRICTLY ADHERED TO. IF UNSURE OF POTENTIAL HAZARDS OR SAFETY STANDARDS, SEEK ADVICE FROM YOUR WORKPLACE OCCUPATION HEALTH AND SAFETY DEPARTMENT OR GOVERNMENT REGULATORY BODY.
- ⊙ THE AMBIENT TEMPERATURE RANGE THAT THE APPARATUS IS SUITABLE FOR IS -20°C TO +50°C.
- ⊙ "EX" CERTIFICATION IS VALID ONLY TO 21% VOL OXYGEN. THE ODALOG® GAS LOGGER SHOULD NOT BE USED IN OXYGEN-ENRICHED ATMOSPHERES.

3.   DESCRIPTION

The OdaLog® is a compact portable gas data-logger designed by industry-proven manufacturer Thermo Fisher Scientific – the gas detection specialists for harsh environments, such as the wastewater industry. With superior sealing and heavy-duty materials, this instrument is corrosion-resistant, durable, and reliable.

The new generation OdaLog® Logger picks up where its respected predecessor left off. With super-low power consumption coupled with a long-life lithium cell power source, battery life will exceed 12 months in most cases, taking "low maintenance" to a whole new level.

New and faster infrared wireless communication and magnetic switches enable the OdaLog® to be easily calibrated and configured and download logged data without disassembly.

The extra-large, easy-to-read LCD makes the OdaLog® simple to use and interpret instrument data and settings on-site. The instrument's main features can be viewed on-screen, such as gas readings, temperature, % of memory used, logging mode and time intervals, and a battery level indicator.

OdaLog® interfaces with Thermo Fisher's dedicated, easy-to-use OdaStat-G™ software package that brings logged data into the office environment in a user-friendly format.

WARNING

The OdaLog® Gas Logger is not designed to operate as a safety device. When entering confined spaces and toxic hazard environments all appropriate regulations and occupational health and safety precautions should be strictly adhered to. If unsure of potential hazards or safety standards, seek advice from your workplace occupation health and safety department or Government regulatory body.

The use of Lithium Batteries other than lithium batteries listed in Table II will invalidate the intrinsic safety approval.

Figure 1: Odalog L2

ThermoFisher

OdaLog® Logger L2

**OdaLog Logger Type L2
New Features**

Simple and effective assembly
Improved Single Screw Design

Improved battery life
Battery lasts up to 12 months

Easy to read menu
Larger LCD display

Increased Memory
Stores up to 42,000 data points

Faster downloading
Superior IrDA communication link

New Sensor Protection Grill
Protect the filter from damage

**OdaLog Logger Type L2
Proven Features**

Build Strong and easy to install
Stainless steel handle

Waterproof seal
Double O-ring seals

**Purpose designed for harsh
wastewater environments**
Unique robust design

Single Button Operation
User friendly

Figure 2: Features of Odalog L2

4.   GENERAL SPECIFICATIONS

Table III: General Specification

Parameters	Range
Instrument Temp Range	-20 °C (-4 °F) … 50 °C (122 °F)
Sensor Temp Range	-10 °C (-14 °F) … 40 °C (104 °F)
Instrument Relative Humidity Range	15 … 90 % non-condensing
Ingress Protection	IP66/68 (2m/ 24hr)
External Dimensions	Diameter 62 mm (2.44") x Height 196 mm (7.72")
Instrument Weight	420 g (14.8 oz)
Power Supply(s)	C-Size Lithium Battery
Battery Life/ Run Time	Greater than eight months (for life of Lithium battery)
Data Logging Capacity	Up to 42,000 readings in total
Interval	Selectable from 1 second to 1 hour
Data Logging	Capacity > Logging Interval of 1min = 29 days
Duration Example	Capacity > Logging Interval of 5min = 6+ months

Storage of the OdaLog® instrument, with sensors fitted, should be limited to the temperature range of 0°C (32°F) … +25°C (75°F) and between 20% … 80% RH.

The following is a list of gas types available for the OdaLog® L2:

Table IV: Available Gas Sensor Type

Model	Gas	Range (ppm)	Resolution (ppm)	Accuracy FS[1]	Accuracy STP[2]
LL[3]	Hydrogen Sulfide (H$_2$S)	0-1000	1	1%	
LL	Hydrogen Sulfide (H$_2$S)	0-200	0.1	1%	
SL[4]	Hydrogen Sulfide (H$_2$S)	0-2000	1	2%	
SL	Hydrogen Sulfide (H$_2$S)	0-1000	1	1%	± 2ppm
SL	Hydrogen Sulfide (H$_2$S)	0-200	0.1	1%	
SL	Hydrogen Sulfide (H$_2$S)	0-50	0.1	4%	

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[1] Full scale
[2] Standard Temperature and Pressure: 20 °C (68 °F) @ absolute pressure 101.3 kPa (14.7 psi).
[3] Long term logger
[4] Standard logger

5. QUICK OPERATIONAL GUIDE

This section describes a brief operating procedure for the OdaLog® instrument, covering the basics of all primary functionality. For more details, refer to the corresponding information in Section 6.

5.1. Switch On

Press & hold the button down; "ON" will count down ON 3-2-1; release the button when the "test" screen appears (all segments visible/black as shown). The unit will progress through "STATUS" screens and then display the "INST" (Instantaneous reading) screen. (See Section 6.1)
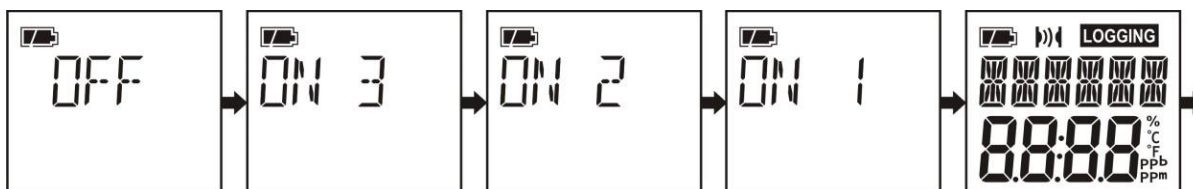
Figure 3: Display during Switch-ON

5.2. LCD Layout Overview
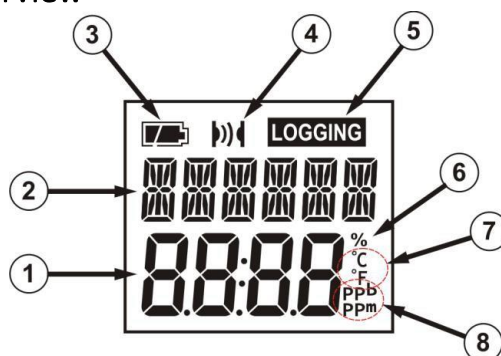
Figure 4: LCD Layout

1. **Lower 7-segment characters** – Displays gas readings and status values – usually numerical digits, some supplemental menu headings, and prompts.
2. **Upper 14-segment characters** – Displays menu headings, prompts, and other visual feedback – usually alphabetic characters, and some numerical values are displayed on some screens.
3. **Battery Level Indicator** – Displays the battery levels (4-stage depletion, see Section 6.11).
4. **Communications Symbol** – Indicates if the instrument is successfully connected and transferring data (i.e., for downloading logs and changing parameters and settings in the OdaStat-G™ software package).
5. **Logging Symbol** – This symbol flashing indicates that the instrument is Logging – Note: flashing interval does not indicate logging interval (See Section 6.5 for more logging information).
6. **%** - This symbol shows any units or screens that display units as a percentage (e.g., memory usage; some gas types are displayed as % Volume).
7. **Temperature units** – displaying the temperature readings on-screen in degrees Centigrade or Fahrenheit, depending on the setting chosen in the OdaStat-G™ software package [Default = °C].
8. **Gas Reading units** – Indicates if gas readings shown are in "parts per million" or "parts per billion" ["ppb" disabled in OdaLog® Logger Type L2 series instruments].

5.3. Null (zero)

With the unit in fresh air, press & hold the button down until "NULL" is displayed and then release. Move the magnet over the word "NULL" on the LHS of the LCD screen. "DONE" should appear briefly when completed (see Section 9.5).

5.4. Pre-Use Span Check

Apply a known level of gas over the sensor (using supplied calibration fitting, [Part No. 11-0001]) at the flow rate and for the flow time as detailed in Table VII (or until the reading stabilises) and record "Start Level" result (see Section 9.8.1).

5.5. Start Logging (*Manual Logging setting only)

Press and hold the button down until "START LOG" is displayed and then release (logging is confirmed by the LOGGING symbol flashing on the screen and flashing LEDs) (see Section 6.5).

5.6. Stop Logging (*Manual Logging setting only)

Press and hold the button down until "STOP LOG" is displayed and then release (see Section 6.6).

5.7. Post-Use Span Check

Flow a known level of gas over the sensor (using supplied calibration fitting, [Part No. 11-0001]) at the flow rate and for the flow time, as detailed in Table VII (or until the reading stabilises) and record "End Level" result when reading stabilises (see Section 9.8.2).

5.8. Download Data

Stop logging as above, press & hold button down until "IrDA" is displayed, and then release. Use the Infra-Red Data Communications link [Part No. 12-0002] and follow the OdaStat-G™ software package instructions for communicating with the OdaLog® instrument (refer to Section 6.8 for more information on communication setup and data download).

5.9. Switch Off

Press and hold the button down until "OFF" is displayed. Continue holding the button as it counts down OFF-2-1, then release (see Section 6.9).

5.10. Training

To locate your nearest Thermo Fisher Scientific training centre please contact us at the address on the back of this manual or refer to our website.

6. OPERATION
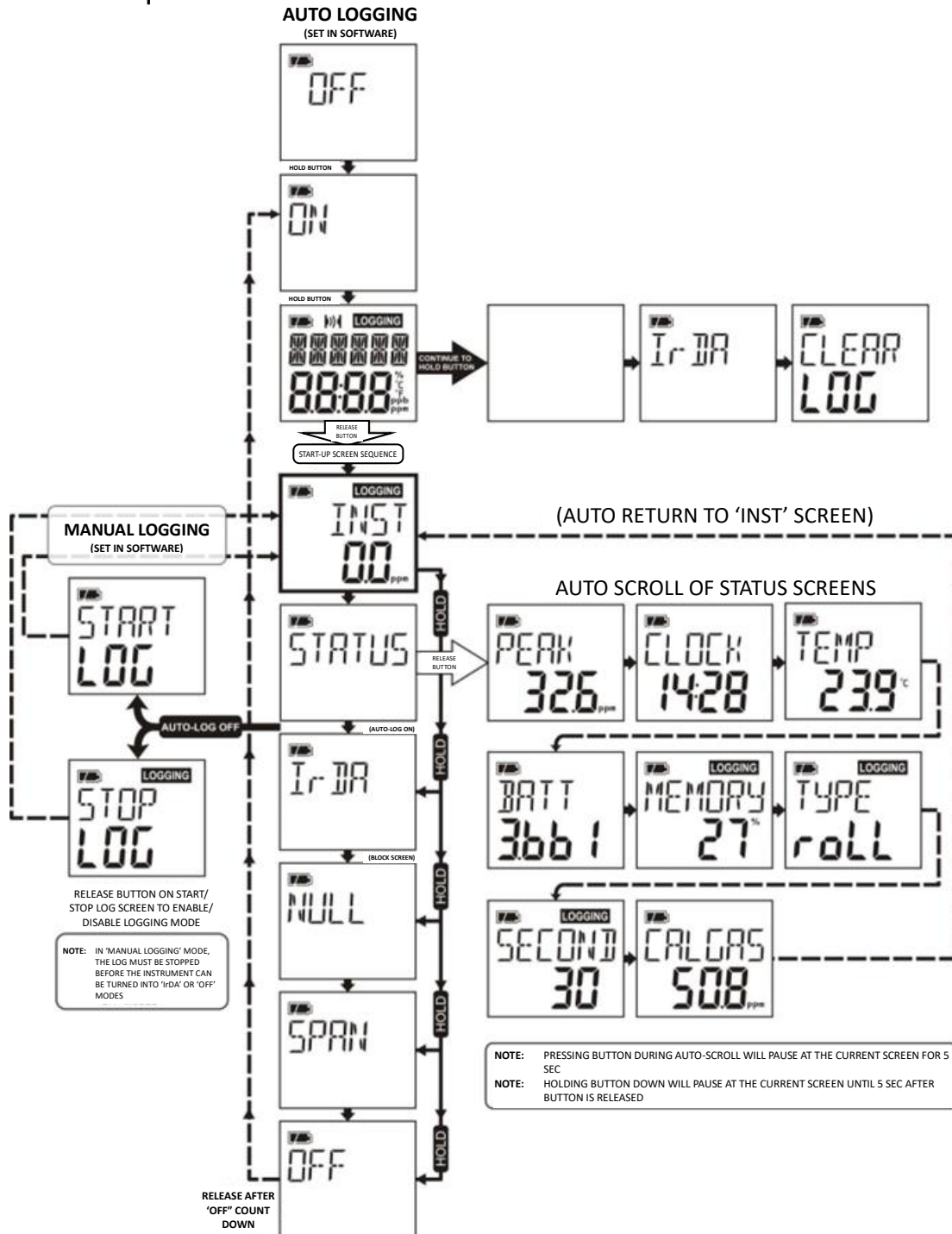
6.1. Operation Overview

Figure 5: Odalog L2 Menu Map

6.2. Switching On

Press and hold the button for three seconds ("On" will count down from 3), then release. The LCD will show (in order):

- o Test Screen – All segments visible/black.
- o "CLOCK…not Set" (See Note 3).
- o Installed OdaLog® Firmware Version.
- o Days Since Last Calibrated.
- o "STATUS" which displays in order.
- o "PEAK" gas level since switch on or log start.
- o "CLOCK" (shown in 24-hour time. If the clock is not set (See Section 6.3), this value may be incorrect on screen and in the instrument log – This must be set in the OdaStat-G™ Software – refer to the OdaStat-G™ Quick User Guide or "Help" section in the software manual).
- o Temperature
- o "BATT" (Battery), battery volts
- o Logging "MEMORY"- % of memory used.
- o "TYPE" of logging - "roLL" (continue logging after the memory is full), "oncE" (stop logging after the memory is full).
- o Logging interval, the time between gas readings displayed as "SECONDS" (set in the OdaStat-G™ software).
- o "CALGAS", Shows Calibration Gas Level in ppm as set via the OdaStat-G™ software package.
- o "CLOCK not SEt" (see note 3 & Section 6.3).
- o "LOG FULL" (see note 4 & section 6.7).

The display will then revert to display instantaneous gas readings in ppm.

Note 1: Releasing the button during the countdown routine will cause an exit to the "OFF" screen.

Note 2: "Peak" is constantly updated when OdaLog® is in use. The Peak value is reset at the switch on and at the start of each logging session.

Note 3: If the clock is not set, "CLOCK not SEt" will be displayed. The message will remain on the display until the button is pressed to continue (see Section 6.3).

Note 4: If the Logger memory is full and you have "Auto Log Start" & "Stop log when full" active (refer to the "Instrument Parameters" section in the OdaStat-G™ software package), the unit will not start logging, and the display will show "LOG", "FULL", and the LED" s will illuminate at the same time. The message will remain on the display until the button is pressed to continue.

6.3. "CLOCK not SEt" Message

Figure 6: Clock not SEt

If the clock has not been set since the last battery change, "CLOCK not…SEt" will be displayed upon start-up and when starting logging functions. This message will be displayed until the button is pressed. Logging will start normally; however, the time and date will be incorrect.

To set the correct time and date, stop the logging function (only necessary if the instrument is in Manual Logging mode - see Section 6.6), place the Instrument into IrDA mode (See Section 6.8.1), and set the clock via the

OdaStat-G™ software package – for more information, refer to the "OdaStat-G Quick User Guide", or the Help function in the software.

6.4.   Displaying STATUS on the LCD

Press and hold the button until "STATUS" is displayed, then release the button. The display will cycle through the "STATUS" screens as shown.

Figure 7: Odalog status screen

6.5.   Start Logging Function (*Manual Logging Mode only, [Default = Enabled])
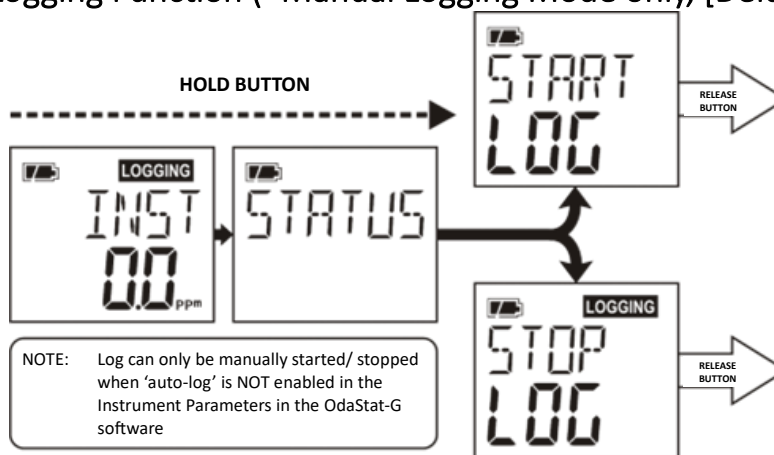
Figure 8: Start logging process.

Press and hold the button down and continue holding as the screen displays "STATUS", then release the button when "START LOG" is displayed. See note 2 below if "CLOCK not SEt" is shown when the button is released.

The OdaLog® is now logging as confirmed by the flashing "LOGGING" symbol on the display and the LED"s on either side of the display flashing once every 10 seconds (Default: Enabled - can be changed in the OdaStat-G™ software).

Note 1:   If the Logger memory is full and you have "Stop log when full" active (refer to the "Instrument Parameters" section in the OdaStat-G™ software package), the unit will not start logging, the display will show "LOG" "FULL" and the LED" s will illuminate at the same time. The message will remain on the display until the button is pressed to continue.

Note 2:   If the clock is not set, "CLOCK not SEt" will be displayed. The message will remain on the display until the button is pressed to continue (see Section 6.3).

6.6. Stop Logging Function (*Manual Logging Mode only, [Default = Enabled])

Press and hold the button down until "STOP LOG" is displayed, then release the button.

6.7. Auto Log Start Function [Default = Disabled]

This function is activated via the OdaStat-G™ software package as per the "Instrument Parameters" section by selecting the "Auto Log Start" option. Once active, logging will automatically start and stop every time the OdaLog® instrument is switched on or off. Logging will also stop and start whenever the instrument enters or exits from "IrDA" mode.

Note 1:   If the Logger memory is full and you have "Auto Log Start" and "Stop log when full" active (Refer to the "Instrument Parameters" section in the OdaStat-G™ software package), the unit will not start logging, the display will show "MEMORY FULL" and the LED's illuminate at the same time. The message will remain on the display until the button is pressed to continue.

Note 2:   If the clock is not set, "CLOCK not SEt" will be displayed. The message will remain on the display until the button is pressed to continue (see Section 6.3).

6.8. IrDA (Infra-Red Data Communication Mode)

6.8.1. Enter "IrDA" mode (Infra-Red Data Communication Mode)

From ON Mode: From the "INST" screen, press & hold the button until "IrDA" is displayed, then release the button (IrDA will appear on screen after "STATUS"; see diagram in Section 6.1).

From OFF Mode: From the "OFF" screen, press & hold the button down until "IrDA" is displayed, then release the button (IrDA will appear on screen after the "ON" countdown and the test screen/s; see diagram in Section 6.10).

Note 1:   This can only be done when logging is stopped unless Auto Log Start is active. (See Section 6.7)

Note 2:   The magnetic switches can be tested with a magnet in IrDA mode, and the LED will illuminate to indicate they are functioning correctly.

6.8.2. Exit "IrDA" mode (Infra-Red Data Communication Mode)

Pressing the button in "IrDA" mode or waiting 75 seconds for the unit to "time out" will cause the instrument to exit communication mode.

6.8.3. Precautions are required when using OdaLog® I.R communication.

The Infra-Red communications system used by the OdaLog® to communicate and transfer data to a computer has been designed as a fast and convenient method to download information. Like all communication systems, the Infra-Red system has some vulnerabilities that can interfere with normal

communications as more portable devices are utilising this technology. As a result, the possibility of interference between devices is increasing, and precautions should be taken to ensure that communications between the OdaLog and PC are reliable and trouble-free.

Conditions that have the potential to disrupt OdaLog® to computer communications are:

- Infra-Red ports built-in to the PC/Laptop or connected to any nearby computers should disabled.
- Infra-Red ports on organisers, phones, modems, etc., that have been activated or are in use.
- Infra-Red ports on printers.
- Strong light sources near the OdaLog during communications
- Infra-Red remote-control devices from TVs, air conditioners, etc.

Note: The OdaLog® is only susceptible to communication interference when placed into "IrDA" mode. No other device or source of Infra-Red interference can affect the OdaLog® if the user has not placed the OdaLog® into the "IrDA" mode.

6.8.4. Steps to ensure reliable I.R communication.

- Position the OdaLog® correctly with respect to the Infrared Data Communication Link, as shown in Figure 9.
- If you are using a computer with an Infra-Red port attached (other than the Infrared Data Communication Link used with the OdaLog®), disable this port to prevent any Infra-Red transmissions from it.
- Ensure that other devices with Infra-Red ports (phones, other computers, organisers, etc.) within about 10 metres of the OdaLog® do not have their Infra-Red ports activated.
- Ensure that strong light sources are not directed onto the OdaLog® while the instrument is in "IrDA" mode.
- When changing the configuration of the OdaLog® using the OdaStat-G™ software package, always read back the settings from the OdaLog® after they have been changed to ensure they have been received correctly.

Note: In severe cases of Infra-Red interference, the OdaLog® may stop responding. If this occurs, contact your nearest OdaLog® distributor or service centre for advice on restoring normal operation to the OdaLog®.

Using In-built IrDA Devices

While some infrared ports (laptops mainly) are compatible with the OdaLog, due to the variation in manufacturers, drivers and communication protocols, users often experience issues connecting and/or downloading reliably. For this reason, Thermo Fisher strongly recommends that users only attempt to connect to the OdaLog via the IR device supplied by us. Only advanced users should attempt to use inbuilt IR ports. If difficulties arise, ensure the inbuilt IR adapter is disabled, and revert to using the provided adapter.

6.8.5. Communications Set-up

- If using a USB-based IR adapter, ensure the drivers are installed BEFORE connecting the device.
- Connect the IrDA device to your PC and install the OdaStat-G™ software package.

- Open the OdaStat-G™ software package on your PC and ensure communication settings are configured correctly to communicate with your OdaLog® instrument (refer to OdaStat-G™ software package Help).
- Place OdaLog® into IrDA Mode.
- Position the IrDA device between 25-150mm (1-6") from the OdaLog® Instrument, ensuring line-of-sight between the IrDA device and the IrDA module on the OdaLog®, as shown in Figure 9.
- Disconnect the instrument when finished.
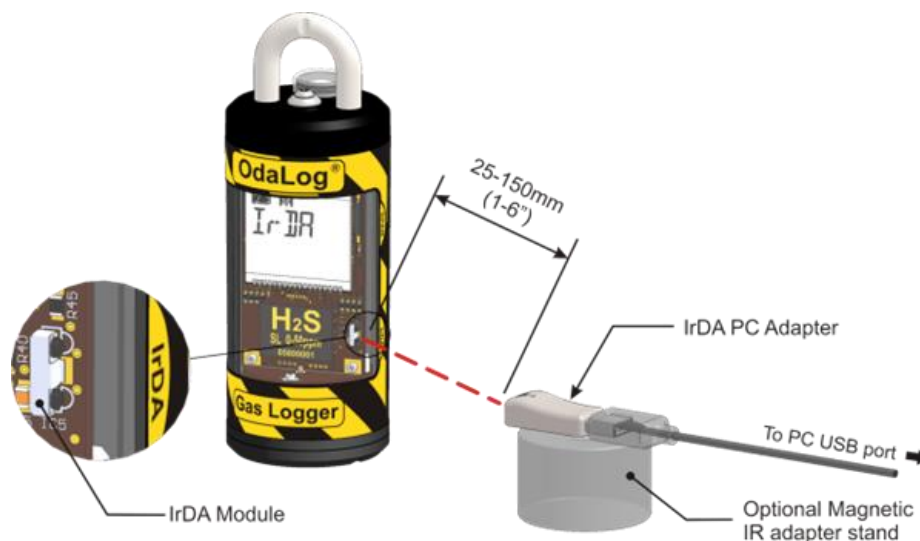
Figure 9:Setup of IrDA Communication

6.9. Switching off
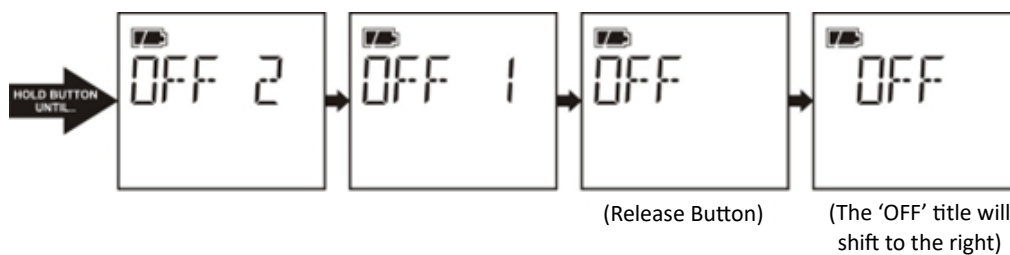
Figure 10: Display during Switching OFF.

Press and hold the button down and wait for the display to cycle through the screens until "OFF2" is displayed. Keep the button depressed until the display counts down from "OFF2" to "OFF", then release the button.

When the button is correctly released to turn the instrument off, the OFF title will shift one character to the right to confirm that the instrument is now in the off state.

Note 1: This can only be done when logging is stopped unless Auto Log Start is active (see Section 6.7).

Note 2: Releasing the button during the countdown routine will cause an exit to the instantaneous screen.

6.10. Clear Logged Data

> **Warning**
>
> All logged data will be lost when the log is cleared, be sure to download anydata that you wish to keep **before** clearing the log.

Switch the instrument "OFF". Press and hold the button whilst "ON" counts down from 3 and continue holding until "CLEAR LOG" appears on the screen, then release the button.

"Y" and "N" will appear on the display. With the magnetic base of the Allen Tool provided, select "Y" to clear the log memory, "DONE" should appear briefly on the screen before returning to the "OFF" state.

Selecting "N" will return to the "OFF" state without clearing the log memory.

Release to CLEAR LOG

Activate Left Magnetic Switch (LMS) to confirm 'CLEAR LOG' command

Figure 11: Accessing CLEAR LOG
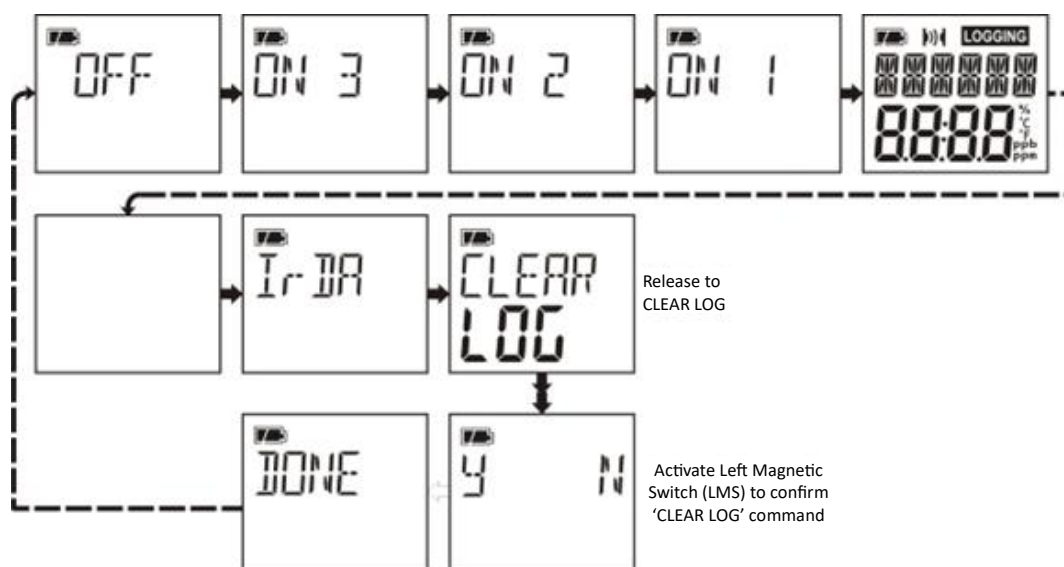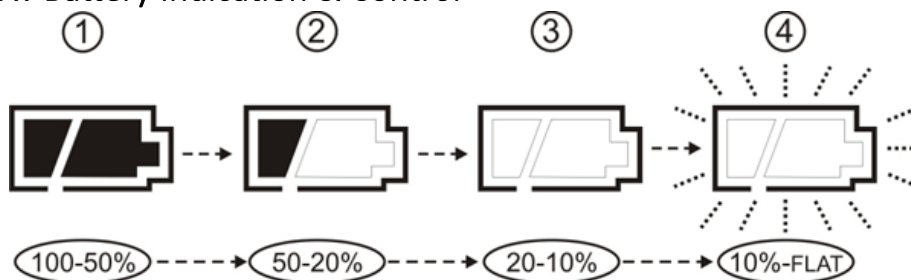
6.11. Low Battery Indication & Control

Figure 12: Battery Indicator

The multi-segment battery symbol indicates battery power levels on-screen, as shown above, with transitions for remaining life expectancy. All segments will be displayed when the battery is above 50% capacity, as in stage 1. Similarly, stage 2, shown above, indicates acceptable battery levels down to 20% battery life.

At low voltage, the battery symbol will be displayed as "empty", i.e., without any segments visible, as shown in stage 3 above. Then, as the battery capacity decreases to a flat (non-operational, stage 4) state, the OdaLog® instrument will stop the active logging session and switch the instrument off, continuously displaying the word "FLAT" on the display with the "Battery Warning" symbol flashing.

Note: The instrument cannot be turned back on until the battery has been replaced, please contact Thermo Fisher/ Authorised Service Center.

6.12. Key Lock (Default = Disabled)

Key Lock (when enabled in the OdaStat-G™ software): this feature allows the user to "lock" the top button and disable the "INST" display while in logging mode. This feature works as follows:

1. The Key Lock option requires enabling from the OdaStat-G™ software package, per the "Instrument Parameters" section.
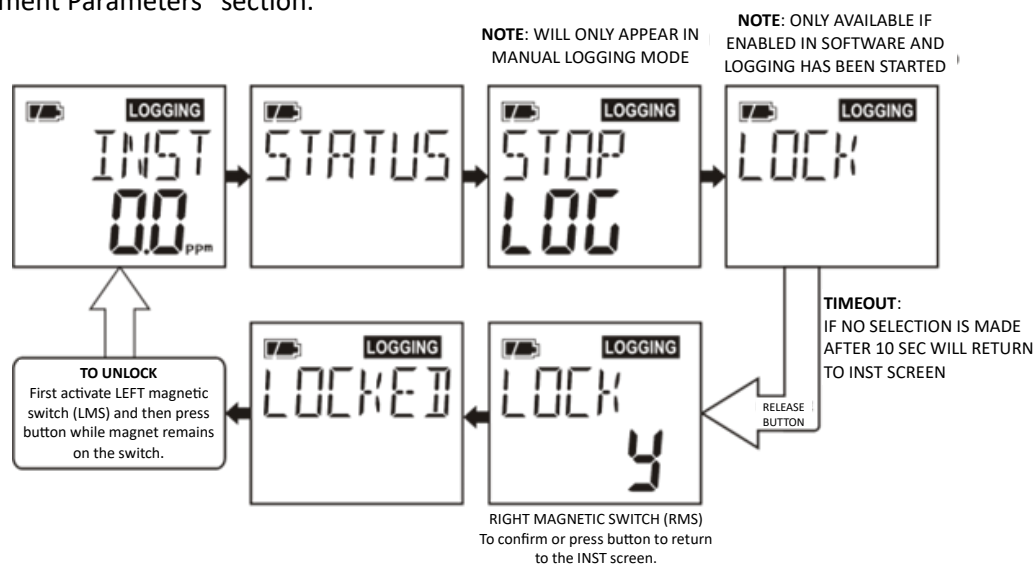
Figure 13: Accessing Key Lock

2. To Lock the OdaLog® instrument.
   Once a logging session is started, the user can select the " LOCK " option from the menu. With "LOCK" displayed, release the button to lock prompt confirmation. Swipe the magnetic base of the Allen Tool provided past the right-hand side of the LCD near the "Y" on the screen. The LCD will display "LOCKED" and the "LOGGING" symbol flashing. The instrument and button operation is now locked.

3. To Un-Lock the OdaLog® instrument.
   Place the magnetic base of the Allen Tool provided on the left-hand side of the LCD display. Press the top button, and the display will return to the "INST" reading screen. The instrument is now unlocked.

6.13. Negative Suppress Function (Default = Enabled)

This function is activated via the OdaStat-G™ software package, "Instrument Parameters" section, by selecting the "Suppress Negative Reading" option. Once active, the instrument suppresses all negative readings to the display and the logging memory.

If the instrument drifts negative by more than 2.5% of full scale or less as per factory configuration, the instrument will display the message "do nuLL". This message indicates that the instrument needs a NULL (Fresh Air Zero) per Section 9.5. The NULL must be performed in "clean air".
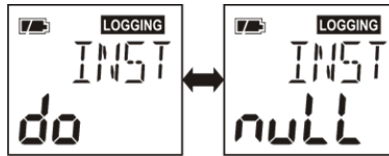
Figure 14: Negative Suppress Function

7.   SENSOR OPERATION

The OdaLog® uses an electrochemical sensor to detect levels of a specific gas in ppm (parts per million).

The sensor consists of electrolytes and electrodes packaged in a small container with a diffusion barrier that the gas passes through.

A subsequent chemical reaction causes current flow within the sensor to change in relation to the level of gas passing through the diffusion barrier.

This current output is then interpreted within the OdaLog®, displayed on the LCD (in ppm), and recorded in the OdaLog's data-logging chip.

While the sensors are designed to react to their specific gas type, other gases will also cause chemical reactions within the sensor, and some of these are listed in (see Section 7.1).

7.1.   Sensor Cross-Sensitivity

The presence of other gases can affect the readings of the electrochemical OdaLog® sensors. The chart below shows how the sensors listed will likely respond to 100 ppm of interfering gases. There may be gases not on this chart, which also interfere with OdaLog® sensors.

Table V: Cross Sensitivity of H_2S Sensor

OdaLog® Sensors	Approximate response to Interfering Gas at 100 ppm unless noted											
	H_2S	CO	SO_2	NO	NO_2	HCN	HCL	NH_3	H_2	C_2H_4O	CH_4	CO_2
H_2S	100	<2	<20	<6	-20	0	0	0	- 20	<1	0	0

7.2.   Effects of Environmental Changes on OdaLog® Sensors

7.2.1.   Temperature

The operating temperature range of OdaLog® sensors is -10°C to +40°C (14oF to 104oF), and within this range, the sensors are temperature compensated, although extreme temperature swings may cause sensor drift until the temperature sensor stabilises.

Due to the temperature sensor being located within the OdaLog® body, there is a stabilisation time of up to an hour when significant temperature changes occur.

7.2.2.   Humidity

The sensors fitted to the OdaLog® Logger can be used continuously in atmospheres of 20% to 80% relative humidity (RH) and can be used intermittently between 0 to 20% and 80 to 99% RH. If used for extended periods of time at low humidity, the sensor may dry out. Conversely, it may take up water and leak acid at high humidity.

> ### IMPORTANT NOTE ON HUMIDITY
>
> The Sensor fitted to the OdaLog Instrument is susceptible to reduced response in continuous high-humidity environments. With the wastewater industry being a common application for the OdaLog, it is <u>IMPORTANT that users understand the effect humidity has on the sensor</u>, in that it cannot operate continuously in a „wet" (above 80% RH) environment without an ongoing operating and service plan to ensure the accuracy of logged data.

In high RH environments (over 90%), a time-in/ timeout ratio of two days "in" and two days "out" is recommended. This ratio allows the sensor adequate time in a "normal air" environment to "dry out" and return to its normal operational state.

Under these conditions, regular physical checks and sensor calibration are essential; an after-use "span check" is recommended for such environments (see Section 9.8).

7.2.3. Pressure

Sensors may exhibit the effects of changes in pressure. For example, an increase in pressure may result in an increase in gas reading. For this reason, we do not recommend this sensor for use in pressurised applications.

7.3. Long-Term Exposure to High Gas Levels

It is possible for some electrochemical sensors to "drop off" in reading when exposed to high levels of gas for extended periods. Therefore, a "pre-use" and "post-use" span check may need to be carried out as described in Section 9.8.

8.   MAINTENANCE

Routine maintenance of the OdaLog® instrument is an extremely important factor affecting the reliability of the instrument. Optimum instrument performance and reliable operation will only be achieved if a dedicated maintenance program is followed (refer to Section 7 for sensor limitations).

To ensure reliable measurements, the OdaLog® should be checked at regular intervals with test gas as described in the Calibration Section of the user manual.

Before you use the OdaLog®, inspect the instrument for signs of misuse or damage and cracks or missing parts. Do not use the OdaLog® instrument if it is damaged. Please contact your closest authorised Thermo Fisher service centre if the instrument is damaged or missing parts.

To ensure that Ex certifications and performance approvals are not invalidated, accredited workshops should only perform any service, repair, or overhaul with full instructions and drawings from the certificate holder. To ensure that any service, repairs, or overhaul are carried out in such a manner, it is preferable that the OdaLog® instrument be sent to the closest authorised Thermo Fisher service centre.

Do not attempt to disassemble or perform maintenance on the OdaLog® unless instructions for that live maintenance procedure are contained in the manual and the part is listed as a replacement. Only use Thermo Fisher Scientific replacement parts.

The OdaLog® should be switched off when not in use and stored in a clean and dry environment, as usually found in a normal office.

Ensure the OdaLog® exterior is kept clean with a soft damp cloth. Do not use solvents, soaps, or polishes.

It is recommended that OdaLog® instruments are returned to an authorised Thermo Fisher service centre every six months for calibration and service.

8.1.   Filter Replacement

⊙   Ensure OdaLog® is off.

⊙   Using the Allen Tool [Part No. 11-0000], remove the three retaining screws from the filter housing assembly (see Figure 18).

> **CAUTION**
>
> Ensure the following procedure is only carried out in a non-hazardous, dirt and grease free area.
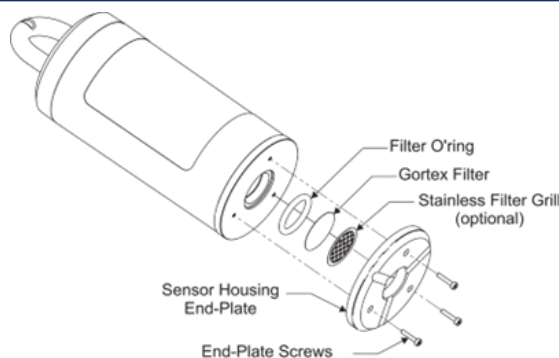

Figure 15: Filter Replacement

- ⊙ Carefully remove the filter housing assembly.
- ⊙ Remove and retain the O-ring.
- ⊙ Remove filter.
- ⊙ Remove, clean, and replace stainless filter grill (if fitted)

> **NOTE:** Ensure hands are free of dirt and grease prior to handling new filter.

- ⊙ Replace filter with "shiny" side facing outwards.
- ⊙ Replace O-ring. **DO NOT GREASE O-RING**
- ⊙ Replace filter housing assembly on OdaLog® body (aligning screw holes)
- ⊙ Replace three end cap-retaining screws. **DO NOT OVERTIGHTEN**

Note 1:   Filter orientation is important. Ensure the replacement filter is correctly placed with the "shiny" side facing outward.

Note 2:   Some sensor filters are fitted with stainless wire gauze protection. If fitted, this should be cleaned and dried before fitting a new filter.

8.2. Service

To locate your nearest Thermo Fisher Scientific service centre please contact us or refer to our website.

9. CALIBRATING THE OdaLog®

> **CAUTION**
>
> OdaLog Instruments should be calibrated by authorised, competent personnel using the correct equipment. If unsure, or the correct equipment is not available, then return the instrument to Thermo Fisher Scientific or an authorised distributor / technical workshop for calibration.

9.1. Preparation for Calibration

Calibration of an OdaLog® must take place in a known clean, fresh air environment at an ambient temperature of between 20°C and 25°C.

Figure 16: Clean (Well Ventilated) Air

A clean, fresh-air environment is one that is free of flammable gases and interfering or contaminating substances (hereafter known as "Clean Air").

Cigarette smoking, the use of butane lighters or solvents nearby, industrial fumes, or vehicle exhaust can cause an incorrect, and hence potentially inaccurate, calibration.

Ensure the OdaLog® has sufficient battery life and that filters are uncontaminated and undamaged.

> **CAUTION**
>
> Ensure calibration is undertaken in a well-ventilated area or fume cupboard. Seek advice from calibration mixture supplier in relation to handling calibration gases.

9.2. Adsorption of Calibration Mixture

Care should be taken when selecting the regulator material, tubing type, and length used for calibration. For certain calibration mixtures, instead of the gas passing freely through the gas regulator & tubing, test gas molecules can attach themselves to the regulator & tubing walls, thus reducing the concentration of calibration mixture that reaches the instrument sensor. This effect is known as adsorption and is more noticeable with certain calibration mixtures than others, particularly Hydrogen Sulphide.

Advice in relation to the suitability of regulators and tubing should be sought from the calibration mixture supplier.

9.3. Tools and Test Equipment

The following equipment is required to perform a calibration on an OdaLog® instrument:

- Calibration mixture: To suit sensor type (refer to Table VII). The calibration mixture should be equivalent to 25- 50 percent of full-scale concentration, ideally near mid-scale. However, lower concentrations are recommended for toxic gases in the interest of safety. The calibration mixture should be certified or analysed to be accurate to at least ±5 percent of the actual labelled concentration.
- Gas bottle regulator: To suit gas type & flow rate (refer: Table VII)
- Calibration fitting/adaptor: Complete with suitable type, size & length tubing. [Part Number 11-0001].
- Magnetic ended Allen Tool: [Part Number: 11-0000].
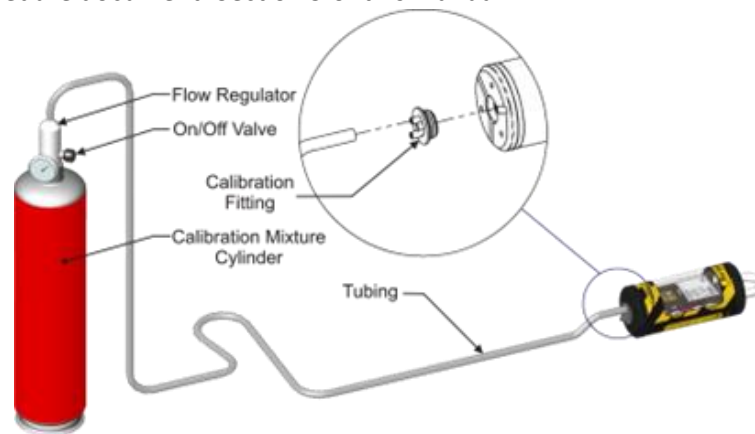- Calibration procedure document: Section 9 of this manual.
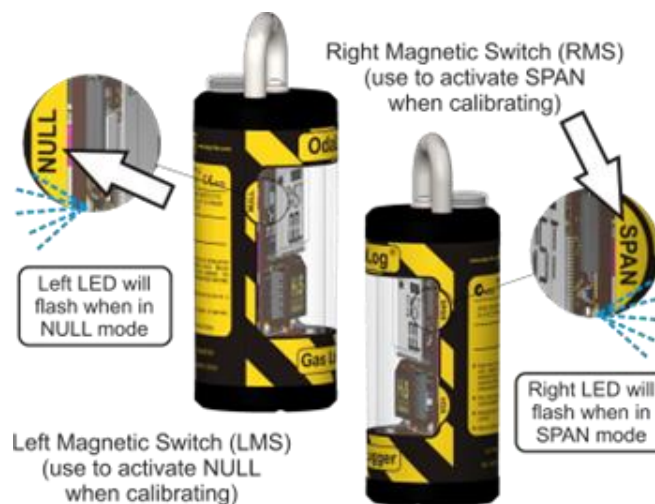

Figure 17: Calibration Mixture Connection

Figure 18: Magnetic Switch (RMS/LMS, SPAN/ NULL)

9.4. Calibration Mixture Application Times & Rates

This table shows the minimum calibration mixture flow time & rate necessary for calibration. Be sure that the correct flow rate and time are used.

Table VI: Flow Rate and Time for Calibration

Calibration Mixture	Recom. Gas Level	Sensor	Min. Flow Rate (ml/min)	Flowtime (min)
Hydrogen Sulphide	50 ppm	H2S SL	250 - 500	5
Hydrogen Sulphide	50 ppm	H2S LL	250 - 500	15

9.5. NULL (Fresh Air Zero)

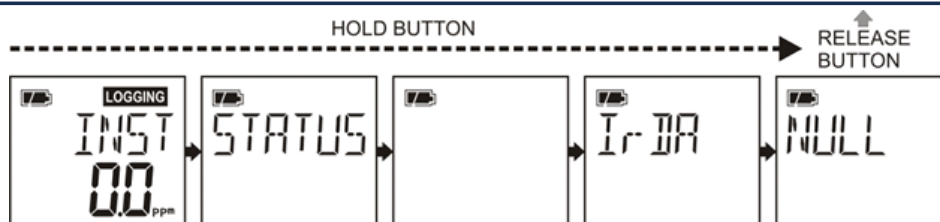> **Note:** It is recommended that logging sessions are stopped prior to a calibration

Figure 19: Accessing NULL calibration.

- ⊙ Ensuring the OdaLog® is in Clean Air, press & hold down the button until the display progresses, "NULL" appears on the screen, and then release the button. The left LED will flash to indicate the instrument is in Null mode.
- ⊙ Place the magnetic base of Allen Tool [Part No 11-0000] provided on the left-hand side of the LCD display above the wording "NULL".
- ⊙ "DONE" will appear briefly, and the LCD will return to the "INST" screen.

Note: Magnet must be applied within 30 seconds; otherwise, the display will revert to "INST". To abort, press the button down at any time, and "CANCEL" will display before reverting to the "INST" screen.

Figure 20: NULL Calibration

9.6. SPAN

⊙ Set the calibration level via the OdaStat-G™ software package "Instrument Parameters" section to match the level stated on the calibration mixture cylinder that is being used.
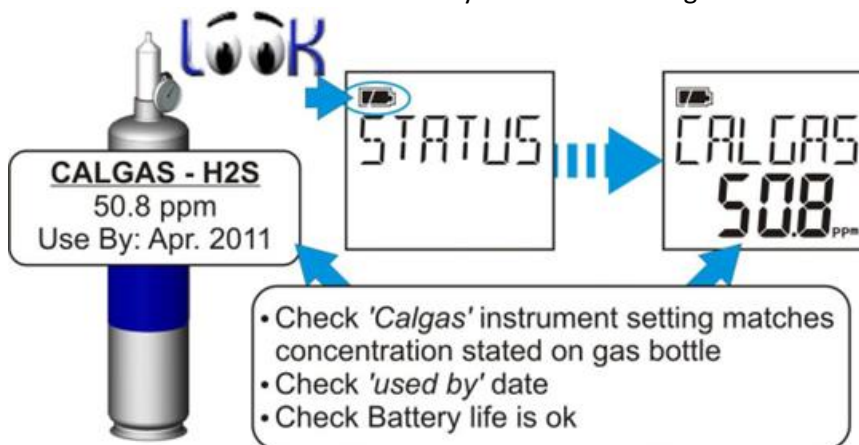

Figure 21: Setting Calibration Gas

⊙ Insert the calibration fitting [Part No 11-0001] over the sensor at the bottom of the OdaLog®, as shown in Figure 26.
⊙ Attach the regulator to the gas cylinder and fit plastic tubing over an inlet on the calibration adaptor (Figure 26).
⊙ Open the regulator and allow gas to pass over the sensor at the flow rate and for the flow time, as detailed in Table VII.
⊙ After waiting for the time shown in Table VII, the gas reading on the screen should have stabilised, and calibration can be performed as follows:
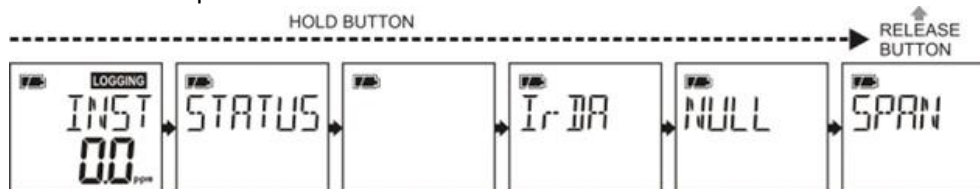
Figure 22: Accessing SPAN calibration.

1. Press and hold down the button until the screen progresses past the menus until "SPAN" appears, then release the button. The right LED will flash to indicate the instrument is in Span mode.
2. Place the magnetic base of Allen Tool provided on the right-hand side of the LCD display above the wording "SPAN".
   o "DONE" will appear briefly, and the LCD will return to the "INST" screen, indicating a successful calibration.
   o "bAd1" or "bAd2" will appear, indicating the span value saved will be inaccurate due to a damaged or faulty sensor (see Section 9.7).
   o "FAILED" calibration (sensor will not save Span value). LCD will return to the "INST" screen (see Section 9.7).

Figure 23: SPAN Calibration

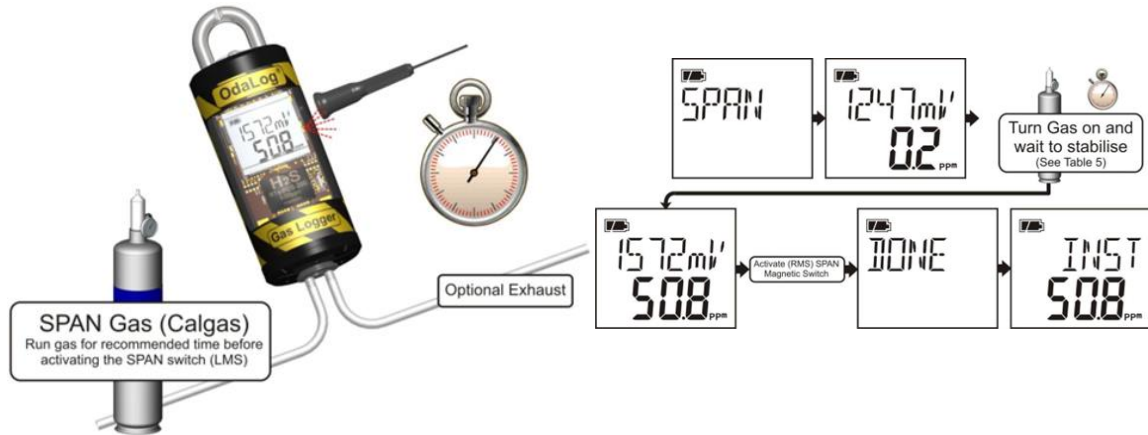3. Ensure that the instantaneous display reads the same as on the cylinder before turning off the gas regulator and removing the calibration fitting.
4. Ensure that reading returns to close to zero within 5 minutes in clean air and re-zero if necessary.
    Note: The instrument will TIMEOUT and return to the "INST" screen if a SPAN is not done within 10 minutes.

9.7. Calibration Errors

Figure 24: Display of Failed Calibration

SENSOR bAd1: The sensor response/reliability has been calculated to be LOW; recheck the calibration and review Section 7 for sensor information. Span value WILL still be saved; however, readings may be inaccurate (> ±10 %).

SENSOR bAd2: The sensor response/reliability has been calculated to be VERY LOW; recheck the calibration and review Section 7 for sensor information. Span value WILL still be saved; however, readings may be inaccurate (> ±10 %).

FAILED: The sensor has FAILED the response/reliability test; the sensor requires urgent replacement before being deployed. Span value WILL NOT be saved; return to the service centre for repair.

N/A: If N/A appears on the LCD, there may be a sensor/hardware issue causing readings to fail. If the error persists, return for service. (ERROR 3 may also indicate this issue).

> **NOTE:** It is recommended that the sensor be replaced when sensor has decayed between "bAd1" and "bAd2" fault warnings - to maintain reasonable accuracy of logged data.

When sensor errors occur during calibration, check the following areas:

> **TROUBLESHOOTING CHECKLIST**
>
> ⊙ Calibration level settings in the "Instrument Parameters" section in the software package or the instruments "STATUS" menu section 6.4.
> ⊙ Appropriate flow through Calibration Gas regulator.
> ⊙ Calibration Gas regulator is turned on.
> ⊙ Sensor Filter is free of obstructions and not „clogged" or covered in any oily residue.
> ⊙ Calibration fitting correctly inserted.
> ⊙ Tubing is leak free and not obstructed.
> ⊙ Calibration gas is within "Use-by" date.

If "FAILED" continues to appear, a sensor fault may have been detected, and the OdaLog® should be returned for testing/repair at an authorised Thermo Fisher service centre.

9.8. Span Gas Check – Pre-Use and Post-Use (if required)

9.8.1. Span Gas Check – Pre-Use
⊙ Ensure the "Use By" date is current on the Calibration Mixture Cylinder.
⊙ Immediately before placing OdaLog® in the test area, attach the calibration adaptor and calibration mixture cylinder. Do not enter "SPAN" mode.
⊙ As detailed in Table VII, allow gas to flow at the recommended flow rate and time (or until reading stabilises).
⊙ Record reading. This reading will be the "Start Level" (note reading in relation to the level stated on the calibration mixture cylinder).

9.8.2. Span Gas Check – Post-Use
⊙ Immediately after removing OdaLog® from a test area, attach the calibration adaptor and the same gas cylinder used in 9.8.1 (above). Do not enter "SPAN" mode.
⊙ As detailed in Table VII, allow gas to flow at the recommended flow rate and time.
⊙ Record reading. This reading will be the "End Level" reading. (Note: reading in relation to the level stated on calibration mixture cylinder).

If the OdaLog® has been used in a high gas or high humidity environment, the "post-use" calibration span check may indicate the reading has "dropped off" and is reading low at the end of the test.

If required, the logged readings can be adjusted as described in section 9.8.3 (refer to the "Decay Compensation" section of the OdaStat-G™ software package), provided that the start and end of the level span of gas check readings have been recorded.

After running in fresh air for around 48 hours, the sensor should recover and again read close to the correct level when exposed to a calibration mixture; however, if it is not reading accurately, it should be re-calibrated before the next "logging session".

When the instrument and sensor have been subject to a high humidity environment, the sensor recovery time can be reduced using a Thermo Fisher sensor conditioning kit (part no: 25-0390), which will quickly absorb the moisture trapped in the sensor so it can return to reading gas levels accurately.

9.8.3. Decay Compensation

> **NOTE**
> Sensor Decay Compensation will automatically update logged data when entered into the OdaLog software. This feature requires pre/post data values to be recorded.

This graph option applies a constant sensor decay rate to all gas readings in that session. By recording the "pre-use" and "post-use" span check results (See Section 9.8.1 & 9.8.2), you can apply this information to offset any decay in sensor response during the logging period. For example, an OdaLog® calibrated before a logging period to 50 ppm H_2S may read 30 ppm when exposed to the same calibration gas at the end of a logging period.

Notes: The above decay compensation assumes gas exposure to the sensor has occurred uniformly rather than in large bursts. Accordingly, we have used a "straight line" equation as follows:

$$D = \frac{O - F}{O}$$

$$P = \frac{n - 1}{T - 1}$$

$$A = R \times \left[\left(\left(\frac{1}{(1 - D)} - 1 \right) \times P \right) + 1 \right]$$

> D = Sensor decay rate
> O = Original span
> F = Final span
> P = Proportion along entire logging interval
> n = Gas reading number
> T – Total number of gas reading
> A = Actual value of gas if there was no decay
> R – Recorded gas value

⊙ **Applying Sensor Decay**

If selected, a constant decay rate is applied to all gas readings in that session. The application takes the difference between the "Start" (pre-use span check) and "End" Levels and divides this by the number of readings that were taken. This value is then cumulatively adjusted to all gas readings to compensate for any decay in sensor response.

⊙ **Start Level**

"Pre-use" Span Check result (preferred value) when applying test gas before deployment in the field (See Section 9.8.1). If this value was not recorded, use the Span level that was set during calibration (Cal gas value – as set in the OdaStat-G™ software).

⊙ **End Level**

"Post-Use" Span Check result that was recorded once logging had finished (see Section 9.8.2).

Tip: Selecting "Suppress Negatives" (See Section 6.13) when applying decay compensation will prevent a false exaggeration of negative readings.

10. OPTIONAL ACCESSORIES AND SPARES

Figure 25: Accessories and Spares

10.1. Accessories

Table VII: Accessories List

Part Number	Description
11-0000	Allen Tool with Magnetic Base
11-0001	Calibration Fitting
11-0085	OdaLog® Software Kit: OdaStat-G™, IrDA adapter & Manual
11-0008	Plastic Carry Case for Gas
25-0391	Dry Dock (Sensor Conditioning Kit)

10.2. Spare Parts

Table VIII: Spare Parts List

Part Number	Description
29-1017	6 Month Service Kit: Replacement seals & O-rings, new filter/s & grill, button cover, moisture absorption pack/s
22-0002	Button Cover, Moulded, Pk.10
13-0107	23mm Ø Filter Membrane, Pk 10
12-0129	Dry Pack (Moisture Absorption Pack)
19-1000	Stainless Filter Grill
12-0001	O-Ring Grease (Lanolin)
10-1000	User Manual (This Document)
11-0020	Infra-Red Data Communication Link (IrDA)
70-0250	Gas Regulator 250 ml/min (Australia only – International customers contact your local OdaLog Distributor for assistance in sourcing Calibration Gas & Regulators)
70-0500	Gas Regulator 500 ml/min (Australia only – International customers contact your local OdaLog Distributor for assistance in sourcing Calibration Gas & Regulators)
12-0003	Stand for Infra-Red Data Communication Link

11. WARRANTY

11.1. Warranty

Thermo Fisher Scientific Pty. Ltd. warrants, for a period of 12 months from the date of dispatch from Thermo Fisher's premises, that the OdaLog® Gas Logger instrument, including sensors and all internal components, supplied to you will be free from defects arising in the manufacture.

11.2. What the warranty does not cover.

This warranty does not extend to fair, wear and tear, or any damage, defects, or failures with the product which directly or indirectly arise from or are due to:

- ⊙ Failure by you to follow the instructions for use set out in this Manual or any other technical notes or instructions issued by Thermo Fisher either directly or through its authorised distributors.
- ⊙ Any modifications or repairs not carried out by Thermo Fisher or its authorised distributors.
- ⊙ Inappropriate use of the product or any other causes specified in this Manual as being excluded from this warranty. This exclusion includes sensor malfunction or damage due to extended operation in unsuitable environments, as detailed in Section 7 of this manual.

11.3. What Thermo Fisher will do.

In the event of a claim and Thermo Fisher being satisfied that there is a manufacturing defect in the product, Thermo Fisher, at its option, will either repair the product, including any defective sensors, or provide a replacement product. This warranty does not cover:

- ⊙ Any shipping or delivery costs
- ⊙ Calibration costs
- ⊙ Associated costs, including, without limitation, the costs incurred in replacing filters or gaskets. This warranty is subject to Thermo Fisher's terms and conditions of sale.

11.4. Limitations

The obligations of Thermo Fisher under this warranty are limited to those set-out and this warranty expressly instead of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose and notwithstanding any course of dealing between the parties and usage in the trade to the contrary.

Thermo Fisher will not be liable for consequential loss or damage whatsoever and however arising out of or in connection with the supply, performance, or removal of the product, including (but not limited to) any indirect or consequential loss (including, without limitation, loss of profit, loss of revenue, loss of contract, loss of goodwill or increased cost of workings), even if due to negligence of Thermo Fisher or any of its approved distributors, employees or agents.

11.5. Validity

This warranty becomes valid only when Thermo Fisher has been paid in full for the product.

12. Patents, Trademarks, and Registered Designs

The following Authorities have granted Patent, Registered Design, and Trademark certification to the OdaLog®.

Table IX: Patent, Design and Trademark

Location	Type	Number
Britain and Northern Ireland	Registered Trademark	2203862
Britain and Northern Ireland	Registered Design	2089795
Commonwealth of Australia	Registered Trademark	785920
Commonwealth of Australia	Registered Design	140375
European Community	Registered Trademark	001330356
Germany (Deutschland)	Registered Design	4 00 01 216.2
New Zealand	Registered Trademark	313661
United States of America	Patent	Des.432,037
United States of America	Patent	US 6,198,400

13. Appendix A- GLOSSARY OF TERMS AND ABBREVIATIONS

The following abbreviations and terminology are used in this manual and/ or appear on the OdaLog® display screen, label, and software.

Terms	Description
-OF- / -OS- / OFL	Over-display range – Measurement outside the instrument's displayable range
BATT	Battery Volts
BATT FlAt	It indicates a flat battery, with the battery symbol flashing. Active logging will cease.
▰	Battery Level Symbol
CANCEL	Process canceled by user before completion
CE	Europe EMC compliance marking
CLOCK	Time of day
CLOCK not SEt	The clock is not set. Press the button to continue (see Section 6.3).
CLEAR LOG	Clear logged data
C-Tick	Australian EMC compliance marking.
DONE	Selected process completed
do nuLL	Indicates Instrument requires a NULL in clean air (see Section 9.5).
EMC	Electromagnetic compatibility
ESD	Electrostatic discharge
FAILED	Sensor failure during Span operation
INST	Instantaneous measurement
IrDA	Infra Red Data Communication Mode
MEMORY	% Logging memory used (Status Menu), Start logging (Main Menu)
MEMORY FULL	Data log memory full
LOCK	It locks the top button and disables the "INST" display. (See Section 6.12)
LOCKED	Instrument in LOCKED mode. (See Section 6.12)
LED	Light emitting diode
LCD	Liquid crystal display
LHS	Left Hand Side
LMS	Left Magnetic Switch
NULL	Fresh air zero
oda	OdaLog® raw data file name extension
OFF	Displayed when switching the unit off & while the unit is off.
ON	Displayed when switching the unit on
oncE	Stop log when memory is full.
PEAK	Peak gas level for logging session. (lowest level for oxygen model)
RMS	Right Magnetic Switch
roLL	Continuous logging, overwriting the oldest data
SPAN	Span set
START LOG	Start logging
STATUS	Status – scrolls through an overview of instrument data.
STOP LOG	Stop logging
STP	Standard Temperature and Pressure: 20 °C (68 °F) @ 101.3 kPa (14.7 psi)
%VOL	Gas concentration is expressed as a percentage of the Volume in the atmosphere.
%LEL	Gas concentration is expressed as a percentage of the Lower Explosive Limit.
PPM	Gas concentration is expressed as Parts Per Million in the atmosphere.

Australia:
For customer service, call 1300-735-292
For service and calibration, call 1300-736-767
To email an order, ordersanz@thermofisher.com

New Zealand:
For customer service, call 0800-933-966
For service and calibration, call 0800-933-966
To email an order, ordersnz@thermofisher.com

Learn more at **thermofisher.com/odalog**