User's Manual

O$_2$ Safety System

LOGICO O$_2$

NOTE 1: Always test your set, BEFORE INSTALLATION!
The different sets are delivered pre-connected in the package.
Be aware! During the test a very loud sound will be emitted from the horn.

The test procedure is described in chapter 3.1 in this manual.

NOTE 2: Remember to perform a startup calibration when the system is installed.
The calibration procedure is described in chapter 4 in this manual.

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Explanations of symbols for the O2 Safety System

Please note that whenever installing or disconnecting a system, refer to this manual first!

Double insulation protected equipment may also be called "Class 2".

Symbol for the marking of electrical and electronic equipment.
(The symbol indicating separate collection for electrical and electronic equipment).

1. General information on O2-detection

NITROGEN GENERATORS

⚠ Please note that if a nitrogen generator is being used in the area where the O2 sensor is installed, the excess oxygen created by the nitrogen generator must be led out of the area. It is not allowed to use the O2 sensor in the area if the oxygen is not led out.

The LogiCO2´s O2 Safety Systems measures the O2 concentration in an enclosed space environment and provides alerts/alarms in the event that O2 levels in that space reaches the pre-set alarm levels. The O2 sensing devices uses optical analysis for detection of O2.

Depending on how the sensors alarm levels are set, if a sensor detects a low or high O2 level, the O2 sensor alerts via sound and light-diodes as well as remotely connected warning lamps, horns or horn/strobes which will be activated. If it is connected to the Mk9 central unit it will also display which sensor has detected an O2 level alarm.

First after a self-diagnostics program has been done by the system the sensor will begin to detect O2 levels when powered on. The system is delivered pre-connected. With auxiliary kits, functionality can be substantially extended. There is a set which is comprised of one O2 sensor, one central unit, one horn/strobe as well as appropriate signs. As well as one with the Stand alone version.
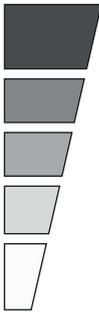
O2 concentration levels (%) and effects

(%)	Effect
20.9	Normal.
19.0	Some unnoticeable adverse physiological effects.
16.0	Increased pulse and breathing rate, impaired thinking and attention, reduced coordination.
14.0	Abnormal fatigue upon exertion, emotional upset, faulty coordination, poor judgment.
12.5	Very poor judgment and coordination, impaired respiration that may cause permanent heart damage, nausea and vomiting.
<10.0	Inability to move, loss of consciousness, convulsions, death.

Source: Compressed Gas Association, 2001.

2. General LogiCO2 Safety System description

LogiCO2´s O2 Safety Systems measure O2 concentration in an enclosed space environment and provides alerts/alarms in the event that O2 levels in that space reaches a pre-set level. The O2 sensing devices uses an optical sensor for accurate detecting of O2. When installed properly, the system will continuously monitor the O2 concentration where a O2 sensor is located.
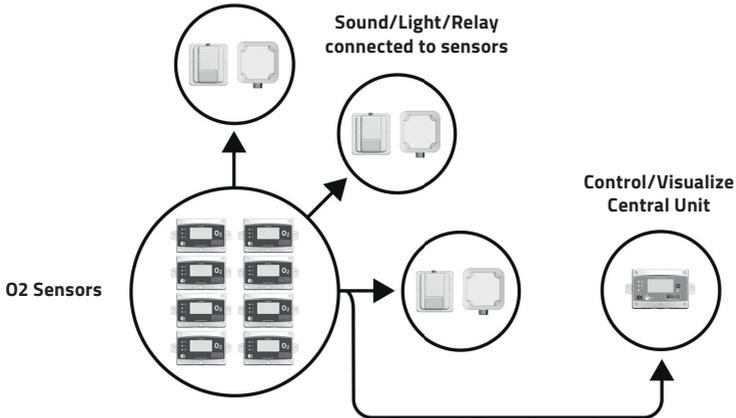
Depending on how the sensors alarm levels are set, if a sensor detects a low or high O2 level, the O2 sensor alerts via sound and light and remotely connected warning lamps, horns or horn/strobes will be activated. The central unit will alert with sound and display which sensor that has detected a low or high O2 level. A properly installed system will begin to detect O2 levels when powered on, after a self-diagnostics program has been made by the system.

The system is delivered as pre-connected sets with auxiliary kits to extend the function of the sets. The sets are comprised of one or more O2 sensors, with auxiliary central unit/s, horn/s and relay boxes.

Examples of sets and kits:

Mk9 O2 Base set 2056

Mk9 O2 sensor Add-on kit 2124

3. Test and installation

LEGAL NOTICE

⚠ All persons responsible for the operation and maintenance of this equipment must read and understand the safety and operating information contained in this guide. Installation and service of this equipment should be performed only by professionals. The function of the equipment will be impaired if it is not properly installed. Disconnection from power supply source: when installing the O2 Safety System to the power net, please ensure that the fuse that the system runs on is clearly marked. This makes it easy to disconnect the power to the system, if needed.

It is very important to be aware that the O2 Safety System does not function if disconnected from power mains.

3.1 Testing set, BEFORE INSTALLATION

The different sets are delivered pre-connected in the package. Always test the set before installation to verify proper function! NOTE: Be aware that during the test a very loud sound will be emitted from the horn.

1. Open the box and carefully take the components out of the package.

2. Find the power supply in the package and attach the correct mains-adaptor for your country's outlet, then connect the power supply to the electrical outlet. The set should now activate.

3. If you test a Mk9 detector set, please check that all LEDs on the central unit and the sensors illuminate and the built-in buzzers beep, this is part of the self-diagnostics program. Approximately 3 seconds after connection all external horns and/or strobes (connected to the sensor) should be activated for approximately 5 seconds.

4. Now your set is tested and you can start the installation.

Note! If additional kits are to be installed. Please check appropriate part of the manual for correct DIP-switch setting (ID-address).

3.2 Installation of the O2 Sensor

Correct placement of the O2 Sensor

The O2 sensor should be placed in the room where there is a risk for unsafe oxygen concentration – this would be at the distribution points of the nitrogen, nitrogen generator or nitrogen tank as well as mixed gas with nitrogen. Please observe, this does not necessarily have to be where the asphyxiant gas is stored, for example when it is stored outside and the gas is routed into the building via pipes.

It is also VERY IMPORTANT to be aware that the danger always is relative to how much asphyxiant gas is used and stored in relationship to the volume of the room in question.
NOTE: If the room has only mechanical ventilation, it should have a sensor.

Installation of the O2 Sensor

The O2 sensor should be installed at breathing height, between 150-180 cm/5-6 feet from the floor. Try to find an installation position where the unit is least likely to be damaged. Mount the O2 sensor with supplied mounting screws.

3.3 Installation of the Horn/Strobe
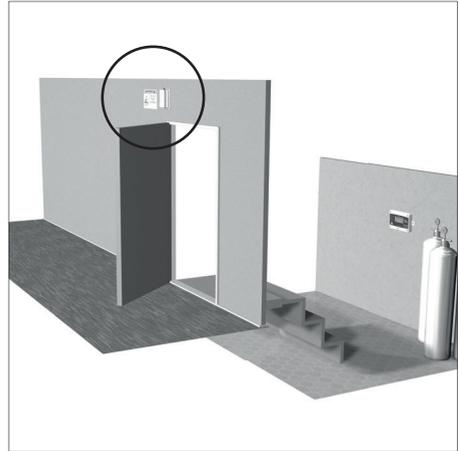
1. The horn/strobe/s must be installed on the wall above the O2 sensor, approximately 2-2.4 m/80-96 inches (as per NFPA 72) above the floor, clearly visible from any entrance of the area being monitored. It is recommended that a second horn/strobe be placed OUTSIDE the area being monitored, preferably placed over the door/s leading to the monitored area. This will require more than one horn/strobe. Mount the unit with supplied mounting screws.

2. Mount the included warning signs so they are clearly visible, next to or above the horn/strobes, in a permanent way.

3.4 Installation of the Central Unit

1. If your set includes a central unit, it must be installed outside the area or room being monitored, for example on a wall in the manager's office. The central unit must be installed at a clearly visible and reachable height.
**2.** Mount the included information signs clearly visible, next to or above the units, in a permanent way.

3.5 Installation and connection of the cables
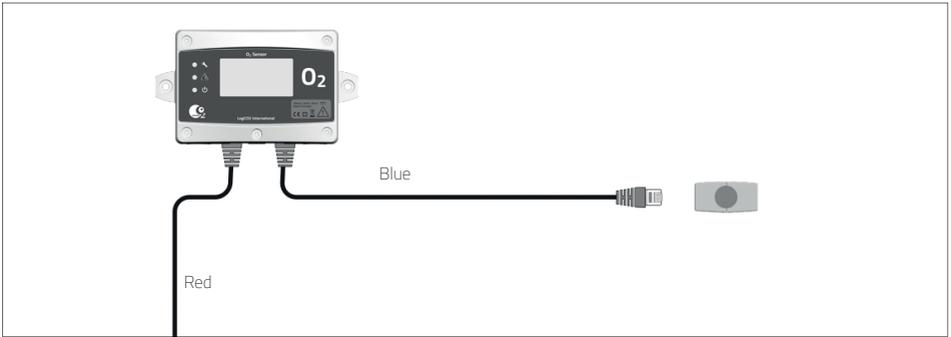
The different units are connected to each other by cables. The blue marked cable is used for signalisation (horn/strobe, warning beacon and remote control box). The red marked cable is for communication and power. Please observe, all cables have splitters at the end to facilitate extended cable lengths. When installing, the cables may need to be disconnected for purposes of cable routing. When reconnecting, please make sure that you connect to the original splitters and connectors. Make sure to mount the protective collar seals with the tie-wraps in order to protect the connections from moisture and dust. The collar seals as well as the tie-wraps are also delivered in the box that the sensor comes in. If possible, route the cables through cable conduits between the units, for a neat and safe installation.

Protective collar seals and cable ties are included. They must be used as below to protect the RJ45 1-1 connector or RJ45 1-2 splitter from moisture and dust.
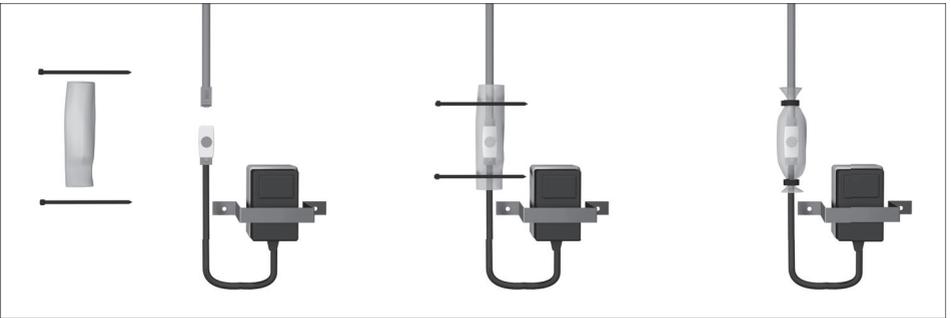
3.6 Connection of the power supply

A separate power supply (100-240 VAC) supplies power to the system. Please observe that you have to connect the appropriate plug adaptor to the power supply depending on which country you are in.

Connect the power supply to the electrical outlet.
Mount the included plug-lock so that the power supply cannot be disconnected without the use of tools.
It is also possible to order a hardwired power supply option when and were it is needed.
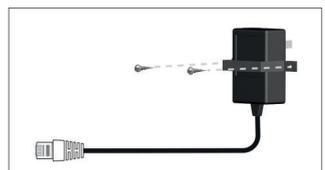
4. Calibration, AFTER INSTALLATION

Startup calibration

When the system has been installed, it is important to do a calibration since the sensor could have become uncalibrated during transportation.

The sensor needs to be powered for at least 20 minutes before the calibration can be done, to make sure it is heated up and adjusted to the environment. Try to make sure that the room is well ventilated.

Instruction:
A more detailed instruction can be found in chapter 7.5, "Service Mode Three", in this manual.

1. Press and hold the button on the sensor for 10 seconds.

2. When the asterisk (*) in the upper right corner of the display is lit, push the button shortly. Repeat this five times in a row to enter the Calibration mode. For each correct push of the button, a dot will be lit in the lower left corner. If an incorrect push happens, the procedure starts over again.

3. The instructions in the display will say Push the button to start calibration. Push the button short and a 90 second timer starts counting down. If the calibration is successful, the display will show "Calibration OK" and go back to Service Mode One, for 30 seconds, and then go to "normal view".

Automatic calibration

The LogiCO2 O2 sensor has an automatic self calibration function, so after the first start up calibration, no further manual calibrations should be needed in normal conditions.

5. Connection diagram

This connection diagram shows an example of how the system can be installed.

Mk9 O2 Sensor

Mk9 CO2 Sensor

Mk90 CO2 Sensor

RJ45 Splitter (blue)
1-1/1-2/1-4

Horn/Strobe

Power Supply

Mk9 Central Unit

Remote Connection Box

RJ45 Splitter (red)
1-1/1-2/1-4

Possibility to expand with up
to eight Mk9 O2 Sensors or
Mk9/Mk90 CO2 Sensors
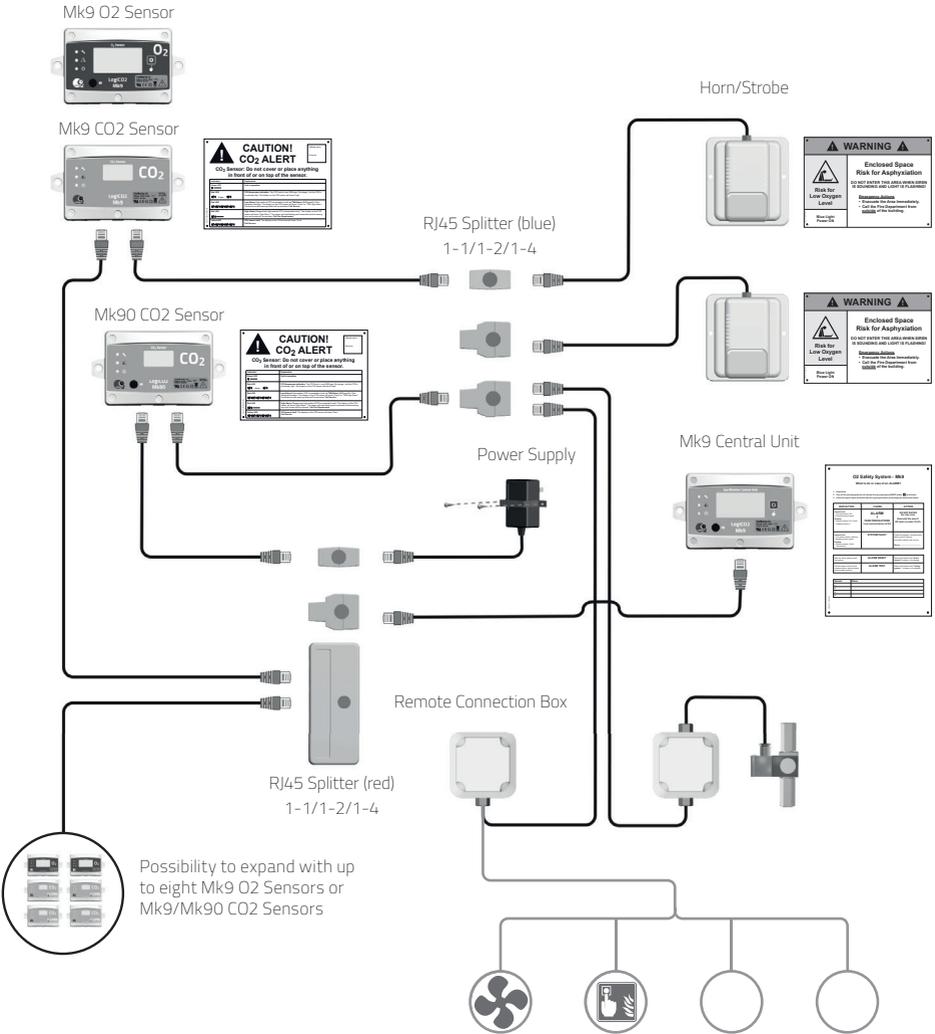
Please note:
A separate installation manual is provided with each extra O2 sensor kit explaining the simple
installation process for adding additional sensors to an existing set.

6. What to do in case of an Alarm?

INDICATION	CAUSE	ACTION
Central Unit: ▪ The red diode is ON ▪ Constant sound signal **Display:** ▪ Sensor number, O2 % and Gateway Alarm A	**ALARM!** **TAKE PRECAUTIONS** Low concentration of O2	**DO NOT ENTER** the risk zone. Evacuate the area if O2 level is under 19.5%.
Central Unit: ▪ The yellow diode is blinking ▪ Beeping sound signal **Display:** ▪ Sensor number, (Fault information)	**SYSTEM FAULT**	Check the manual, communication cables and O2-Sensor. If no fault is found, call service.
After an alarm, always reset the system.	ALARM RESET	Press reset button on Central Unit until "Alarm cleared!" is shown in the display
Test the alarm to insure that communication, warning lamps and sounders function.	ALARM TEST	Press reset button on Central Unit until "Testing system" is shown in the display

7. Mk9 O2 Sensor, General information

System Fault LED (Yellow)

O2 Alarm LED (Red)

Power On LED (Green)

Buzzer

Display

Service Button

7.1 General Description

The sensor is an O2 sensor with display that is used to monitor the O2 levels of an enclosed space. This unit can be connected to a Central Unit or to an existing Mk9 CO2 System for full functionality. Horn/strobes, flash units or external connection boxes can also be connected to the sensor for added functionality. The O2 sensor display shows the current O2 level and the current alarm settings.

The LogiCO2 oxygen sensor (O2) has a FBO oxygen sensor with built-in temperature and pressure adjustment. This means that it has an automatic altitude compansation function. The oxygen sensor is factory calibrated and measures the ambient oxygen partial pressure (ppO_2) levels. The sensor benefits from low power operation and a long lifetime (> 5 years) due to the non-depleting sensing principle.

The O2-sensor is compatible with LogiCO2 Mk9 CO2 Safety System. It communicates via Modbus RTU with the LogiCO2 Mk9 Central unit and can be used together with the different LogiCO2 CO2 sensors. The unit is delivered together with a horn and strobe alarm device.

7.2 LED (Light Emitting Diode), buzzer and display indications

Indication	Explanation
Green LED on	**Unit in operation**
Red LED on and constant sound signal	**Alarm**. Ambient O2 concentration level is under or over the alarm settings. The display on the O2 sensor will show the current O2 level and the information text: "EVACUATE AREA: Very critical O2 level!". If the O2 level is under 19.5%, evacuate the area. The Central Unit will emit constant sound signal and the digital display will show "Gateway Alarm A". Connected remote horns/strobes will be activated.
Yellow LED on and intermittent audible tone	**Error**. The display on the O2 sensor will show "Sensor error" or "System error", together with an information text. A beeping tone will be made by the Central Unit. The error will be described in the display of the Central Unit until the fault has been rectified and cleared/reset on the Central Unit.

7.3 Mk9 O2 Sensor, Internal layout
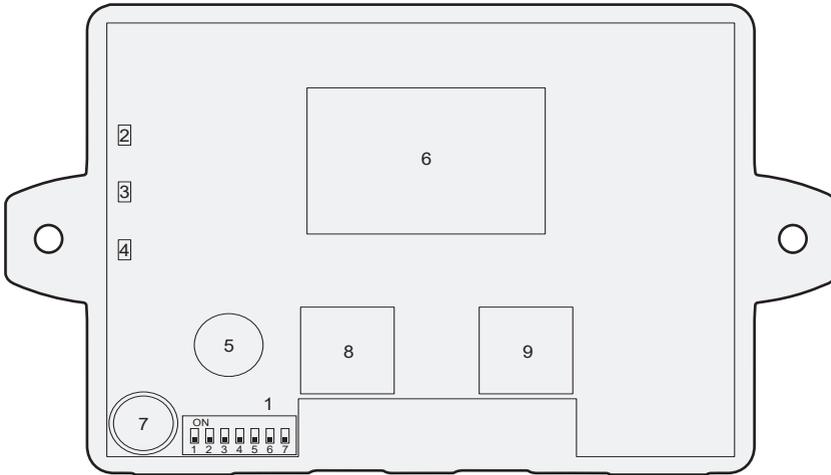
| O2 Sensor	Function/Indication
1. DIP-switch	ID settings
2. LED yellow	Fault
3. LED red	Alarm
4. LED green	Power ON
5. Buzzer	High-Alarm
6. Display	Measurement and alarm information
7. O2 Sensor	O2 measurement sensor
8. RJ45 input connector	Power and communication (red connector)
9. RJ45 output connector	Alarm outputs (blue connector)

7.4 Mk9 O2 Sensor, DIP-switch settings

ID-address 1-8:

ID- address	Dip1	Dip2	Dip3	
ID1	OFF	OFF	OFF	1 2 3 4 5 6 7
ID2	ON	OFF	OFF	1 2 3 4 5 6 7
ID3	OFF	ON	OFF	1 2 3 4 5 6 7
ID4	ON	ON	OFF	1 2 3 4 5 6 7
ID5	OFF	OFF	ON	1 2 3 4 5 6 7
ID6	ON	OFF	ON	1 2 3 4 5 6 7
ID7	OFF	ON	ON	1 2 3 4 5 6 7
ID8	ON	ON	ON	1 2 3 4 5 6 7
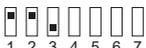
Alarm levels:

The O2 sensor can be set to either make alarms in case of low O2 levels (depletion) or high O2 levels (enrichment). This is set using Dip 6. Dip 6 is OFF in the default setting, meaning the sensor will only make an alarm if low levels of O2 are detected.

Alarm for low O2 levels (Depletion)	Alarm for high O2 levels (Enrichment)	Dip4	Dip5	
A-ALARM: 19.5% B-ALARM: 19.5%	A-ALARM: 23.5% B-ALARM: 23.5%	OFF	OFF	1 2 3 4 5 6 7
A-ALARM: 18.0% B-ALARM: 19.5%	A-ALARM: 25.0% B-ALARM: 23.5%	ON	OFF	1 2 3 4 5 6 7
A-ALARM: 18.0% B-ALARM: 18.0%	A-ALARM: 25.0% B-ALARM: 25.0%	OFF	ON	1 2 3 4 5 6 7
A-ALARM: 17.0% B-ALARM: 18.0% PC changeable	A-ALARM: 25.0% B-ALARM: 24.0% PC changeable	ON	ON	1 2 3 4 5 6 7
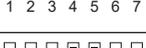
Depletion or Enrichment:

Depletion/Enrichment	Dip6	
Alarm for low O2 levels (Depletion)	OFF	1 2 3 4 5 6 7
Alarm for high O2 levels (Enrichment)	ON	1 2 3 4 5 6 7

7.5 Mk9 O2 Sensor, Display information

Display information during start-up:

Start-up software version	Start-up test
LogiCO2 O2 Gateway FW: 1608 ID: 1	Testing system...

Display information during no alarm mode:

Operation O2 concentration	Normal view
O2 Level: 20.6% A-ALARM: <19.5% B-ALARM: <19.5%	**In normal view, the displays shows:** The current O2 concentration in %. Also, the A-ALARM trig level and the B-ALARM trig level. These levels can be the same depending on the setting. The A-ALARM activates the audible (Horn) alarm device and the B-ALARM activates the optical (Strobe) alarm device.

Display information during alarm mode:

O2 High-Alarm	
O2 Level: 19.4% A-ALARM: <19.5% B-ALARM: <19.5% EVACUATE AREA: Very crit...*	

* Information text is only shown during alarm or error situations.

Display information during error/fault mode:

Error/Fault	
O2 Level: 20.6% "Sensor error" A-ALARM: <19.5% B-ALARM: <19.5% Information text...*	

* Information text is only shown during alarm or error situations.

Display information - The service buttons three functions:
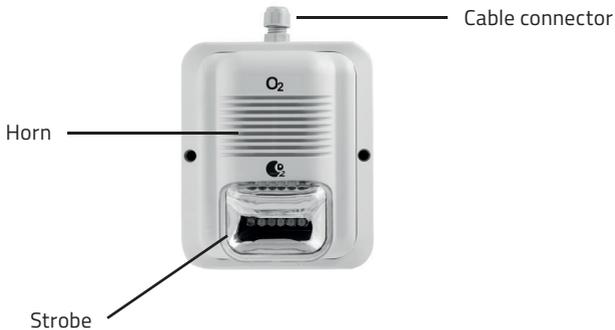
	1. Service Mode One
| ```
O 02017.1
T +24.1
P 1026
% 020.66
e 0000
Up-time: 1568days
Cal-time: 287days
CAL 0.00% (OFF)
``` | **One short push:**<br>a. Reading of sensor element data, total run-time of the O2-sensor, days since the last Calibration and readout of the correction factor (CAL) for the automatic background calibration (AUTO-CAL) function.<br>b. To return to "normal display view", push the button short or wait for 30 seconds. |
| | **2. Service Mode Two** |
| ```
O 02017.1          *
T +24.1
P 1026
% 020.66
e 0000
Up-time: 1568days
Cal-time: 287days
CAL 0.00% (OFF)
``` | **In the "normal display view" push and hold the button for 10 seconds:**<br>a. Reset of the correction factor (CAL. RESET!) for the automatic background calibration (ABC) function. Release the button.<br>b. To return to "normal display view", wait for 30 seconds.<br>c. In this mode it is possible to go to Service Mode Three. |
| | **3. Service Mode Three** |

Entering Service Mode Three

```
O 02017.1          *
T +24.1
P 1026
% 020.66
e 0000
Up-time: 1568days
Cal-time: 287days
...
```

Service Mode Three

```
Calibration

Press the button to
start calibration



```

Service Mode Three calibration

```
Calibration

Executing calibration



```

Calibration*: In the "normal display view", push and hold the button for 10 seconds:

a. When the asterisk (*) in the upper right corner of the display is lit, push the button shortly. Repeat this five times in a row to enter the Calibration mode. For each correct push of the button, a dot will be lit in the lower left corner. If an incorrect push happens, the procedure starts over again. The reason for this advanced way to enter the Calibration is to avoid unintentional calibration.

b. If no further actions is performed for 1 minute, in Calibration mode, the O2 Sensor will go back to Service Mode One.

c. The instructions in the display will say Push the button to start the calibration. Push the button short and a 90 second timer starts counting down. If the calibration is successful, the display will show "Calibration OK" and go back to Service Mode One, for 30 seconds, and then go to "normal view".

If the display says "Calibration Error", try to ventilate the room more and make a new calibration. If the calibration still fails, replace the O2-sensor.

* Calibration - Only to be performed by trained and certified service personnel.

7.6 Mk9 O2 Sensor, Specifications

Power supply:	24V DC
Power consumption:	<30 mA
Wiring connections:	RJ 45
Digital interface:	RS485 serial port MODBUS
Outputs:	2 x transistor output 24V DC, Min 1 mA
Display:	Graphical 128x64, backlit
Acoustic signal-strength:	76 dBa (1m) max.
Operating principle:	FB-optical
O2 measuring range:	0-25 Vol.%
Accuracy O2:	<2% FC
Ambient temperature:	-20 to +50°C (-4 to +122°F). Only for indoor use.
LED indications	
Green:	Operation
Yellow:	Fault
Red:	Alarm (<19.5% O2)
Sound indications	
Beeping:	Fault
Continuous:	Alarm
Approvals:	Tested in accordance with DIN6653-2, applied to O2 sensors.
Dimensions (LxWxD):	90 x 161 x 38 mm / 3.5" x 6.3" x 1.5"
Ingress protection:	IP54

Please observe that since this is a safety product we recommend that a function control should be carried out at least once a year. For more information see chapter 9.5 "Test the system" and chapter 4 "Calibration".

8. Horn/Strobe LED, General information

Cable connector

Horn

Strobe

8.1 General Description

The horn/strobe is equipped with a pre-wired cable for connection to the O2 Safety System. The horn/strobe is power supplied from the O2 sensor. Horn/Strobe LED is a loud warning horn (110 dB/1 m) and high intensity strobe (115 cd).
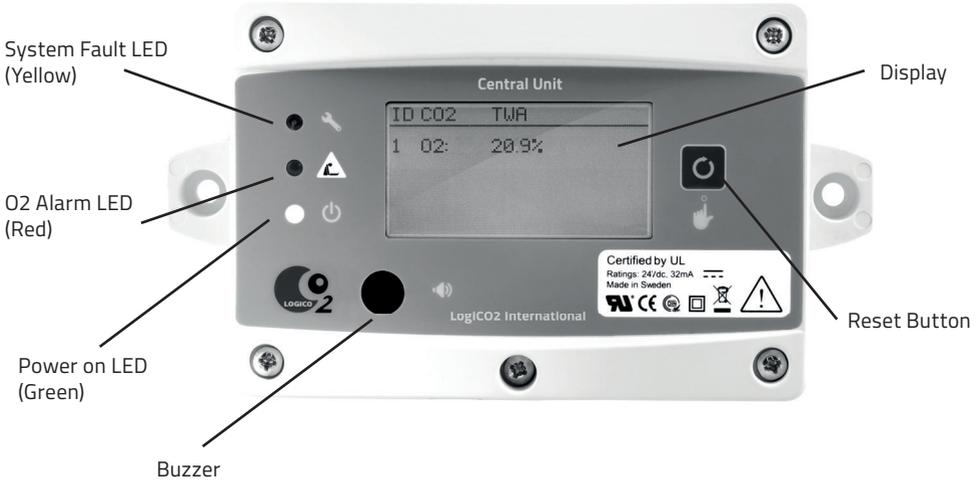
8.2 Horn/Strobe, Warning Sign

The sign for the horn/strobe should be mounted in a permanent way next to the unit.

8.3 Horn/Strobe LED, Specifications

Nominal voltage:	18-24V DC
Average current:	120 mA @ 24V DC supply
Decibel:	110 dB / 1 m (High-Alarm)
Flash intensity:	115 cd (Low-Alarm)
Flash frequency:	65/min
Ambient temperature:	-5°C to +50°C (+23°F to +122°F)
Dimensions (LxWxD):	134 x 115 x 61 mm / 5.3" x 4.5" x 2.4"
Ingress protection:	IP65

9. Mk9 Central Unit, General information

System Fault LED
(Yellow)

O2 Alarm LED
(Red)

Power on LED
(Green)

Buzzer

Display

Reset Button

9.1 General Description

The Central Unit has a display that is used to monitor and control a O2 Safety System with up to eight sensors. The central unit is multi-lingual and it displays information text for all alarm and error conditions. It also displays the O2 values of all connected O2 sensors, indicating which sensor the value comes from. The central unit has an alarm memory that remembers and reactivates any alarm after a power interruption.

9.2 LED (Light Emitting Diode), buzzer and display indications

Indication	Explanation
Green LED on	**Unit in operation**
Red LED on and constant sound signal	**Alarm.** Ambient O2 concentration level is under or over the alarm settings. The display will show "Gateway Alarm A", indicating which sensor the alarm comes from. Connected remote horn/strobes will be activated. If the O2 level is under 19.5%, evacuate the area.
Yellow LED on and intermittent audible tone	**System fault.** The error will be described in the display until the fault has been rectified and cleared/reset on the central unit.

9.3 Mute/reset button

On the right side of the display, there is a sound mute/reset and test button. A short push on the reset button mutes the internal buzzer during an alarm situation. Push and hold the reset button for approximately 4 seconds to clear/reset an alarm. "Alarm Cleared!" is shown in the display.

Mute/reset button

9.4 O2 Alarm

In case of Alarm, the buzzer in the central unit may be muted by pressing the reset button shortly. The alarm can only be totally cleared/reset when the O2 level is within the alarm level settings.

9.5 Test the system

To test all alarm indications (horn/strobe/LED/buzzer), push and hold the reset button for approx. 10 seconds. "Testing system…" is shown in the display.

9.6 System fault

In the event of a system fault, the yellow LED is activated and a beeping tone will be made by the central unit. The error will be described in the display until the fault has been rectified and cleared/reset on the central unit.
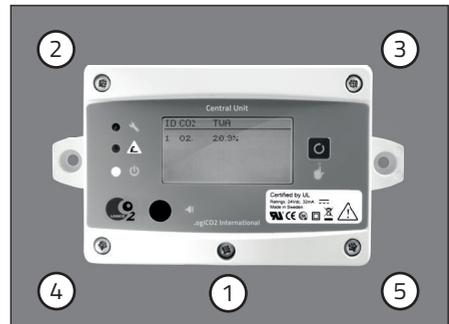
System fault indicator
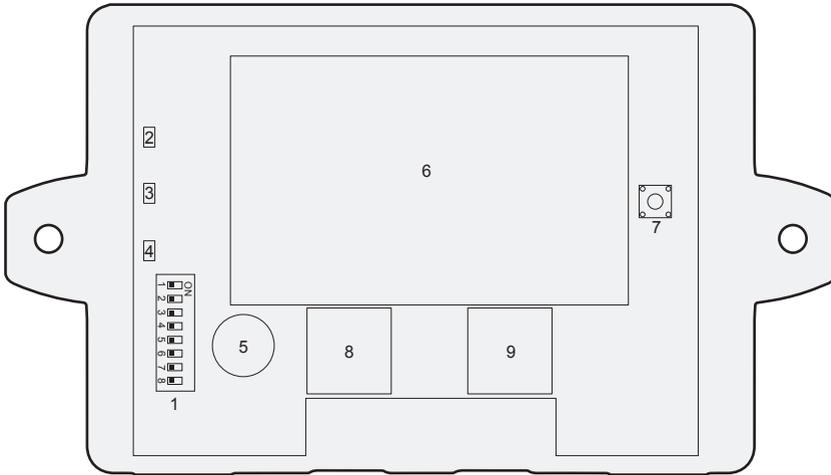
9.7 Removal of the Mk9 unit cover

If the cover of the Mk9 central unit or the O2 sensor needs to be removed please observe the following order of screw reassambling.

Note! When remounting the cover, be careful not to damage the reset button.

Reassambling order of the screws

9.8 Mk9 Central Unit, Internal layout

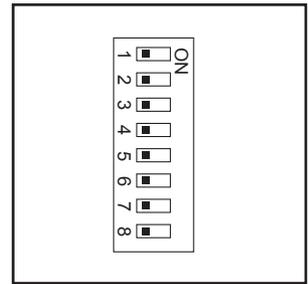| Central Unit	Function/Indication
1. DIP-switch	Setting number of connected O2 sensors
2. LED yellow	Fault
3. LED red	Alarm
4. LED green	Power ON
5. Buzzer	Alarm
6. Display	Measurement and alarm information
7. Mute/Reset/Test button	Mute/Reset/Test button
8. RJ45 input connector	Power and communication
9. RJ45 output connector	Power and communication

9.9 DIP-switch settings

All DIP-switches are set to OFF as default.

<u>Default functions/settings:</u>
- Connection to one O2 sensor

The number of connected O2 sensors is set on dip 1-3.
Dip 4-8 are not used and must be in position OFF.

9.10 DIP-switch settings, Number of connected sensors
Dip 1-3. NOTE! Dip 4-8 is not in use and must be placed in "OFF" position

It is possible to expand the system with up to eight Mk9 O2 sensors, Mk9 CO2 sensors or Mk90 CO2 sensors.

Number of connected sensors	Dip1	Dip2	Dip3	Dip 4-8 Not used	DIP-swith
1 connected sensor	OFF	OFF	OFF	OFF	
2 connected sensors	ON	OFF	OFF	OFF	
3 connected sensors	OFF	ON	OFF	OFF	
4 connected sensors	ON	ON	OFF	OFF	
5 connected sensors	OFF	OFF	ON	OFF	
6 connected sensors	ON	OFF	ON	OFF	
7 connected sensors	OFF	ON	ON	OFF	
8 connected sensors	ON	ON	ON	OFF	

9.11 Mk9 Central Unit, Display information

Display information during start-up:

Software version	Cycle/Start-up
LogiCO2 Central unit FW: 1420*	ID CO2 TWA 1 Heating...
*FW = Firmware version	

Normal display information, one O2 sensor connected:

One O2 sensor is attached
ID CO2   TWA 1 O2:   20.9%

Display information during O2 alarm mode:

O2 Alarm
ID CO2   TWA 1 O2:   16.0%   Gateway Alarm A

Display information during error alarm mode:
Central unit display together with blinking yellow LED and intermittent internal buzzer.
Fault in the O2 sensor measuring device

Error Alarm
ID CO2   TWA 1 Out of range   Information text...*
* Information text is only shown during alarm or error situations.

9.12 Error alarm codes (shown in the Central Unit display):

Fault message	Measures
Out of range!	O2-measuring fault.
Sensor error!	Internal fault in O2-Sensor.
Lost sensor!	Communication error. Check red cabling and connectors. Check affected O2 Sensors ID- number.

9.13 Mk9 Central Unit, Warning Sign

The sign for the Mk9 central unit should be mounted in a permanent way next to or above the unit.

9.14 Mk9 Central Unit, Specifications

Supply:	24V DC
Current consumption:	No alarm status: 21 mA Alarm status: 32 mA
Communication:	RS485, Modbus
Display:	Graphical 128x64, backlit
Acoustic signal-strength:	80 dBa (1m) max.
Ambient temperature:	0 to +40°C (+32°F to +102°F)
Humidity:	0-90% non-condensing
Approval:	CE: Emission tests according SS-EN 61000-6-3 and the immunity tests according to SS-EN 61000-6-2. Manufactured in accordance with DIN 6653-2. The O2 Safety System is tested by the German TÜV-Rheinland. Certified by UL.
Dimensions (LxWxD):	90 x 161 x 38 mm / 3.5" x 6.3" x 1.5"
Ingress protection:	IP44

10. Plug-In Power Supply, Specifications

Type:	Model FJ-SW2401000N
Input voltage:	100-240V AC, 50/60 Hz, max 0.5 A.
Output:	24V DC, max 1.0 A
Ambient temperature:	0-40°C (+32°F to +102°F)
Dimensions (LxWxD):	82.4 x 44.5 x 36.2 mm / 3.2" x 1.8" x 1.4" + input plug

It is also possible to order a hardwired power supply option when and were it is needed.

11. Environmental conditions for the system

a) For indoor use.

b) Altitude operating range to 5500m (18000 ft).

c) Ambient temperature 0°C to +40°C.

d) Maximum relative humidity 95% (non condensing).

e) Mains supply voltage fluctuations up to ±10% of the nominal voltage.

f) Transient overvoltages up to the levels of overvoltage category II.
NOTE: These levels of transient overvoltage are typical for equipment
supplied from the building wiring.

g) Pollution degree 2.

12. Service and maintenance

1. Should be performed only by authorized professional service agents who are familiar with the O2 Safety System and all pertinent safety and service procedures. Contact your representative for the name of the authorized service agent(s) in your area.

2. Since this is a safety product we recommend that a function check be performed on the O2 Safety System by a qualified professional service agent at least once every year.

3. The O2 Safety System has no user serviceable parts. All service work should be performed by an authorized professional agent.

4. NOTE: Any attempt to service the equipment by unauthorized persons or to perform unauthorized modifications will void the warranty.

5. The O2 sensor and central unit housing must NEVER be opened by unauthorized personnel.

6. Cleaning is done by use of water on a moistened cloth.

13. Function and installation check

Store Name (Store Number)	
Address	
City	
State / Region	
Zip Code	
Country	
Date of inspection	
Service Provider's Company Name	
Repair Company Name (if different)	

13.1 Power supply control

If a plug-in power supply is used, make sure that the plug-lock is mounted in a way to eliminate the risk for the power supply to be un-plugged.

Checklist Power supply	YES	NO
Is it a hardwired power-supply (directly connected to the power network without any plug, OBSERVE not for the US)?		
Is it a plug-in power supply?		
If it is a plug-in power supply, is the plug-lock securely mounted (or any other mechanical system that eliminates the risk for the power supply to be un-plugged)?		

13.2 Central Unit check

The central unit must be mounted at a height and where it is easily reachable (to control/reset the system and to read the values/messages). The sign "What to do" must be mounted in a permanent manner (NOT TAPE) next to the central unit so that the personnel can easily read it. Phone number of the service provider responsible if there is a O2 alarm, should be registered on the "What to do" sign.
When the central unit is running properly, the green diode (ON) is ON, and the screen should display the O2 levels of the O2 sensor or sensors that are connected.

Checklist Central Unit	YES	NO
Is the central unit mounted in a way that makes it easy to read?		
Is the "What to do" sign mounted next to the central unit and is it easily readable?		
Is the "What to do" sign mounted in a permanent way?		
Is the phone number of the service provider, which is responsible if there is a O2 alarm, written on the "What to do" sign?		
Is the green diode ON?		
Is the yellow diode (Error) ON?		
Is the red diode (Alarm/Alert) ON?		
Is any error message displayed? if yes, what is it: ………………………………………………		

13.3 O2 Values displayed on the Central Unit

When the system is running properly, the O2 level measured by each sensor is displayed in % (actual value). The values are displayed on the second line of the display. The first character displayed is the sensor ID and the value is displayed after.

Checklist O2 Values	Value in %
Sensor 1	
Sensor 2	
Sensor 3	
Sensor 4	
Sensor 5	
Sensor 6	
Sensor 7	
Sensor 8	

13.4 Mk9 O2 Sensor check

Each sensor should be mounted at breathing height, between 150-180 cm/5-6 feet from the floor. The warning lamp should be mounted so that it can easily be seen by the personnel without entering the zone at risk. Under normal conditions the O2 value displayed should read between 20-21%.

Checklist Mk9 Sensor 1, Specifications		
Sensor serial number (normally written on a sticker on the side of the sensor housing).		
O2 Value on sensor		%

Checklist Mk9 Sensor 1	YES	NO
Is the green diode ON?		
Is the yellow diode ON?		
Is the red diode ON?		
Is the horn/strobe mounted at a height of 2.0-2.4 m/80-96 inches, so that the staff can see it without any obstructions in the way?		
Is there a O2 warning sign mounted next to the horn/strobe, with a telephone number to the service provider?		
Is the O2 warning sign next to the horn/strobe or warning lamp mounted in a permanent way?		
Is a horn/strobe installed above the sensor at a height of 2.0-2.4 m/80-96 inches?		
Is there a O2 warning sign mounted next to the horn/strobe?		
Is this O2 warning sign, next to the horn/strobe, mounted in a permanent way?		

Horn/strobe with sign

Checklist Mk9 Sensor 2, Specifications	
Sensor serial number (normally written on a sticker on the side of the sensor housing).	
O2 Value on sensor	%

Checklist Mk9 Sensor 2	YES	NO
Is the green diode ON?		
Is the yellow diode ON?		
Is the red diode ON?		
Is the horn/strobe mounted at a height of 2.0-2.4 m/80-96 inches so that the staff can see it without any obstructions in the way?		
Is there a O2 warning sign mounted next to the horn/strobe, with a telephone number to the service provider?		
Is the O2 warning sign next to the horn/strobe mounted in a permanent way?		
Is a horn/strobe installed above the sensor at a height of 2.0-2.4 m/80-96 inches?		
Is there a O2 warning sign mounted next to the horn/strobe?		
Is this O2 warning sign, next to the horn/strobe, mounted in a permanent way?		

13.5 Installation Record

The two year warranty as of the date of installation is only valid when this form has been completed.

Installing company:	
Name of installer:	
The LogiCO2 O2 Safety System has been properly installed and tested by an authorized person. Operation instructions have been provided by:	
Date:	
Signature/installation company:	
Signature/user:	

14. Warranty

Warranty Policy

LogiCO2 warrants to the Purchaser of the O2 Safety System equipment for two years from the installation date that said equipment shall be free from any defects in workmanship and materials. Purchaser agrees that as a pre condition to any LogiCO2 liability hereunder, Purchaser or its appointed agents shall fully inspect all goods immediately upon delivery and shall give LogiCO2 written notice of any claim or defect within ten (10) days after discovery of such defect.

As a further pre condition to any LogiCO2 liability about hereunder, both parts replacement and labour must be supplied by an approved LogiCO2 service company. LogiCO2 may elect to repair or replace such equipment or any defective component or part thereof which proves to be defective, or to refund the purchase price paid by the original Purchaser. LogiCO2 shall not be liable for defects caused by the effects of normal wear and tear, erosion, corrosion, fire, explosion, misuse, or unauthorized modification. Alterations or repair by others than those designated and approved by LogiCO2 or operation of such equipment in a manner inconsistent with LogiCO2 accepted practices and all operating instructions, unless pre authorized in writing by LogiCO2, shall void this Warranty.

LogiCO2's sole and exclusive liability under this Warranty is to the Purchaser and shall not exceed the lesser of the cost of repair, cost of replacement, or refund of the net purchase price paid by the original Purchaser. LogiCO2 is not liable for any losses (including O2), damages, or costs of delays, including incidental or consequential damages. LogiCO2 specifically makes no warranties or guarantees, expressed or implied, including the warranties of merchantability or fitness for a particular purpose or use, other than those warrantied expressed herein.

Warranty Claims Procedure

All warranty claims must be previously authorized by: LogiCO2 / electronic approval may be obtained by contacting: E-mail info@logico2.com.

Authorization must be obtained from LogiCO2 prior to shipping any equipment to LogiCO2 facilities. The customer returning the goods is responsible for all freight, proper packing, and any damage incurred during shipment of the goods back to LogiCO2.

IMPORTANT

All persons responsible for the use and maintenance of this equipment must read and understand the safety and operating information contained in this guide. Installation and service of this equipment should be performed only by professionals. The function of the equipment will be impaired if it is not properly installed.

Important information regarding third party products

The functionality of LogiCO2's products are only warranted if connected to LogiCO2's systems and products. LogiCO2 is not liable for the functionality of any systems if LogiCO2 components or parts are connected to third party products. LogiCO2 permits its products to be connected to external relays controlling ventilation and valves as well as fire alarm panels and building management systems.
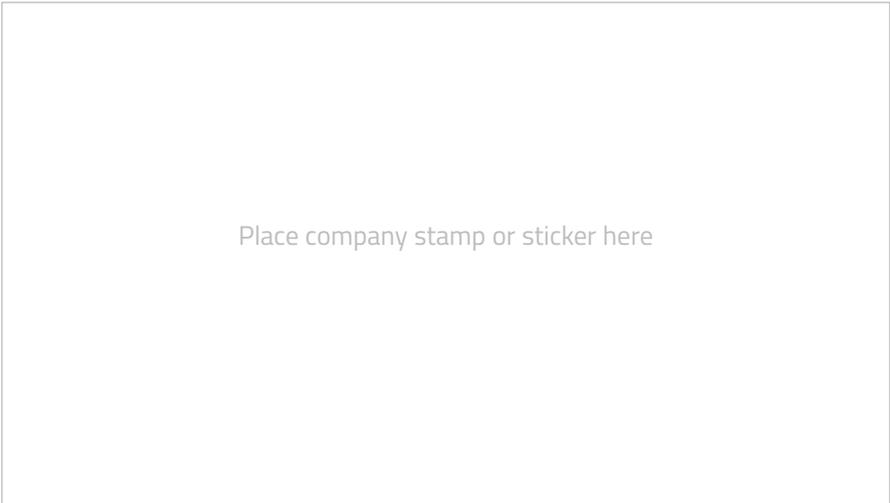
Contact information

Sales and service contact:
For parts or service contact your local authorized supplier or equipment service agent.

Company:..

Phone:..

Place company stamp or sticker here

Manufactured by:

LogiCO2 International AB
Box 9097   E-mail: info@logico2.com
400 92 Gothenburg, Sweden   Web: www.logico2.com