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Oxygen Sensing – LuminOx ppm Modbus Register Set

This document details the Modbus register set developed to control and analyse data from the LuminOx ppm oxygen sensor.

Contents

1 DEFINITIONS

The following definitions apply to WARNINGS, CAUTIONS, ACTIONS and NOTES used throughout this manual.

WARNING:

The warning symbol is used to indicate instructions that, if they are not followed, can result in minor, serious or even fatal injuries to personnel.

CAUTION:

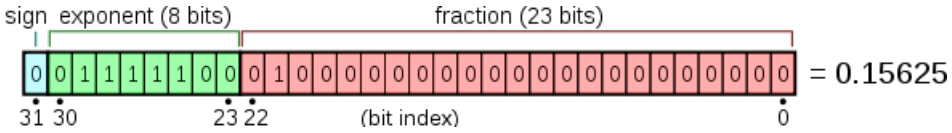
The caution symbol is used to indicate instructions that, if they are not followed, can result in damage to the equipment (hardware and/or software), or a system failure occurring.

ACTION: How data from the device should be used during normal operation.

NOTE: Operating conditions or statements pertaining to the recommended action.

The following terminology and acronyms are used throughout this manual:

- **Input registers** – are read only 16-bit registers. Valid address range starts at 30001.
- **Holding registers** – are read / write 16-bit registers. Valid address range starts at 40001.
- **MSB** – Most Significant Bits.
- **LSB** – Least Significant Bits.
- **EEPROM** - Electrically Erasable Programmable Read-Only Memory.
- **32-bit Integers** – Unsigned 32-bit integers are split over two 16-bit registers where the MSB and LSB are identified.
- **Floating point numbers** – are digitally represented using the IEEE–754 format. Single precision floating point numbers are used throughout and they require 32-bits of data. Since a Modbus register holds 16-bits, it takes two registers to represent a floating point number. The IEEE 754 standard specifies a binary32 as having:
  - Sign bit: 1 bit
  - Exponent width: 8 bits
  - Significand precision: 24 bits (23 explicitly stored)



For example, 20.7 in IEEE 754 format is: 0 10000011 01001011001100110011010

2 MODBUS SETUP

NOTE: Background reading is strongly recommended if there is no prior knowledge of Modbus. A good place to start is www.modbus.org, where the specification and resources can be obtained in the technical resources page.

The RS232 TTL Modbus interface is configured as follows:

- **Modbus mode:** RTU
- **Address:** One
- **Baudrate:** 9600
- **Parity:** None
- **Stopbits:** Two

3 MODBUS REGISTERS

NOTE: Default values are shown in **bold**.

NOTE: Values shown in grey are reserved, not applicable or indicate that they should not be changed.

3.1 Serial Registers

Table 3-1 – Serial - Input Registers

Name	Register Address	Description	Actions / Notes
Serial Status	0x762B (30251)	0 = Error Error committing serial changes to memory 1 = Not Ready Serial changes are currently not permitted **2 = Ready** Serial changes are permitted 3 = Busy Serial changes in process 4 = Complete Serial changes committed to memory, system will restart in 1s with the new communication settings	**ACTION:** Monitor in system **NOTE:** Used in Table 3-2 below.

Table 3-2 – Serial - Holding Registers

Name	Register Address	Description / Valid Values	Actions / Notes
Serial Address[a]	0x9D3B (40251)	**1**-247	**ACTION:** Set/Monitor in system
Reserved	0x9D3C (40252)	Reserved	
Reserved	0x9D3D (40253)	Reserved	
Serial Control	0x9D3E (40254)	**0 = Idle** 1 = Save and reset	

[a] LuminOx ppm evaluation kit; sensor serial address set to 1.

3.2 Temperature Registers

Table 3-3 – Temperature - Input Registers

Name	Register Address	Description	Actions / Notes
Temperature ID	0x7725 (30501)	0101	**ACTION:** For reference **NOTE:** Unique identifier
Temperature Warning	0x7726 (30502)	16-bit bitmask Each bit represents an individual warning state 0 = No fault Temperature within normal operating range 14 = Greater Temperature above valid operating limit 15 = Less Temperature below valid operating limit	**ACTION:** Monitor in system **NOTES:** Warnings are not retained on power loss.
Temperature Error	0x7727 (30503)	16-bit bitmask Each bit represents an individual error state	**ACTION:** Monitor in system **NOTES:** Errors are not retained on power loss.
Temperature Uncalibrated Value	0x7728 (30504)	Floating point IEEE 754 (MSB 16-bits) Unit = °C	**ACTION:** Monitor in system
	0x7729 (30505)	Floating point IEEE 754 (LSB 16-bits) Unit = °C	
Temperature Calibrated Value	0x772A (30506)	Floating point IEEE 754 (MSB 16-bits) Unit = °C Valid Range = -10 to 35	**ACTION:** Monitor in system
	0x772B (30507)	Floating point IEEE 754 (LSB 16-bits) Unit = °C Valid Range = -10 to 35	
Temperature Status	0x772C (30508)	0 = Loading System initialising, no temperature measurements 1 = OFF No temperature measurements 2 = Standby No temperature measurements 3 = Reserved **4 = ON** Valid temperature measurements 5 = Reserved 6 = Calibration Invalid temperature measurements, calibration in process	**ACTION:** Monitor in system

Table 3-4 – Temperature - Holding Registers

Name	Register Address	Description / Valid Values	Actions / Notes
Temperature Control	0x9E35 (40501)	Reserved	**ACTION:** Monitor in system **NOTE:** The temperature measurement cannot be switched off.
Clear Temperature Warning	0x9E36 (40502)	**0 = Idle** 1 = Clear warning (Reserved)	**ACTION:** None **NOTE:** Any warning present in *Temperature Warning* (30502) will auto clear if the condition that caused the warning is removed.
Clear Temperature Error	0x9E37 (40503)	**0 = Idle** 1 = Clear Error	**ACTION:** None **NOTE:** If an error present in *Temperature Error* (30503) has forced *Temperature Status* to *OFF* (30508 = 1) the error may be cleared using this register. If the error persists, contact technical@sstsensing.com for guidance.

3.3 Pressure Registers

Table 3-5 – Pressure - Input Registers

Name	Register Address	Description	Actions / Notes
Pressure ID	0x781F (30751)	0102	**ACTION:** For reference **NOTE:** Unique identifier
Pressure Warning	0x7820 (30752)	16-bit bitmask Each bit represents an individual warning state 0 = No fault Pressure within normal operating range 14 = Greater Pressure above valid operating limit 15 = Less Pressure below valid operating limit	**ACTION:** Monitor in system **NOTES:** Warnings are not retained on power loss.
Pressure Error	0x7821 (30753)	16-bit bitmask Each bit represents an individual error state	**ACTION:** Monitor in system **NOTES:** Errors are not retained on power loss.
Pressure Uncalibrated Value	0x7822 (30754)	Floating point IEEE 754 (MSB 16-bits) Unit = mbar	**ACTION:** Monitor in system
	0x7823 (30755)	Floating point IEEE 754 (LSB 16-bits) Unit = mbar	
Pressure Calibrated Value	0x7824 (30756)	Floating point IEEE 754 (MSB 16-bits) Unit = mbar Valid Range = 500 to 1200	**ACTION:** Monitor in system
	0x7825 (30757)	Floating point IEEE 754 (LSB 16-bits) Unit = mbar Valid Range = 500 to 1200	
Pressure Status	0x7826 (30758)	0 = Loading System initialising, no pressure measurements 1 = OFF No pressure measurements 2 = Standby No pressure measurements 3 = Reserved **4 = ON** Valid pressure measurements 5 = Reserved 6 = Calibration Invalid pressure measurements, calibration in process	**ACTION:** Monitor in system

Table 3-6 – Pressure - Holding Registers

Name	Register Address	Description / Valid Values	Actions / Notes
Pressure Control	0x9F2F (40751)	Reserved	**ACTION:** Monitor in system **NOTE:** The pressure measurement cannot be switched off.
Clear Pressure Warning	0x9F30 (40752)	**0 = Idle** 1 = Clear warning (Reserved)	**ACTION:** None **NOTE:** Any warning present in *Pressure Warning* (30752) will auto clear if the condition that caused the warning is removed.
Clear Pressure Error	0x9F31 (40753)	**0 = Idle** 1 = Clear Error	**ACTION:** None **NOTE:** If an error present in *Pressure Error* (30753) has forced *Pressure Status* to *OFF* (30758 = 1) the error may be cleared using this register. If the error persists, contact technical@sstsensing.com for guidance.

3.4 ppO_2 Registers

Table 3-7 – ppO_2 - Input Registers

Name	Register Address	Description	Actions / Notes
ppO_2 ID	0x7919 (31001)	0103	**ACTION:** For reference **NOTE:** Unique identifier
ppO_2 Warning	0x791A (31002)	16-bit bitmask Each bit represents an individual warning state 0 = No fault ppO_2 within normal operating range 14 = Greater ppO_2 above valid operating limit 15 = Less ppO_2 below valid operating limit	**ACTION:** Monitor in system **NOTES:** Warnings are not retained on power loss.
ppO_2 Error	0x791B (31003)	16-bit bitmask Each bit represents an individual error state	**ACTION:** Monitor in system **NOTES:** Errors are not retained on power loss.
ppO_2 Uncalibrated Value	0x791C (31004)	Floating point IEEE 754 (MSB 16-bits) Unit = mbar	**ACTION:** Monitor in system **NOTES:** This value can be greater than or less than the sensor range and is used to determine measurement stability during the calibration process. Refer to instructions on page 3-14.
	0x791D (31005)	Floating point IEEE 754 (LSB 16-bits) Unit = mbar	
ppO_2 Calibrated Value	0x791E (31006)	Floating point IEEE 754 (MSB 16-bits) Unit = mbar Valid Range = 0 to 1.2	**ACTION:** Monitor in system **NOTE:** Refer to instructions on page 3-14.
	0x791F (31007)	Floating point IEEE 754 (LSB 16-bits) Unit = mbar Valid Range = 0 to 1.2	
ppO_2 Status	0x7920 (31008)	0 = Loading System initialising, no ppO_2 measurements 1 = OFF No ppO_2 measurements 2 = Standby No ppO_2 measurements 3 = Reserved **4 = ON** Valid ppO_2 measurements 5 = Reserved 6 = Calibration Invalid O_2 measurements, calibration in process	**ACTION:** Monitor in system **NOTE:** Refer to instructions on page 3-14.

Name	Register Address	Description	Actions / Notes
ppO_2 Offset Status (Calibration)	0x7921 (31009)	0 = Error Error during the calibration process 1 = Not Ready Calibration is currently disabled **2 = Ready** Calibration enabled 3 = Busy Calibration in progress 4 = Complete Calibration complete	**ACTION:** Monitor in system **NOTE:** Refer to instructions on page 3-14.
ppO_2 Gain Status (Calibration)	0x7922 (31010)	0 = Error Error during the calibration process 1 = Not Ready Calibration is currently disabled **2 = Ready** Calibration enabled 3 = Busy Calibration in progress 4 = Complete Calibration complete	**ACTION:** Monitor in system **NOTE:** Refer to instructions on page 3-14.
ppO_2 DAC (Diagnostic)	0x7923 (31011)	32-bit integer (MSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	**ACTION:** Monitor in system
	0x7924 (31012)	32-bit integer (LSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	
ppO_2 DAC Status (Diagnostic)	0x7925 (31013)	0 = Error Error during the diagnostic index change process 1 = Not Ready Diagnostic values are currently disabled **2 = Ready** Diagnostic values enabled	**ACTION:** Monitor in system
ppO_2 ADC Background (Diagnostic)	0x7926 (31014)	32-bit integer (MSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	**ACTION:** Monitor in system
	0x7927 (31015)	32-bit integer (LSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	

Name	Register Address	Description	Actions / Notes
ppO₂ ADC Background Status (Diagnostic)	0x7928 (31016)	0 = Error Error during the diagnostic index change process 1 = Not Ready Diagnostic values are currently disabled **2 = Ready** Diagnostic values enabled	**ACTION:** Monitor in system
ppO₂ ADC Peak (Diagnostic)	0x7929 (31017)	32-bit integer (MSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	**ACTION:** Monitor in system
	0x792A (31018)	32-bit integer (LSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	
O₂ ADC Peak Status (Diagnostic)	0x792B (31019)	0 = Error Error during the diagnostic index change process 1 = Not Ready Diagnostic values are currently disabled **2 = Ready** Diagnostic values enabled	**ACTION:** Monitor in system

Table 3-8 – ppO_2 Sensor - Holding Registers

Name	Register Address	Description / Valid Values	Actions / Notes
ppO_2 Control	0xA029 (41001)	Reserved	**ACTION:** Monitor in system
Clear ppO_2 Warning	0xA02A (41002)	**0 = Idle** 1 = Clear warning (Reserved)	**ACTION:** None **NOTE:** Any warning present in *ppO_2 Warning* (31002) will auto clear if the condition that caused the warning is removed.
Clear ppO_2 Error	0xA02B (41003)	**0 = Idle** 1 = Clear error	**ACTION:** Set in system **NOTE:** If an error present in *ppO_2 Error* (31003) has forced *ppO_2 Status* to *OFF* (31008 = 1) the error may be cleared using this register. If the error persists, contact technical@sstsensing.com for guidance.
ppO_2 Offset (Calibration)	0xA02C (41004)	Floating point IEEE 754 (MSB 16-bits) Unit = mbar Valid Range = 0 to 0.1	**ACTION:** Set/Monitor in system **NOTES:** Any changes are saved in EEPROM and retained on power loss. Default = **0.01**. Refer to instructions on page 3-14.
	0xA02D (41005)	Floating point IEEE 754 (LSB 16-bits) Unit = mbar Valid Range = 0 to 0.1	
ppO_2 Offset Control (Calibration)	0xA02E (41006)	**0 = Idle** 1 = Apply Calibration 2 = Reset Status	**ACTION:** Set in system **NOTE:** Refer to instructions on page 3-14.
ppO_2 Gain (Calibration)	0xA02F (41007)	Floating point IEEE 754 (MSB 16-bits) Unit = mbar Valid Range = 0.1 to 1.2	**ACTION:** Set/Monitor in system **NOTES:** Any changes are saved in EEPROM and retained on power loss. Default = **1.0**. Refer to instructions on page 3-14.
	0xA030 (41008)	Floating point IEEE 754 (LSB 16-bits) Unit = mbar Valid Range = 0.1 to 1.2	
ppO_2 Gain Control (Calibration)	0xA031 (41009)	**0 = Idle** 1 = Apply Calibration 2 = Reset Status	**ACTION:** Set in system **NOTE:** Refer to instructions on page 3-14.

3.5 O_2 Registers

Table 3-9 – O_2 Sensor - Input Registers

Name	Register Address	Description	Actions / Notes
O_2 ID	0x7A13 (31251)	0104	**ACTION:** For reference **NOTE:** Unique identifier
O_2 Warning	0x7A14 (31252)	16-bit bitmask Each bit represents an individual warning state 0 = No fault O_2 within normal operating range 14 = Greater O_2 above valid operating limit 15 = Less O_2 below valid operating limit	**ACTION:** Monitor in system **NOTES:** Warnings are not retained on power loss.
O_2 Error	0x7A15 (31253)	16-bit bitmask Each bit represents an individual error state	**ACTION:** Monitor in system **NOTES:** Errors are not retained on power loss.
O_2 Uncalibrated Value	0x7A16 (31254)	Floating point IEEE 754 (MSB 16-bits) Unit = ppm	**ACTION:** Monitor in system **NOTES:** This value can be greater than or less than the ppm sensor range and is used to determine measurement stability during the calibration process. Used in Section 3.6 on page 3-14.
	0x7A17 (31255)	Floating point IEEE 754 (LSB 16-bits) Unit = ppm	
O_2 Calibrated Value	0x7A18 (31256)	Floating point IEEE 754 (MSB 16-bits) Unit = ppm Valid Range = 0 to 1200	**ACTION:** Monitor in system **NOTE:** Used in Section 3.6 on page 3-14.
	0x7A19 (31257)	Floating point IEEE 754 (LSB 16-bits) Unit = ppm Valid Range = 0 to 1200	
O_2 Status	0x7A1A (31258)	0 = Loading System initialising, no O_2 measurements 1 = OFF No O_2 measurements 2 = Standby No O_2 measurements 3 = Reserved **4 = ON** Valid O_2 measurements 5 = Reserved 6 = Calibration Invalid O_2 measurements, calibration in process	**ACTION:** Monitor in system **NOTE:** Used in Section 3.6 on page 3-14.

Name	Register Address	Description	Actions / Notes
O_2 Offset Status (Calibration)	0x7A1B (31259)	0 = Error Error during the offset calibration process 1 = Not Ready Offset calibration is currently disabled **2 = Ready** Offset calibration enabled 3 = Busy Offset calibration in progress 4 = Complete Offset calibration complete	**ACTION:** Monitor in system **NOTES:** Used in Section 3.6.1 on page 3-14.
O_2 Gain Status (Calibration)	0x7A1C (31260)	0 = Error Error during the gain calibration process 1 = Not Ready Gain calibration is currently disabled **2 = Ready** Gain calibration enabled 3 = Busy Gain calibration in progress 4 = Complete Gain calibration complete	**ACTION:** Monitor in system **NOTES:** Used in Section 3.6.2 on page 3-14.
O_2 DAC (Diagnostic)	0x7A1D (31261)	32-bit integer (MSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	**ACTION:** Monitor in system
	0x7A1E (31262)	32-bit integer (LSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	
O_2 DAC Status (Diagnostic)	0x7A1F (31263)	0 = Error Error during the diagnostic index change process 1 = Not Ready Diagnostic values are currently disabled **2 = Ready** Diagnostic values enabled	**ACTION:** Monitor in system
O_2 ADC Background (Diagnostic)	0x7A20 (31264)	32-bit integer (MSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	**ACTION:** Monitor in system
	0x7A21 (31265)	32-bit integer (LSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	

Name	Register Address	Description	Actions / Notes
O_2 ADC Background (Diagnostic)	0x7A22 (31266)	0 = Error Error during the diagnostic index change process 1 = Not Ready Diagnostic values are currently disabled **2 = Ready** Diagnostic values enabled	**ACTION:** Monitor in system
O_2 ADC Peak (Diagnostic)	0x7A23 (31267)	32-bit integer (MSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	**ACTION:** Monitor in system
	0x7A24 (31268)	32-bit integer (LSB 16-bits) Unit = (0.8mv) steps Valid range = 0 to 65535	
O_2 ADC Peak (Diagnostic)	0x7A25 (31269)	0 = Error Error during the diagnostic index change process 1 = Not Ready Diagnostic values are currently disabled **2 = Ready** Diagnostic values enabled	**ACTION:** Monitor in system

Table 3-10 – O_2 Sensor - Holding Registers

Name	Register Address	Description / Valid Values	Actions / Notes
O_2 Control	0xA123 (41251)	Reserved	**ACTION:** Monitor in system **NOTE:** The O_2 measurement cannot be switched off.
Clear O_2 Warning	0xA124 (41252)	**0 = Idle** 1 = Clear warning (Reserved)	**ACTION:** None **NOTE:** Any warning present in *O_2 Warning* (31252) will auto clear if the condition that caused the warning is removed.
Clear O_2 Error	0xA125 (41253)	**0 = Idle** 1 = Clear Error	**ACTION:** Set in system **NOTE:** If an error present in *O_2 Error* (31253) has forced *O_2 Status* to *OFF* (31258 = 1) the error may be cleared using this register and an attempt made to reset the status by setting the *O_2 Control* to *Reset Status* (41256 = 2 or 41259 = 2). If the error persists, contact technical@sstsensing.com for guidance.
O_2 Offset (Calibration)	0xA126 (41254)	Floating point IEEE 754 (MSB 16-bits) Unit = ppm Valid Range = 0 to 100	**ACTION:** Set/Monitor in system **NOTES:** Any changes are saved in EEPROM and retained on power loss. Default = **10**. Used in Section 3.6.1 on page 3-14.
	0xA127 (41255)	Floating point IEEE 754 (LSB 16-bits) Unit = ppm Valid Range = 0 to 100	
O_2 Offset Control (Calibration)	0xA128 (41256)	**0 = Idle** 1 = Apply Calibration 2 = Reset Status	**ACTION:** Set in system **NOTE:** Used in Section 3.6.1 on page 3-14.
O_2 Gain (Calibration)	0xA129 (41257)	Floating point IEEE 754 (MSB 16-bits) Unit = ppm Valid Range = 10 to 1200	**ACTION:** Set/Monitor in system **NOTES:** Any changes are saved in EEPROM and retained on power loss. Default = **1000**. Used in Section 3.6.2 on page 3-14.
	0xA12A (41258)	Floating point IEEE 754 (LSB 16-bits) Unit = ppm Valid Range = 10 to 1200	
O_2 Gain Control (Calibration)	0xA12B (41259)	**0 = Idle** 1 = Apply Calibration 2 = Reset Status	**ACTION:** Set in system **NOTE:** Used in Section 3.6.2 on page 3-14.

3.6 Calibrating the Sensor

3.6.1 Offset Calibration

1. Confirm *O_2 Offset Status (Calibration)* = *Ready* (31259 = 2).
2. Apply a "zero" (Offset) gas of a known ppm value over the sensor.

NOTE: The "zero" gas MUST have an Oxygen concentration less than 100ppm; it is recommended that the "zero" gas is less than 25ppm.

NOTE: Recommended flow rate is one litre per minute.

3. Monitor *O_2 Uncalibrated Value* (31254 and 31255) and wait at least 30 minutes until the value stabilises.

NOTE: Wait time based on purging from air.

4. Input the "zero" gas value (ppm) into *O_2 Offset (Calibration)* (41254 and 41255).
5. Set *O_2 Offset Control (Calibration)* to *Apply Calibration* (41256 = 1).
6. During the calibration routine *O_2 Offset Status (Calibration)* will change to *Busy* (31259 = 3) and *O_2 Status* will change to *Calibration* (31258 = 6). O_2 measurements are not valid during this phase.
7. When the calibration routine is complete *O_2 Offset Status (Calibration)* will change to *Complete* (31259 = 4) and *O_2 Status* will return to *ON* (31258 = 4).
8. Set *O_2 Offset Control (Calibration)* to *Reset Status* (41256 = 2) to return *O_2 Offset Status (Calibration)* to *Ready* (31259 = 2).
9. Confirm the *O_2 Calibrated Value* (31256 and 31257) is within ±2 ppm of the calibration gas applied. If not, repeat Steps 3 to 8 and allow the *O_2 Uncalibrated Value* (31254 and 31255) to stabilise for a longer period. If multiple calibration attempts do not result in an accurate calibration, contact technical@sstsensing.com for guidance.

3.6.2 Gain Calibration

The Offset is the main calibration point, however, if a "span" (Gain) calibration is required:

1. Confirm *O_2 Gain Status (Calibration)* = *Ready* (31260 = 2).
2. Apply a "span" (Gain) gas of a known ppm value over the sensor.

NOTE: The "span" gas MUST have an Oxygen concentration greater than 100ppm; it is recommended that the "span" gas is the maximum of the working range or, if available, 1000ppm should be used.

NOTE: Recommended flow rate is one litre per minute.

3. Monitor *O_2 Uncalibrated Value* (31254 and 31255) and wait at least 10 minutes until the value stabilises.

NOTE: Wait time based on purging from air.

4. Input the "span" gas value (ppm) into *O_2 Gain (Calibration)* (41257 and 41258).
5. Set *O_2 Gain Control (Calibration)* to *Apply Calibration* (41259 = 1).
6. During the calibration routine *O_2 Gain Status (Calibration)* will change to *Busy* (31260 = 3) and *O_2 Status* will change to *Calibration* (31258 = 6). O_2 measurements are not valid during this phase.
7. When the calibration routine is complete *O_2 Gain Status (Calibration)* will change to *Complete* (31260 = 4) and *O_2 Status* will return to *ON* (31258 = 4).

8. Set *O_2 Gain Control (Calibration)* to *Reset Status* (41259 = 2) to return *O_2 Gain Status (Calibration)* to *Ready* (31260 = 2).
9. Confirm the *O_2 Calibrated Value* (31256 and 31257) is within ±2 ppm of the calibration gas applied. If not, repeat Steps 3 to 8 and allow the *O_2 Uncalibrated Value* (31254 and 31255) to stabilise for a longer period. If multiple calibration attempts do not result in an accurate calibration, contact technical@sstsensing.com for guidance.

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REFERENCE DOCUMENTS

Reference documents are listed below. The SST documentation list is not exhaustive, always refer to the SST website for the latest information.

Part Number	Title
DS-0154	Oxygen Sensing – LuminOx ppm Series Datasheet
UG-015	Oxygen Sensing – LuminOx ppm Series User's Guide

INFORMATION

As customer applications are outside of SST Sensing Limited's control, the information provided is given without legal responsibility. Customers should test under their own conditions to ensure that the equipment is suitable for their intended application.

For technical assistance or advice, please contact technical@sstsensing.com.

General Note: SST Sensing Ltd. reserves the right to make changes to product specifications without notice or liability. All information is subject to SST Sensing Ltd.'s own data and considered accurate at time of going to print

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