

UV Flux 25% Oxygen Sensor Manual

The UV Flux sensor is an alternative to electrochemical sensors with the benefits of RoHS compliance, long life and complete environmental compensation built-in.

Details of the RS232 protocol and commands are given below.

General Settings

Baud Rate:	9600
Data Bits:	8
Stop Bits:	1
Parity(check bits):	0



OX-0052

Command Set

All RS232 communication is performed using ASCII characters, *Table 1* shows the legal characters for each description block. There are three modes available: Poll Mode, Stream Mode and Off Mode.

Description	Legal Characters	Hex
<Command>	"M", "O", "%", "T", "P", "A", "#", "e"	0x4D, 0x4F, 0x25, 0x54, 0x50, 0x41, 0x23, 0x65
<Argument>	"0"-9"	0x30-0x39
<Separator>	" "	0x20
<Terminator>	"\r\n"	0x0D 0x0A

Poll Mode (M 1)

Each request is built using a combination of the description blocks. (See Table 1). A typical arrangement will be one of the following formats:

- <Command><Terminator>
- <Command>< Separator><Argument><Terminator>
-

Each response will be in the following format:

- <Command>< Separator><Argument><Terminator>

Table 2 provides a description of all commands and the valid arguments that can be applied to the interface when in Poll Mode (M1). All commands are case sensitive

Command	Description	Arguments	Response
"M"	Output Mode	0 = Stream 1 = Poll 2 = Off	"M xx\r\n" Where xx equals the Argument of the command.
"O"	Request current ppO ₂	N/a	"O xxxx.x\r\n" Where xxxx.x equals the ppO ₂ in mBar
"%"	Request current O ₂ value (only valid for sensors fitted with barometric pressure sensor. Otherwise returns "- - - -")	N/a	"% xxx.xx\r\n" Where xxx.xx equals the O ₂ in percent %
"T"	Request current temperature inside sensor	N/a	"T yxx.x\r\n" Where y equals the sign '-' or '+' and xx.x equals the temperature in °C
"P"	Request current barometric pressure (only valid for sensors fitted with barometric pressure sensor. Otherwise returns "- - -")	N/a	"P xxx\r\n" Where xxx equals the pressure in mBar
"e"	Sensor Status	N/a	"e 0000\r\n" = Sensor Status Good "e xxxx\r\n" = Any other response contact SST Sensing for advice.
"A"	Request all values (see above: O, T, P, % and e)	N/a	See Stream Mode (M 0), Page 4.
"#"	Sensor Information	0 = Date of manufacture 1 = Serial Number 2 = Software Revision	"# YYYYYY DDDDD\r\n" "# xxxxx xxxxx\r\n" "# xxxxx\r\n"

Example 1:

Request (What is the current oxygen partial pressure?):

- O\r\n "0x4F 0x0D 0x0A"

Response (210.3mbar):

- O 0210.3\r\n "0x4F 0x20 0x30 0x32 0x31 0x30 0x2E 0x33 0x0D 0x0A"

Example 2:

Request (Put sensor into streaming mode):

- “M 0\r\n” “0x4D 0x20 0x30 0x0D 0x0A”

Response (sensor is now in streaming mode):

- “M 00\r\n” “0x4D 0x20 0x30 0x30 0x0D 0x0A”

Stream Mode (M 0)

By default stream mode is initiated on sensor power-up and will supply an output string approximately once every second. This provides the data for ppO₂, Temperature, Pressure, O₂ and Sensor Status. The format is provided below, for more details on the Argument see Table 2.

- “O xxx.x T yxx.x P xxxx % xxx.xx e xxx\r\n”

or the equivalent block description:

<Command>< Separator><Argument>< Separator><Command>< Separator><Argument>< Separator>
 <Command>< Separator><Argument>< Separator><Command>< Separator><Argument>< Separator>
 <Command>< Separator><Argument><Terminator>”

Off Mode (M 2)

In this mode, OX-1000 stops taking measurements and current consumption reduces to less than 6mA constantly.

Error Codes

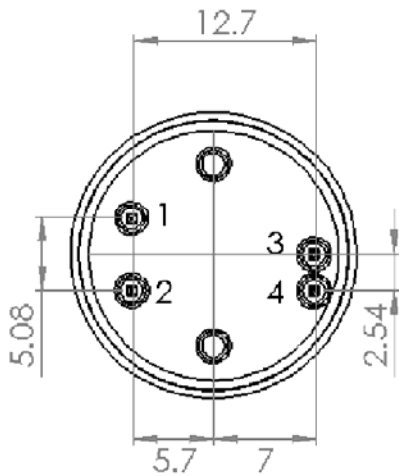
When a request has been unsuccessfully received, an error code may appear in a response format. Table 3 provides more information on possible causes and actions.

Response:	Description:	Possible Cause:	Action:
“E 00\r\n”	RS232 Receiver Overflow	No <Terminator> received before overflow.	Check RS232 Setup, Confirm correct termination.
“E 01\r\n”	Invalid Command	Unrecognized <Command> received.	Check command is valid Check command is upper Case “M” instead of “m”
“E 02\r\n”	Invalid Frame	Incorrect character in frame < Separator>.	Check correct separator is used.
“E 03\r\n”	Invalid Argument	<Argument> not allowed or in limits.	Check Argument is no longer than 6 characters long. Check Argument is within limits Check Argument is available for command.

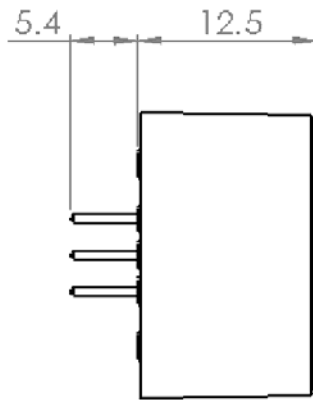
Supply Voltage	5v
Interface	UART
Current Consumption	6mA(streaming 1 sample per second), 17mA peak
Response Tim	<15s
Lifetime	>5 years
Oxygen Measuring Range	0-25%
Accuracy	Better than 2%FS
Pressure Range	500-1200 mbar
Operating temperature	-30°C to +60°C
Temperature Accuracy	+/- 2°C

Dimensional Drawing

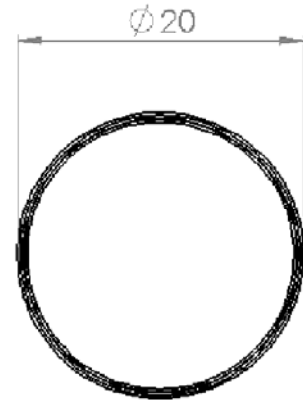
(in mm)



Top View



Bottom View



PINOUT:

Pin 1: Vs (+5V)

Pin 2: GND (0V)

Pin 3: 3.3V RS232 Sensor Transmit

Pin 4: 3.3V RS232 Sensor Receive

NOTE:

Always apply power to the sensor pins 1 and 2 before attempting to communicate on pins 3 and 4. The sensor should be treated as an electronic component and handled using the correct ESD handling.

The sensor automatically corrects for changes to the sensor's temperature, but it does not correct for changes to the temperature, humidity and atmospheric pressure of the gas being measured. All measurements assume the gas to be at Standard Temperature and Pressure. Adjustments should be made using the Ideal gas law, $PV=nRT$.

WARNING**Personal Injury**

DO NOT USE these products as safety or Emergency Stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

CAUTION

Do not exceed maximum ratings.
Carefully follow all wiring instructions, incorrect wiring can cause permanent damage to the device.
Do not use chemical cleaning agents.

Failure to comply with these instructions may result in product damage.

It is the customer's responsibility to ensure that this product is suitable for use in their application.