

# OCS1

## Oxygen (20.8 to 100%), FLOW (0 to $\pm 10$ L/M $\pm 0.1$ L/M)

Miniature any Oxygen and Flow Rate sensor. OCS1 is powered by 8V to 35V / 7ma Unregulated DC Power Supply. OCS1 outputs: USART & 0-5Vdc O<sub>2</sub> concentration and Flow Rate proportional outputs. Thermal characteristics allow any Oxygen concentration measurement. No Flow Alarm output can serve to detect condition of No Flow. Customer or field calibrations are provided.



### Specification:

|                                 |  |
|---------------------------------|--|
| Size                            | 4.7" x 0.8" x 0.5" / 25g   |
| Oxygen types                    | Controlled by J1.4 0V - O <sub>2</sub> concentrator 5V - air mixtures with pure O <sub>2</sub> |
| Outputs                         | USART, LCD, Analog   |
| Analog O <sub>2</sub> output    | 0 to 5V DC Linearly proportional to 0–100% O <sub>2</sub>                                      |
| Analog Flow output              | 0 to 5V DC Linearly proportional to 0–10 L/M   |
| Power Supply                    | Unregulated 8V to 35V DC / 7 ma  |
| Display Switch                  | Performs Field Calibrations  |
| O <sub>2</sub> Accuracy         | $\pm 1.5\%$ @ -5 to +45°C; $\pm 2\%$ @ -45°C to -5°C, 45°C to +70°C                            |
| O <sub>2</sub> Range            | 20.8% - 95.7%, 20.8% - 100%  |
| Flow Rate Accuracy              | $\pm 0.1$ L/M  |
| Flow Rate Range                 | 0 to $\pm 10$ L/M  |
| Max pressure                    | 30 psig  |
| Thermal change response         | 1°C per Minute   |
| Thermal Gradient <sub>max</sub> | 50 K/ meter  |
| Operating Temperature           | -45 to 70°C  |
| Survival Temperature            | -85 to +85°C   |
| RS232 transmit Rate             | 19200 bits/sec   |
| <b>Calibration Retention</b>    | More than <b>10 years</b>  |
| Calibration                     | Factory. Optional customer site, or field calibration is provided.                             |
| Flow I/O                        | <b>Bi-directional via 1/8" male barbs</b>  |
| Response Time - O <sub>2</sub>  | 100 milliseconds   |
| Response Time - Flow            | 10 milli-seconds   |
| USART Frame content             | O <sub>2</sub> [%], Flow Rate [L/M]  |
| No Flow Indicator               | J1.3—Open Drain  |

## Features

USART / RS-232 output—TTL level  
DigiFLO Computer Download Program is available.  
Linear Analog outputs  
LCD display output

## POSTS / STANDOFFS

The following 3/16" posts / standoffs were found fit:

LYNTRON – [lyntron.com](http://lyntron.com) –

AA6978-0.187-00 (M - Aluminum); NY6978-0.187-00 (M-Nylon)

AA6950-0.256-0.250-00 (F - Aluminum); NY6950-0.256-0.250-00 (F-Nylon)

M – Male

F - Female

## CONNECTORS

### J1 – Through Hole

Pin

1. (Square pad) 8 to 30V Unregulated DC Power Supply (+)
2. Flow Rate Analog Out. (0 to 5V<sub>DC</sub> Linearly proportional to 0- 10 L/M)
3. Condition of No Flow. Open drain output: 0v when active.
4. Oxygen type Input. 3.5 to 5V. 5v ('1') indicates 100% O<sub>2</sub> / Air mix. GND ('0') indicates Oxygen concentrator gas
5. N/A
6. Dual Function pin
  - 10Hz 5V 50% DS Square wave output.
  - PB Switch contact. Performs field calibrations in conjunction with DigiDISP LCD
7. Oxygen Analog Out. (0 to 5V<sub>DC</sub> Linearly proportional to 0- 100%)
8. USART TTL level TXD. Provides Flow Rate & %O<sub>2</sub>
9. 8 to 30V Unregulated DC Power Supply (-) - GND

### J2 (RS232) – RS-232 I/O - Board Edge

Connects to [DigiRS232](#)

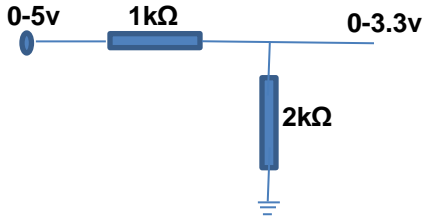
For RS232 protocol see OFS1 User Interface document.

### J3 (DISPLAY) – Board Edge

Connect to [DigiDISP](#)

## Connecting to a 3.3v Microcontroller

0 to 5v UART and / or Proportional analog outputs need to be reduced to a 0 to 3.3v range. This can be accomplished via a resistor circuit as follows:



## Connecting OCS1 to a computer via a COM port

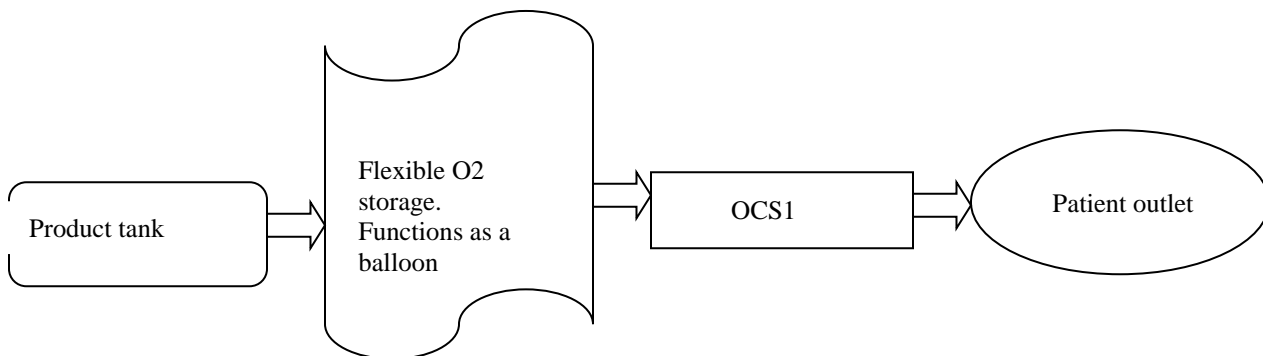
Via [DigiRS232](#) OCS1 can be connected to a computer COM port, such that OCS1 measured Oxygen content and Flow rate, can be stored in a file. DigiFLO program is available.

## RS232 & Field Calibrations

See OCS1 User Interface document.

### How to Detect Start of Breath:

Flexible O2 storage inflates during breath cycle and partially deflates by the patient to indicate Start of breath. OCS1 utilizes its speed, resolution and accuracy to detect patient forced deflating flow rate.

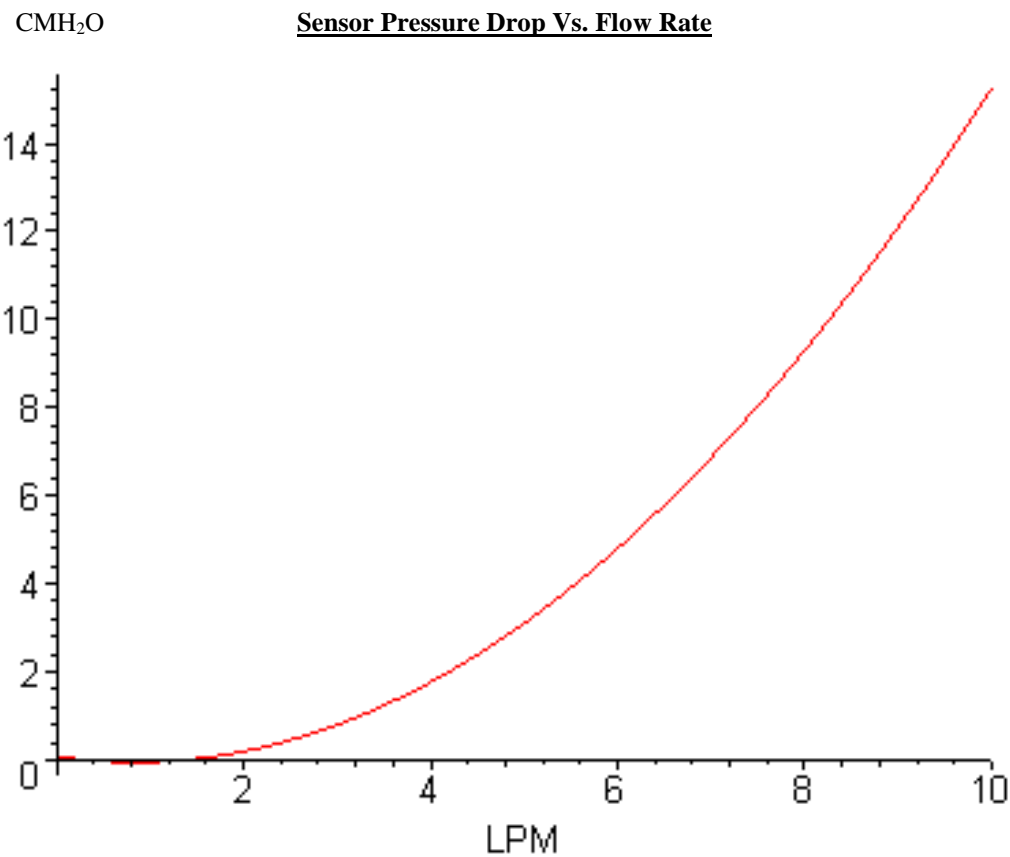


## **Connecting OCS1 to a computer via a COM port**

Via [DigiRS232](#) OCS1 can be connected to a computer COM port, such that OCS1 measured Oxygen content, Temperature and hours of operation can be stored in a file. DigiFLO program is available.

## **RS232 & Field Calibrations**

See OCS1 User Interface document.



**OFS1 Dimensions Drawing**

Mounting holes spacing: 0.58" x 4.5"

