OFS1

Any Oxygen (20.8 to 100%)

Flow Rate (0 to 20 ±0.1 LPM)

Ultra fast and miniature - Oxygen and Volumetric Flow rate sensor. OFS1 is powered by 8V to 35V / 14ma Unregulated DC Power Supply. 0 to 5Vdc proportional outputs are available. RS-232 output provides O_2 concentration, Volumetric Flow Rate, Temperature and operational hours. 4ms response time is ideally suited for flow rate measurement & closed loop control applications. Time constant, bi-directionally stable response enables crisp detection of Start of Breath and calculation of spirometry parameters. Thermal characteristics allow automotive, high altitude and other complex Flow rate Oxygen Measurement application. 10hz square wave output, can serve to ease oxygen concentrator timing & control. Flow direction output can serve to detect wrong direction of Flow.

Specification:

Size	4.7" x 0.8" x 0.5" / 25g
Oxygen types	Controlled by J1.4 0V - O2 concentrator 5V - air mixtures with pure O2
Outputs	USART, LCD, Analog
Analog Flow output	0 to 5V DC Linearly proportional to 0—20 LPM
Analog O2 output	0 to 5V DC Linearly proportional to 0—100% O2
Power Supply	Unregulated 8V to 35V DC / 7 ma
Display Switch	Performs Field Calibrations & Toggles between O2 & Flow on **DigiDISP**
O2 Accuracy	±1.5% @ –5 to +45°C; ±2% @ -45°C to –5°C, 45°C to +70°C
Flow Resolution	±0.1 LPM
O2 Range	20.8% - 95.7%, 20.8% - 100%
Max pressure	30 psig
Thermal change response	1°C per Minute
$\text{Thermal Gradient}_{max}$	50 K/ meter
Operating Temperature	-45 to 70°C
Survival Temperature	-85 to +85°C
RS232 transmit Rate	200 bytes per second @ 19200 bits/sec
Calibration Retention	More than **10 years**
Calibration	Factory. Optional field calibration is provided.
Flow I/O	**Bi-directional via 1/8" male barbs**
Response Time	4 mili-seconds
USART Frame content	O2 [%], Flow Rate[LPM], Temperature [°C], Cumulative hours of operation
10Hz Square wave output	J1.6 5V P-P
Flow Direction Indicator	J1.3—Open Drain

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Tel. 206-232-2193

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 –
AA6978-0.187-00 (M - Aluminum); NY6978-0.187-00 (M-Nylon)
AA6950-0256-0.250-00 (F - Aluminum); NY6950-0256-0.250-00 (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 $5V_{DC}$ Linearly proportional to 0- 20 LPM)
3. Direction of Flow. Open drain output: Open forward; 0v backward direction.
4. Oxygen type Input. 3.5 to 5V. 5v ('1') indicates 100% O_2 / 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 $5V_{DC}$ Linearly proportional to 0- 100%)
8. USART TTL level TXD. Provides $\%O_2$, Volumetric Flow Rate, Temperature and operational Hours
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.

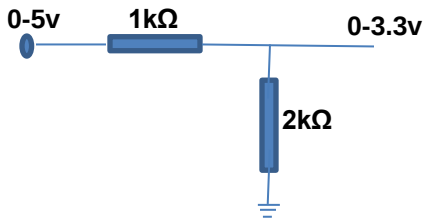
J3 (DISPLAY)—Board Edge

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.

Circuit:



Connecting OFS1 to a computer via a COM port

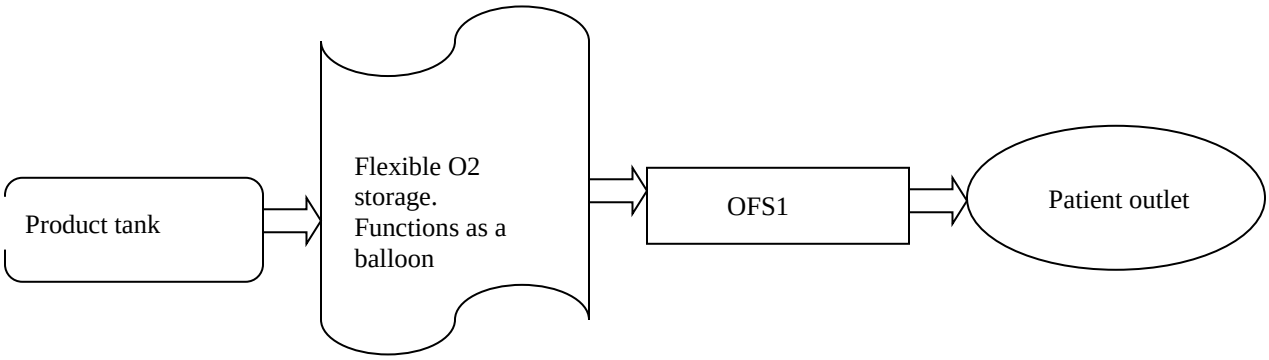
Via DigiRS232 OFS1 can be connected to a computer COM port, such that OFS1 measured Oxygen content, Flow rate, Temperature and hours of operation can be stored in a file. DigiFLO program is available.

RS232 & Field Calibrations

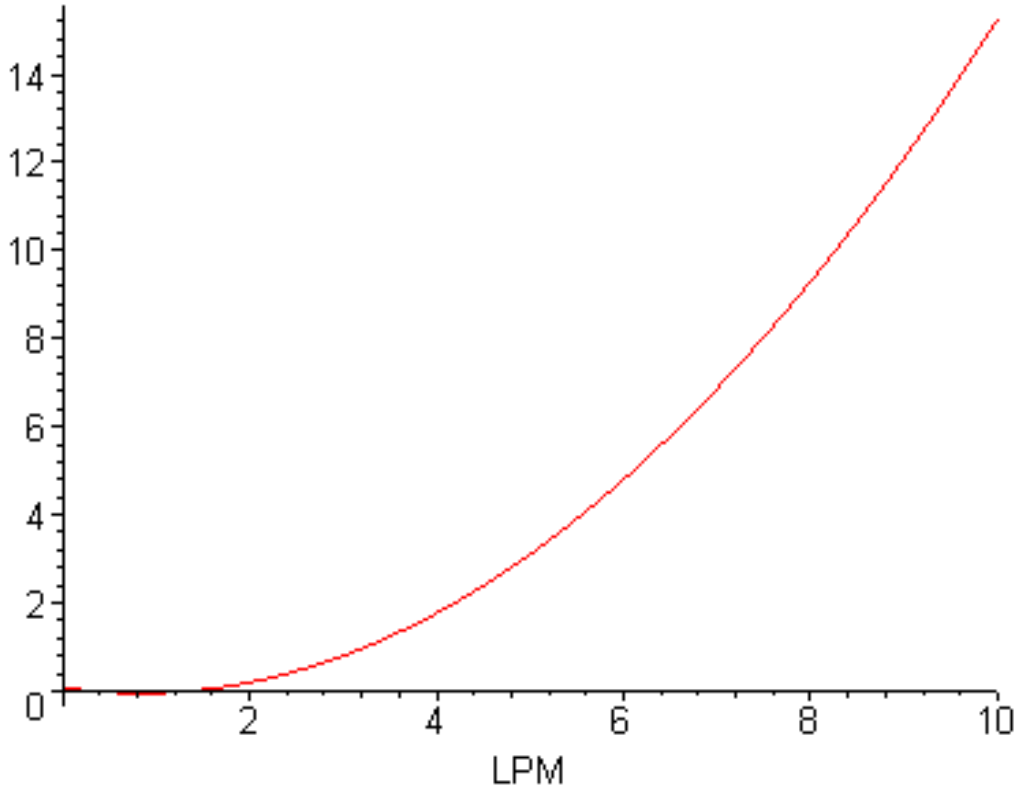
See OFS1 User Interface document.

How to Detect Start of Breath:

Flexible O2 storage inflates during breath cycle and partially deflates by the patient to indicate Start of breath. OFS1 utilizes its speed, resolution and accuracy to detect patient forced deflating flow rate.



CMH_2O **Sensor Pressure Drop Vs. Flow Rate**



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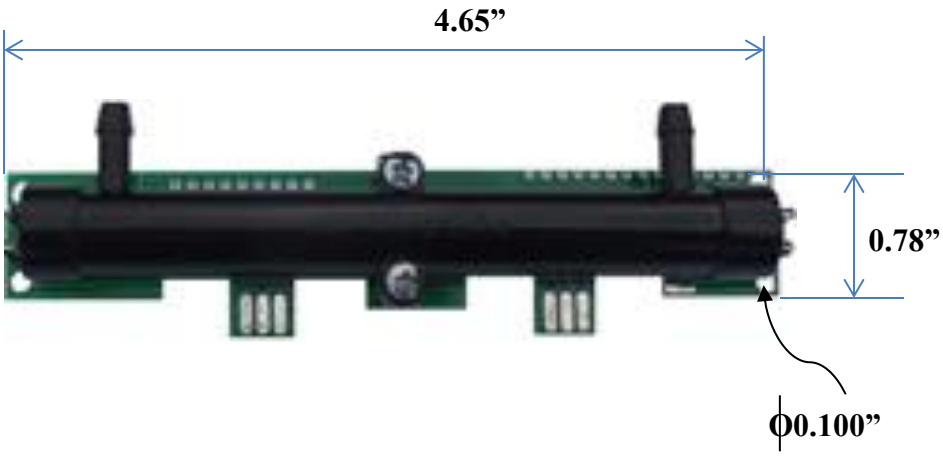
OFS1 Dimensions Drawing

Mounting holes spacing: 0.58” x 4.5”



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