



MPS1

Any Oxygen (20.8 to 100%)
Flow Rate (0 to $\pm 20 \pm 0.1$ LPM)
Pressure (0 to 20 psig $\pm 0.5\%$ FS)

Ultra fast and miniature – Oxygen, Volumetric Flow rate and pressure sensor. MPS1 is powered by 8V to 35V / 14ma Unregulated DC Power Supply. 0 to 5Vdc proportional outputs are available. RS-232 output provides O₂ concentration, Volumetric Flow Rate, Gauge Pressure, 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 - O ₂ concentrator 5V - air mixtures with pure O ₂
Outputs	USART, LCD, Analog
Analog Flow output	0 to 5V DC Linearly proportional to 0–20 LPM
Analog O ₂ output	0 to 5V DC Linearly proportional to 0–100% O ₂
Analog Pressure output	0 to 5V DC Linearly proportional to 0–20 psig
Power Supply	Unregulated 8V to 35V DC / 14 ma
Display Switch	Performs Field Calibrations & Toggles between O ₂ & Flow on DigiDISP
O ₂ Accuracy	$\pm 1.5\%$ @ -5 to +45°C; $\pm 2\%$ @ -45°C to -5°C, 45°C to +70°C
Flow Resolution	± 0.1 LPM
O ₂ Range	20.8% - 95.7%, 20.8% - 100%
Max pressure	30 psig
Thermal change response	1°C per Minute
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	O ₂ [%], 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

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 / standoff s 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 IN+ direction of flow; 0v IN- direction of flow.
4. Oxygen type Input. 3.5 to 5V. 5v ('1') indicates 100% O₂ / Air mix. GND ('0') indicates Oxygen concentrator gas
5. Gauge pressure Analog Out. (0 to 5V_{DC} Linearly proportional to 0- 20 psig)
6. Dual Function pin
 - 10Hz 5V 50% DS Square wave output.
 - PB Switch contact. Toggles between DigiDISP LCD display of Oxygen, Flow Rate & pressure. 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 %O₂, Volumetric Flow Rate, Temperature and operational Hours
9. 8 to 30V Unregulated DC Power Supply (-) - GND

J2 (RS232) – RS-232 I/O - Board Edge

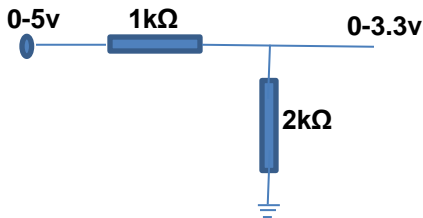
Connects to [DigiRS232](#)

For RS232 protocol see MPS1 User Interface document.

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:



J3 (DISPLAY)—Board Edge

Connect to [DigiDISP](#)

Connecting OFS1 to a computer via a COM port

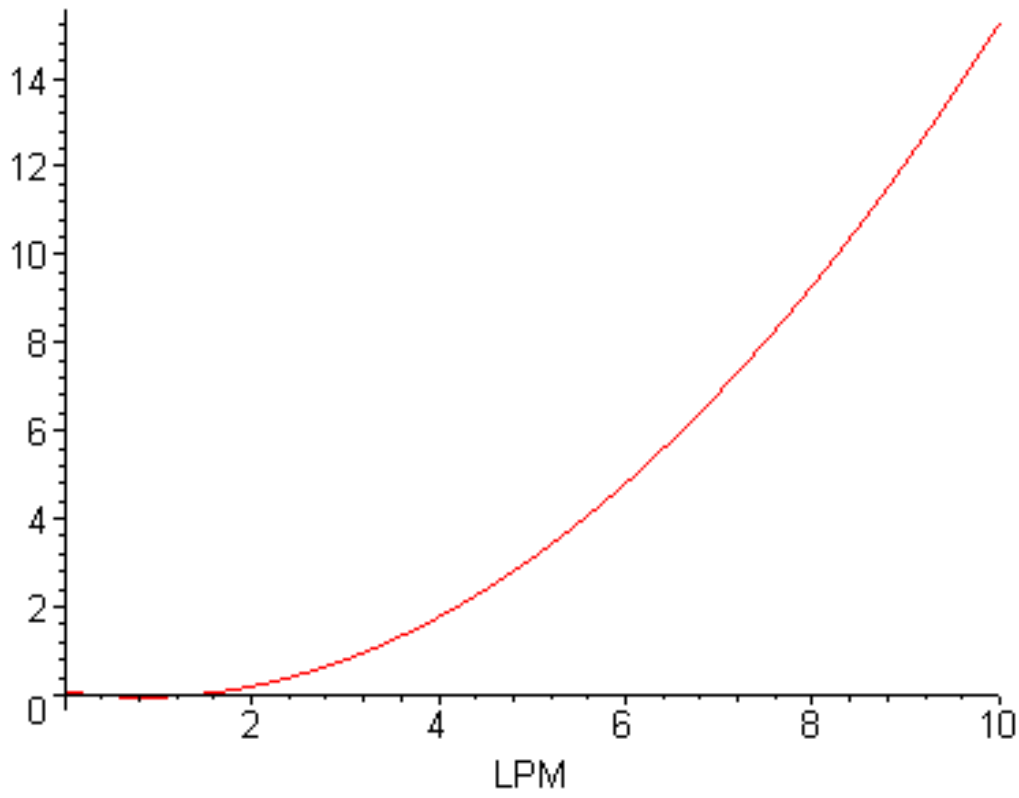
Via [DigiRS232](#) OFS1 can be connected to a computer COM port, such that MPS1 measured Oxygen content, Flow rate, Temperature and hours of operation can be stored in a file. DigiFLO program is available.

RS232 & Field Calibrations

See MPS1 User Interface document.

CMH₂O

Sensor Pressure Drop Vs. Flow Rate



MPS1 Directions of Flow



MPS1 Dimensions Drawing

Mounting holes spacing: 0.58" x 4.5"

