



Natural Gas-500

Natural Gas (0 to 100%)

Flow Rate (0 to $\pm 500 \pm 1$ LPM)

Pressure (0 to 20 psig $\pm 0.5\%$ FS)

Ultra fast and miniature – Any Gas content, Volumetric Flow rate and pressure sensor. Natural Gas-500 is powered by 8V to 35V / 14ma Unregulated DC Power Supply. 0 to 5Vdc proportional outputs are available. RS-232 output provides gas Molecular Weight, Volumetric Flow Rate, Gauge Pressure, Temperature and operational hours. 4ms response time is ideally suited for flow rate measurement & closed loop control applications. Molecular weight measurement can serve to detect various pollutants. Time constant, bi-directionally stable response enables crisp gas flow rate control. Thermal characteristics allow automotive, high altitude and other complex Flow rate and other complex Gas Measurement applications. 10hz square wave output, can serve to ease mother board timing & control. Flow direction output can serve to detect wrong direction of Flow.

Specification:

Size	4.7" x 0.8" x 0.5" / 25g
Gas Concentration range	0 to 100%
Outputs	USART, LCD, Analog
Analog Flow output	0 to 5V DC Linearly proportional to 0–500 LPM
Analog Gas content output	0 to 5V DC Linearly proportional to 0–100%
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 gas content [%], Flow Rate and Pressure on DigiDISP
mw Accuracy	$\pm 1.5\%$ @ -5 to +45°C; $\pm 2\%$ @ -45°C to -5°C, 45°C to +70°C
Accuracy of Flow Resolution	± 1 LPM
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	Gas Content [%], 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 / standoffs were found fit:

LYNTRON – 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_{DC} Linearly proportional to 0- 500 LPM)
3. Direction of Flow. Open drain output: Open IN+ direction of flow; 0v IN- direction of flow.
4. N/A
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 gas content, Flow Rate & pressure. Performs field calibrations in conjunction with DigiDISP LCD.
7. Gas content [%] 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

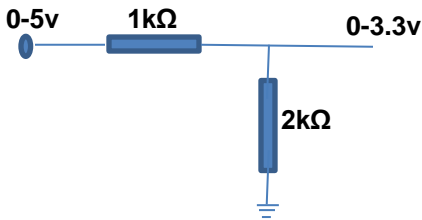
Connects to [DigiRS232](#)

For RS232 protocol, see Natural Gas-500 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:



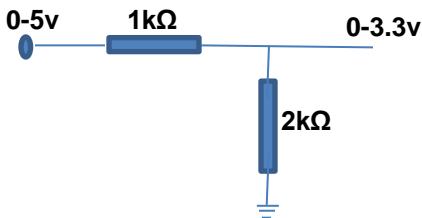
J3 (DISPLAY)—Board Edge

Connect to [DigiDISP](#)

Connecting 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:



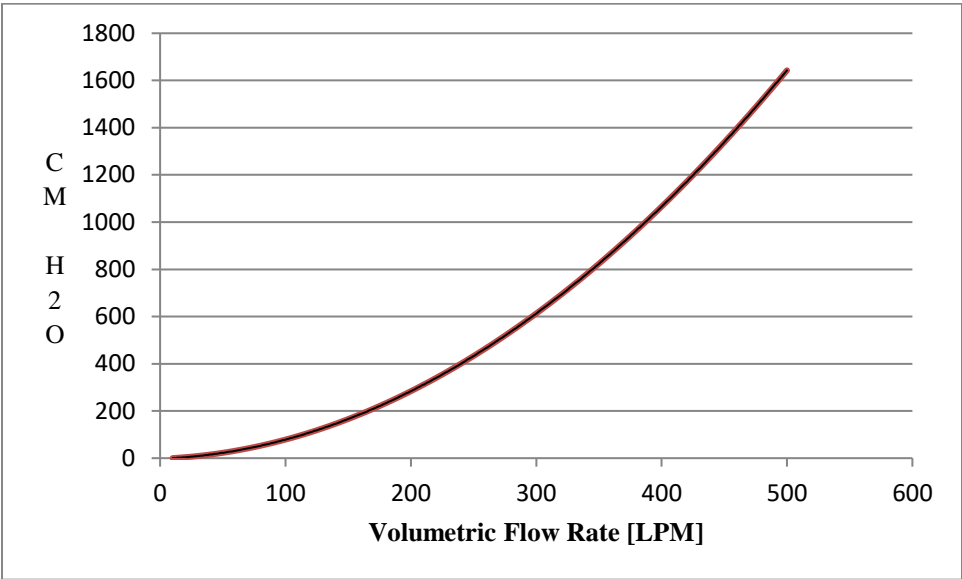
Connecting Natural Gas-500 to a computer via a COM port

Via [DigiRS232](#) Natural Gas-500 can be connected to a computer COM port, such that Natural Gas-500 measured mw content, Flow rate, Temperature and hours of operation can be stored in a file. DigiFLO program is available.

RS232 & Field Calibrations

See Natural Gas-500 User Interface document.

Sensor Pressure Drop Vs. Flow Rate



Natural Gas-500 Directions of Flow



Natural Gas-500 Dimensions Drawing

Mounting holes spacing: 0.58" x 4.5"

