

## Quick Guide for Boost Gauge Installation

**⚠ Warning: Please follow the wiring diagram carefully when connecting power to the sensor. Wiring the sensor incorrectly may permanently damage the sensor.**

### A. Installation of Auber 104 4 bar MAP sender.

1) Wiring the sensor as shown in Fig 1. Connecting power lead (red) to terminal 10, signal lead (green) to terminal 9, and ground lead (black) to terminal 6. The 12V DC buzzer is optional.

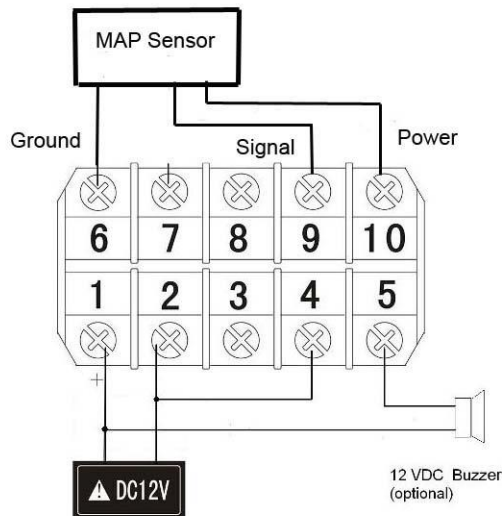


Fig 1. Wiring diagram for SYL-1813 automobile multimeter.

2) To display the absolute pressure unit in Bar (0.01 bar resolution), enter the Basic Parameter setting mode with code 0089, a) Set input type, **Inty**, for 0-5 V input. b) Set the decimal point, **dot=** 00.00. c) Set the PuL= -0.20. PuH=04.15.

3) To display the absolute pressure unit in PSI (00.1psi resolution), enter the Basic Parameter setting mode with code 0089, a) Set input type, **Inty**, for 0-5 V input. b) Set the decimal point, **dot=** 000.0. c) Set the PuL= -02.9. PuH=060.2.

4) For boost applications, many users might want to display the pressure in relative pressure (or gauge pressure) instead absolute pressure. This will allow the gauge to show vacuum (negative pressure) when the pressure is below the standard atmosphere pressure. To do that, you need to shift the PuL and PuH down by one atmosphere pressure unit (standard atmosphere =1.00bar or 14.5PSI).

**For display in Bar, PuL = -0.20-1 = -1.20, PuH = 4.15-1 = 3.15**

**For display in PSI, PuL= - 17.4, PuH = 45.7**

Note. Since this is an absolute pressure sensor instead of gauge pressure sensor, the meter will not display zero pressure unless the absolute barometric pressure at the sensor location is 1.00 bars (or 14.5PSI). The barometric pressure reported from location weather station is the pressure converted to the sea level, or relative barometric pressure. It is not the absolute barometric pressure at the local altitude.

5) To set the alarm on at 3.50 Bar and off at 3.48 Bar, enter code 0001 to set AH1=3.50 and AL1=3.48. The detail can be found in section C 2 of the instruction manual.

## B, Discussion

1) If you want the display to display a different pressure unit than Bar or PSI, you need to find the value of PuL and PuH. Appendix 1 shows how the Auber 104 sensor parameter is determined. If you need help, please email us the specification of your sensor to [info@auberins.com](mailto:info@auberins.com)

2) The peak holding function is set for displaying the Maximum pressure only. To display the peak pressure from the last run, or display the pressure in the peak holding mode continuously, press the ">" key once. The MAX (MIN) LED will be on, indicating the display is in the peak mode. Press ">" again to change back to display the current pressure. Press and hold "Λ" for 3 second will reset the memory. Three additional peak parameters are turned off. They are, the time that the maximum pressure was recorded, the minimum pressure and its recording time. If you want see them, use code 0037 to turn on these functions. The detail can be found in section C3 of the instruction manual.

## C. Appendix 1,

### Example, Calculating the set up parameters for Auber 104 MAP sensor.

For a pressure sensor that is powered by 5 V DC, the linear range of the output signal will be higher than 0V and lower than 5 V due to the nature of mechanics and electronics. For this sensor 0.0 bar = 0.25V, 4.0 bar =4.885 V. What these data tell us is that the sensor has a linear output between 0.25 and 4.85 V when the input signal is between 0.0 and 4.0 Bar, In other words, within this range, the relationship between pressure and output voltage can be represented by

$$V = a \times P + b \quad (1)$$

Where P is the pressure, V is the voltage. **a**, is the slop, and **b** is the intersection at zero pressure,

Because the meter is set for 0-5V linear input, we need to find out what is the pressure when we extend the equation 1 from 0.25-4.85V to the 0 ~5 V range. The pressure at 0 and 5 V output will be used to set the meter display scale.

Calculating slop **a** and intersection **b**

$$a = (4.85 - 0.25) / (4 - 0) = 1.15$$

$$b = V - a \times P = 0.25$$

$$\text{So, } V = 1.15P + 0.25, \text{ or } P = (V - 0.25) / 1.15$$

Therefore, at 0 V, P = -0.22; at 5 V, P = 4.13.

To display in absolute pressure,

Set **dot** to **00.00**, **PuL=-0.22**, **PuH=4.13**

To display the pressure with PSI units instead of Bar, multiply the number by 14.5 (1bar=14.503PSI)

Set **dot** to **000.0**, **PuL=-3.2** , **PuH=59.9**.

Please note, numbers used in the meter set up (page 1) is slight different than this number. They were corrected by actual calibration with the meter for improved accuracy