

Quick Guide for using MAP or Boost Pressure Sensor with SYL-2813

This is a quick guide for using AUBER-103 MAP Sensor with SYL-2813 automobile gauge. It can also be used as a guidance for installation other similar pressure senders, such as AUBER-104, AUBER-303, the GM 3 bar MAP sensor (part # 12223861).

A. Wiring and Setting

- 1) Wiring the sensor as shown in Figure 1. Connecting power lead (red or brown) to terminal 9 which provides +5V DC, signal lead (green or blue) to terminal 14 for Channel2, and ground lead (black) to terminal 1. The 12V DC buzzer is optional.

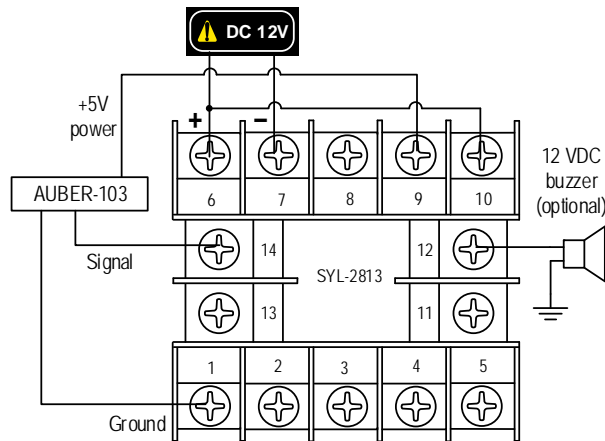


Figure 1. SYL-2813 wiring example of AUBER-103 pressure sender in Channel 2.

- 2) To display the pressure unit in PSI (0.1 PSI resolution), a) enter the Basic Parameter Setting Mode using code 0089; b) then set input type "Int2" to 5v for 0-5 V input; c) set the decimal point dot2 = 1; d) set PuL2 = 000.2 and PuH2 = 045.7.
- 3) To display the pressure unit in Bar (0.01 Bar resolution), enter the Basic Parameter Setting Mode using code 0089, b) set input type "Int2" to 5v for 0-5 V input; c) set the decimal point dot2 = 2; d) set PuL2 = 00.01 and PuH2 = 03.15.
- 4) To set the high alarm to be on at 2.50 Bar and be off at 2.48 Bar, enter code 0001 and then set AH2 = 2.50 and AL2 = 2.48. The detail can be found in section D.3 of the instruction manual.
- 5) Zero Adjustment. If the pressure does not show 0.0 Bar or 0 PSI when no pressure is applied, you can adjust the display to zero by shifting the value of PuL2 and PuH2 by the same amount. For instance, if the display shows 1.00 Bar when no pressure is applied to the sensor, you can minus 1.0 Bar from PuL2 and PuH2. Set PuL2 = 0.01 - 1.00 = -0.99, and PuH2 = 3.15 - 1.00 = 2.15. The overall accuracy of the sensor is 1.5% of full scale. It is normal to see the zero point to fluctuate slightly. (Note: Standard atmosphere =1.00 Bar or 14.5 PSI)

B. Discussion

- 1) Since the output specification of Auber 103 and the GM 12223861 MAP sender are identical, this instruction can be used for both of them.

- 2) If you have a pressure sensor (sender, transducer or transmitter) that has different output specification, you need to find out the value of PuL and PuH. Appendix 1 shows how the parameters for AUBER-103 are determined. If you need help, please email the specifications of your sensor to info@auberins.com.

C. Appendix 1: How to Calculate the Setup Parameters for GM MAP Sensor (12223861)

For a pressure sensor that is powered by 5V DC, the linear range of the output signal will be higher than 0V and lower than 5 V due to the nature of its mechanics and electronics. The published GM data is 0.40 Bar corresponds to 0.619V, and 3.04 Bar corresponds to 4.818V. What these data tell us is that the sensor has a linear output between 0.619 and 4.818 V when the input signal is between 0.40 and 3.04 Bar, In other words, within this range, the relationship between pressure and output voltage can be represented by

$$\mathbf{V} = \mathbf{a} \times \mathbf{P} + \mathbf{b} \quad (1),$$

where **P** is the pressure, **V** is the voltage, **a** is the slop, and **b** is the intersection at P = 0.

Because the meter is set to accept 0-5V linear input signal, we need to find out what pressure values would correspond to 0 and 5 V signal.

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

$$\mathbf{a} = (4.818 - 0.619)/(3.04 - 0.40) = 1.5905$$

$$\mathbf{b} = \mathbf{V} - \mathbf{a} \times \mathbf{P} = 4.818 - 3.04 \times 1.5905 = -0.01712$$

So, the expression (1) can be written as:

$$\mathbf{V} = 1.5905\mathbf{P} - 0.01712 \quad (2),$$

or be written as:

$$\mathbf{P} = (\mathbf{V} + 0.01712)/1.5905 \quad (3).$$

Therefore, at 0 V, pressure P = 0.01076 Bar; at 5 V, pressure P = 3.154 Bar.

To display in absolute pressure in Bar, set dot = 2, PuL2 = 0.01, PuH2 = 3.15.

To display the pressure in PSI units instead of Bar, multiply the number by 14.5 (1 Bar=14.503 PSI). So, set dot = 1, PuL2 = 0.2, PuH2 = 45.7.