



Part Number 30-5132  
Analog Boost Gauge

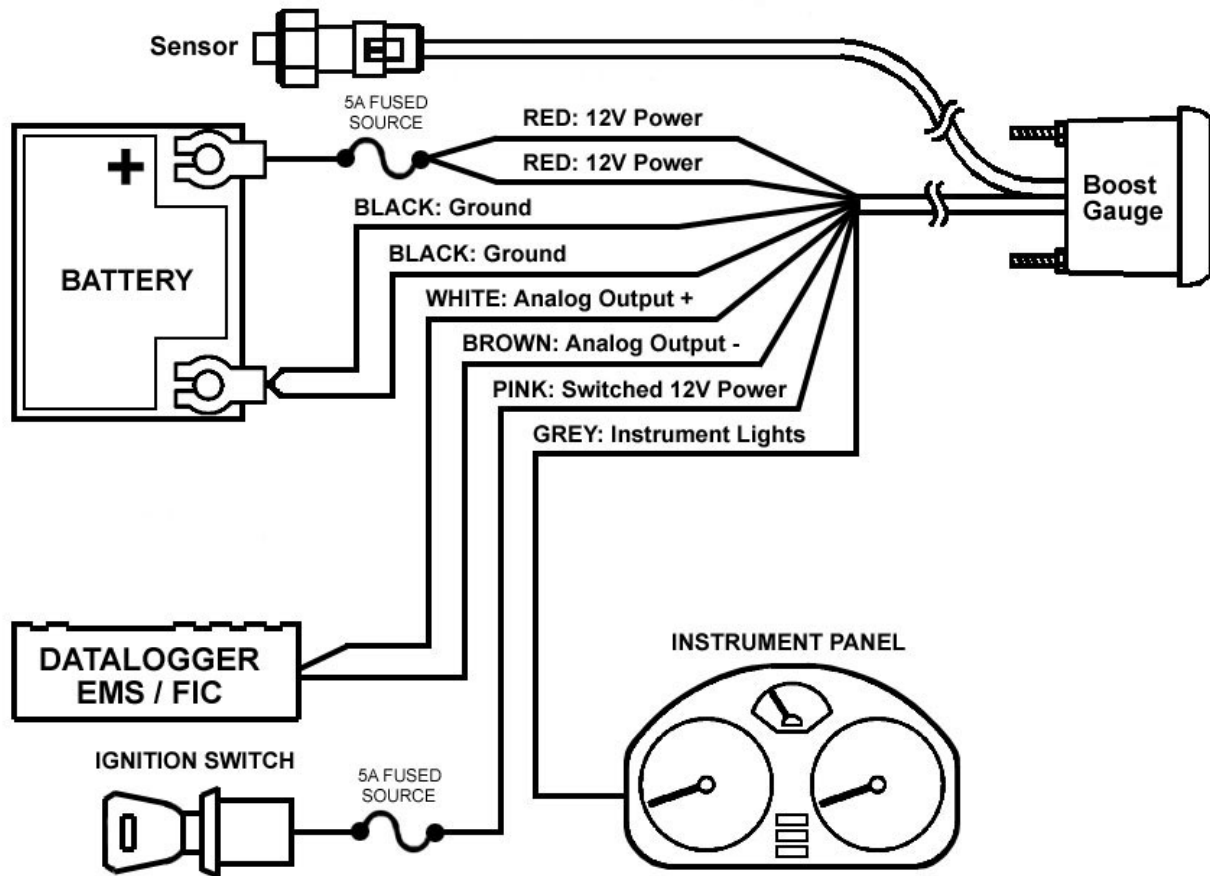


Figure 1. Wiring Schematic

**AEM Boost Gauge Parts**

- 1 x 35-5132(B/W) Boost Gauge Assembly
- 1 x 30-2131-50 Boost Sensor
- 1 x 35-4302 Install Kit (6 Butt Connectors)
- 1 x 10-5132 Installation Instructions
- 1 x 35-3411 8-Pin Power Harness
- 1 x 35-3410 3-Pin Sensor Harness
- 1 x 35-8529S Silver Bezel
- 1 x 35-2151 1/8" NPT Female Hose Adapter
- 1 x 35-2149 Boost Tee
- 1 x 8-161 36" Vacuum Hose
- 4 x 1-117 Zip Tie

## INSTALLATION

1. Disconnect the negative battery cable.
2. Secure the gauge in a 2 1/16<sup>th</sup> (52MM) mounting hole with the supplied bracket.
3. Plug the 8-wire power harness into the mating connector on the back of the gauge and connect the wires as shown in Figure 1. Note: the locating tabs on the side of the connector should be nearest the center of the gauge.
4. Using the supplied hose adapter, boost tee, vacuum hose, and zip ties, connect the sensor to a good engine manifold pressure source, downstream of the throttle body.
5. Connect the sensor to the gauge using the 3-wire sensor cable. The single-row connector connects to the back of the gauge. The locating tabs on the single-row connector should be nearest the center of the gauge.

RED - Connect **BOTH** RED wires to a constant 12 volt power source utilizing a 5A fuse.

BLACK – Connect **BOTH** BLACK wires to a clean power ground.

PINK – Connect to a switched 12 volt power source that is on in the On, Run, and Crank key positions utilizing a 5A fuse. NOTE: The gauge can be used to help verify a power source that is on in the On, Run, and Crank key positions. With the sensor disconnected, turn the key to the On position. The needle will sweep counter-clockwise against the needle stop then sweep clockwise to the vertical position, pointing down, the left status light will flash. Move the key to the Run position, then the Crank position. The needle should remain pointing down, and the status light should continue to flash. If at any time the needle sweeps counter clockwise, or the status light remains off, the power source has turned off and is not suitable for use.

GREY - Connect to instrument lighting circuit supply voltage.

\*WHITE - Connect to Analog + Input.

\*BROWN - Connect to Analog – input. (Must be connected if Analog + is used)

*\*optional – only needed if using the available differential analog output*

Wiring notes:

RED - When wired as shown above, the gauge will park the needle against the needle stop upon powering down. Alternatively, both RED wires can be connected to the same location as the PINK wire. With both RED wires and the PINK wire connected to the same switched power, the needle will remain at its current position upon powering down. For both power connection methods, the needle will rotate to the parked position before rotating to the value of the current operating condition upon powering up.

GREY – The GREY wire is used to control the lighting intensity of the gauge. Maximum lighting intensity is achieved when the GREY wire is connected to 12 volts. Minimum lighting intensity is achieved when the GREY wire is not connected. The instrumentation illumination on many vehicles is controlled by varying the supply voltage to the instrument panel lights. When the GREY wire is connected to the instrument panel supply voltage, the intensity of the gauge is controlled by the dimmer switch on the dash.

WHITE – The WHITE wire should be connected to the Analog + input on the AEM EMS or the analog + input on a similar device.

BROWN – The BROWN wire should be connected to the Analog – input. If the EMS or similar device does not have a – input, the BROWN wire should be connected to a sensor ground. If no sensor ground is available, the BROWN wire should be connected to a power ground. **Note: The BROWN wire must be connected in order to get correct readings from the analog output.**

## Gauge Start-Up

The boost gauge has an “auto zero” function that accommodates for variances in atmospheric pressure. Upon powering up, the gauge will take an instantaneous pressure reading, which will be used as the “zero point” on the faceplate. This allows the needle position at atmospheric pressure to be “0” for all operating conditions. The needle will display between 0-35 psi boost for pressures above the current atmospheric level. The needle will display between 0-30 inHg for “vacuum” pressures below the current atmospheric level.

### Auto Zero Troubleshooting

If the gauge reads “0” or close to “0” while the engine is idling, the auto zero pressure measurement is inaccurate. This is most likely caused by a power source that is not on in the On, Run, and Crank positions.

## Changing the Bezel

The AEM Boost Gauge comes with the black bezel installed. However, a silver bezel is also included in the gauge kit. To change the bezel, orient the gauge so you are looking at the faceplate. Rotate the bezel counter-clockwise to unscrew it from the gauge cup. The bezel, lens, and rubber spacer are all removable. Reassemble the gauge as shown below in Figure 3. Note: When reassembling the gauge, it may be necessary to apply a light amount of pressure on the lens and spacer to keep the faceplate from rotating when reinstalling the bezel. **Do not over tighten the bezel when reassembling the gauge.**

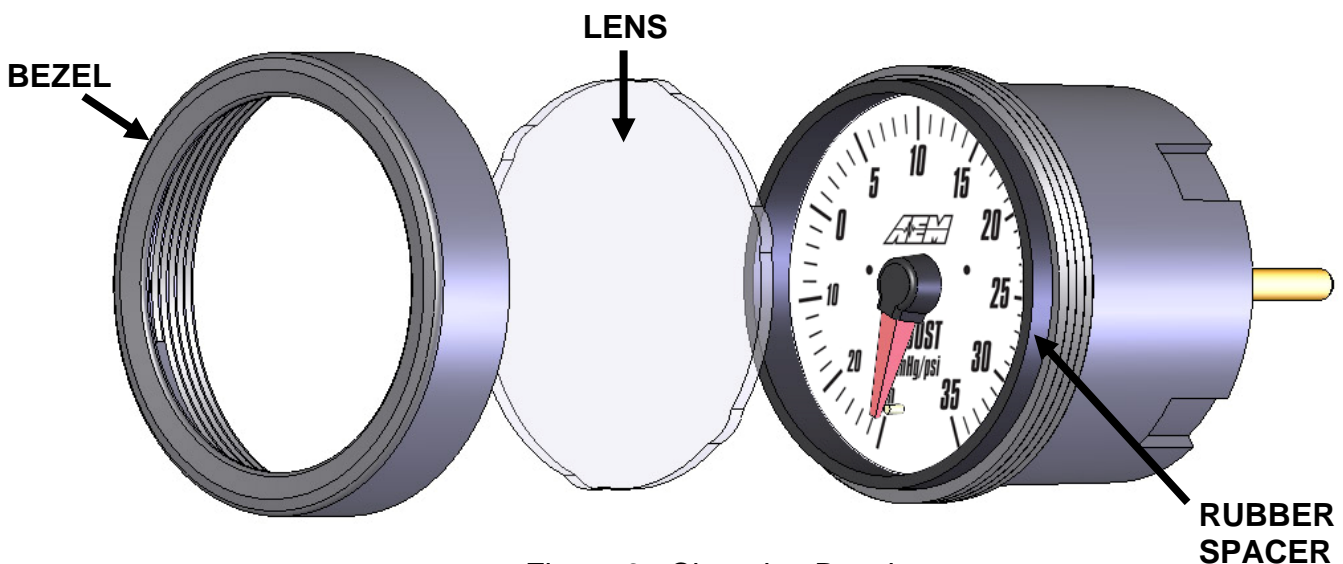


Figure 3. Changing Bezels

## Backlighting

The AEM Boost Gauge has 7 different backlight colors available to the end user, which closely match some of the more common factory dash panels: white, blue, green, red, orange, light blue, and aqua. To change the backlight color, rotate the backlighting switch using a small precision style screwdriver. The backlight switch is accessed through the small hole in the back of the gauge.

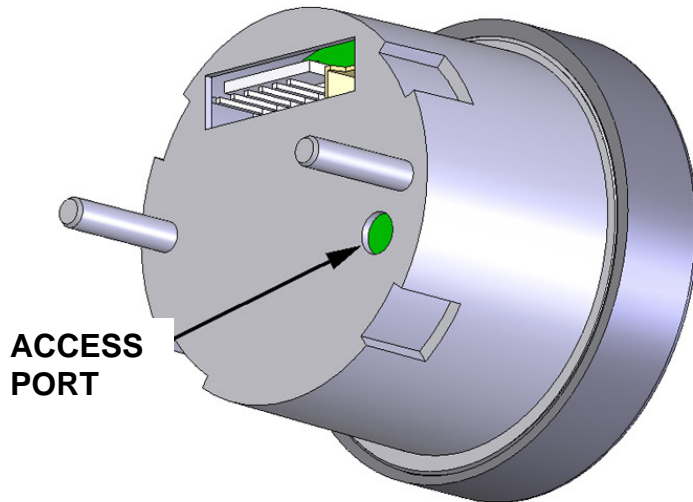


Figure 4. Backlighting Adjustment

## Status Lights

The AEM Boost gauge has two status lights, see Figure 4. The status light on the left will flash if an out of range low voltage sensor error is detected. The status light on the right will flash if an out of range high voltage sensor error is detected. In either case, the needle will point straight downward to signify an error. See Table 1 for corrective actions.



Figure 4. Illuminated Status Lights

| Status Light | Fault                       | Corrective Action                                     |
|--------------|-----------------------------|---|
| Left         | Sensor Wiring and/or sensor | Make sure sensor is connected, check for broken wires |
| Right        | Sensor and/or sensor wiring | Check for shorted sensor wires                        |

Table 1. Error Codes

### Analog Output

The analog output from the AEM Analog boost gauge is a linear dc voltage signal that varies from **0.5 Vdc at 30 inHg (-1 Bar) vacuum to 4.5 Vdc at 35 psi (2.4 Bar) boost** over the operating range of the gauge. The signal is used for sending information to a data logger or an engine management system like the AEM EMS or F/IC. Since the gauge displays different units for vacuum and boost, two different transfer functions are needed. The vacuum (inHg) and boost (psi) transfer functions are listed below

Boost Range: 0-35 psi, 1.68 – 4.5 volts

$$\text{Boost} = 12.41 \times \text{Voltage} - 20.85$$

Vacuum Range: 0-30 inHg, 0.5 – 1.67 volts

$$\text{Vacuum} = -25.42 \times \text{Voltage} + 42.71$$

The transfer function for pressure units in bar is listed below. Since both the vacuum and boost ranges use the same units, bar, a single transfer function can be used.

Vacuum/Boost Range: -1 Bar Vacuum to 2.4 Bar Boost, 0.5 – 4.5 volts

$$\text{Vacuum/Boost} = 0.85 \times \text{Voltage} - 1.43$$

A list of output voltages and corresponding pressures is shown below in Table 1.

| Voltage | Pressure |          |
|---------|----------|----------|
| 0.50    | 30 inhg  | -1.0 BAR |
| 0.75    | 24 inhg  | -0.8 BAR |
| 1.00    | 17 inhg  | -0.6 BAR |
| 1.25    | 11 inhg  | -0.4 BAR |
| 1.50    | 5 inhg   | -0.2 BAR |
| 1.67    | 0 PSI    | 0.0 BAR  |
| 1.75    | 1 PSI    | 0.1 BAR  |
| 2.00    | 4 PSI    | 0.3 BAR  |
| 2.25    | 7 PSI    | 0.5 BAR  |
| 2.50    | 10 PSI   | 0.7 BAR  |
| 2.75    | 13 PSI   | 0.9 BAR  |
| 3.00    | 16 PSI   | 1.1 BAR  |
| 3.25    | 19 PSI   | 1.3 BAR  |
| 3.50    | 23 PSI   | 1.5 BAR  |
| 3.75    | 26 PSI   | 1.8 BAR  |
| 4.00    | 29 PSI   | 2.0 BAR  |
| 4.25    | 32 PSI   | 2.2 BAR  |
| 4.50    | 35 PSI   | 2.4 BAR  |

Table 1. Analog Calibrations

### Connector Pinouts

The pinouts for the 3-pin sensor harness and 8-pin power harness are provided below in Figure 6.

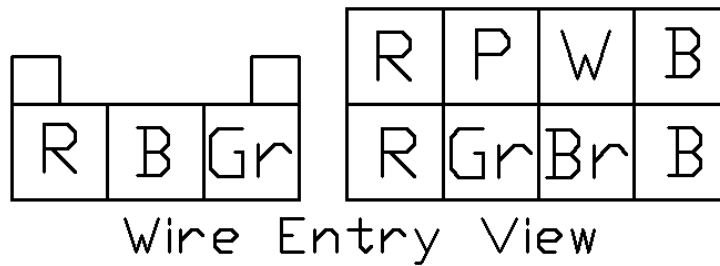


Figure 6. Harness Pinouts

## Specifications

### Gauge

|                                 |  |
|---------------------------------|--|
| Supply Current                  | 0.1 A  |
| Differential Analog Outputs     | 1  |
| Measuring Range                 | 30 inHg Vacuum to 35 psi Boost<br>-1 Bar Vacuum to 2.4 Bar Boost |
| Operating Voltage (nominal)     | 8.5-15 volts dc  |
| Harness & Connector Temp Limit: | 105C   |

### Notes

The sensor is a precision pressure measuring device and should not be subject to mechanical or thermal shock or it may be damaged.

If further tuning help is needed be sure to visit the video gallery or performance electronics forum at [www.aempower.com](http://www.aempower.com) for comprehensive instructional videos and information.

### Replacement Components

35-3411 8-Pin Power Harness  
35-3410 3-Pin Sensor Harness  
35-2131-50 Pressure Sensor

### 12 MONTH LIMITED WARRANTY

Advanced Engine Management Inc. warrants to the consumer that all AEM High Performance products will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced at AEM's option, when determined by AEM that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of the AEM part. In no event shall this warranty exceed the original purchase price of the AEM part nor shall AEM be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product. Warranty claims to AEM must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12 month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty. AEM disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by AEM. Warranty returns will only be accepted by AEM when accompanied by a valid Return Goods Authorization (RGA) number. Product must be received by AEM within 30 days of the date the RGA is issued.

Please note that before AEM can issue an RGA for any product, it is first necessary for the installer or end user to contact the AEM Performance Electronics tech line at 1-800-423-0046 to discuss the problem. Most issues can be resolved over the phone. Under no circumstances should a system be returned or a RGA requested before the above process transpires.

Need additional help? Contact the AEM Performance Electronics tech department at 1-800-423-0046 or [tech@aempower.com](mailto:tech@aempower.com), or visit the AEM Performance Electronics forum at <http://forum.aempower.com/forum/>