



7. On the Serial Telemetry screen, first set the baud rate to "57600".
8. Under the Channel 1 Data section, double click channel "ADCR17" and select "Ign Timing" from the drop down list.
9. Next, double click "ADCR15" and select "Knock 1 Volts" from the list.
10. When complete and your screen looks like the one below, click close.

To apply default settings, please use Setup Wizard dialog. (Wizards-> Setup Wizard)

General

Telemetry Channel: Channel 1      Checksum:  Invert Checksum

Baud Rate: 57600      Byte Count: 19

Parity: None      Header Byte: 0x55

Channel 1 Data

Byte	Channel	Channel Alias
1	Engine Speed	
2	Engine Load	
3	Throttle	
4	Air Temp	
5	Coolant Temp	
6	ADCR11	
7	ADCR13	
8	ADCR14	
9	Ign Timing	
10	ADCR18	
11	Knock 1 Volts	
12	ADCR16	
13	ADCR08	Battery Raw
14	O2 #1	
15	O2 #2	
16	Vehicle Speed	
17	Gear Calculated	
18	Error 1	Error Air, Error Airflow, Error Coolant, Error Crank, Error MAP, Error Sync, Error TPS
19	Error 2	Error Baro, Error Injector Duty, Error Knock 1, Error Knock 2

Show Info...      Close

11. Upload this configuration to your EMS and be sure that you are not altering your engine tune. The above changes only setup the serial port to output data. It does not change the way that the EMS runs your engine in any way.
12. Connect the 9 pin cable from the gauge to the AEM EMS serial port.
13. Connect the black gauge wire to the same ground as the EMS. This is very important to follow.
14. Connect the red gauge wire to switched 12 volt power. This power source should shut off when the ignition key is switched off.

After installation is complete, start the engine. The gauge should power up and display the Rush Racing logo for 5 seconds and then start displaying gauge data. Lightly tap the screen to show the navigation buttons. Pressing the left and right buttons will rotate through the various gauges. Available gauges are Air/Fuel Ratio, Intake Air Temp (F), Battery Voltage, Coolant Temp (F), Knock Voltage, Manifold Pressure (PSI), RPM, Speed (MPH), Throttle (%), Timing, and an overall digital readout of all functions.

Press the right arrow repeatedly until the Manifold Pressure gauge is displayed. At the top of the screen, press the BAR button to select the MAP sensor that is installed on your vehicle. Available choices are 2 BAR, 3 BAR, 3.5 BAR, and 5 BAR MAP sensors.

On any of the gauge screens, you may change the color of the displayed gauge. To do so, press the "Change Color" button at the bottom of the screen. Use the left and right buttons to change the display color. Available colors are blue, green, orange, purple, red, teal, black, and red on black. Each gauge can have a different color. Press "Save" when the desired color is selected. The gauge then goes back to normal function.

Digital values of both air/fuel ratio and map pressure are displayed at the bottom of the screen at all times. Peak values for these two parameters are also displayed in small font. The AFR value is only set to increase when the throttle is over 80% and engine rpm over 4000. When the throttle is less than 80% or rpm less than 4000, the peak value is left in its current state even if the peak value is exceeded. Tapping the screen once, sets both peak values to the minimum possible value for AFR and MAP.

All gauge colors and last selected gauge are saved and will remain when power is shut off and will be restored when re-powered.

The Telemetry Data screen shows all values in a digital format. A few extra items are shown at the bottom of this screen. Errors1, Error2, and Serial faults. Error1 and Error2 are coded 8 bit data that represents when the AEM EMS detects sensor data faults. This is an 8 bit data chunk. If for instance "101" is displayed, it should be read as "00000101". Each bit represents a different fault that can be decoded in and is explained in the AEMTuner software.

After the Telemetry Data screen there are two standard 0-5vdc gauges that can be set using bytes 7 and 8 on the AEMTuner Serial Telemetry screen. These can be set to other gauge values but are displayed in volts as they would be from the AEM logging. These can be left as is if you do not wish to configure them.

## **TROUBLESHOOTING:**

- The gauge does not power on.  
**Check that the power and ground wire is secure and that 12 volts is being supplied by checking it with a multi-meter.**

***TROUBLESHOOTING CONTINUED ON NEXT PAGE***

- The gauge does not leave the logo screen or is stuck on a gauge screen and does not change.  
**Be sure that the serial cable is connected securely to the EMS. Also be sure that the telemetry data is setup correctly and baud rate set at 57600 in the AEMTuner software. The gauge will not operate until it sees valid serial data.**
- The gauges do not read correctly.  
**Be sure that you have selected the correct MAP sensor on the manifold pressure screen. Also be sure that you have correctly set the telemetry data on in the AEMTuner software. If this is not correct, then the wrong data will be sent to the gauge and displayed incorrectly.**
- AFR peak value does not change.  
**Be sure that your throttle position is greater than 80% and RPM greater than 4000. This can be verified on the throttle position and RPM gauges.**
- Screen is corrupted or blank.  
**Be sure that the microSD card on the top of the gauge is seated properly. Try removing and inserting the card.**