



Interfacing with MAP Sensors

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Summary

This application note describes the setup procedures for connecting various MAP sensors to the R-Series analog input for data logging VAC and Boost. It outlines in detail how to setup the R-Series unit and PLX Logger analog tables to properly interpret the input voltage to useful values in PSI or kPA.

Supported MAP Sensors

- 1) All Honda/Acura
- 2) All Toyota
- 3) Mazda RX-7 (93-95)
- 4) AEM 5 Bar
- 5) AEM 3.5 Bar
- 6) AEM 2 Bar
- 7) Subaru WRX/Saab 92X
- 8) Dodge/Chrysler/Jeep
- 9) GM P/N 12247561 (1 Bar)
- 10) GM P/N 12219927 (1 Bar)
- 11) GM P/N 12219931 (1 Bar)
- 12) GM P/N 12247571 (2 Bar)
- 13) GM P/N 12223851 (2 Bar)
- 14) GM P/N 12223861 (3 Bar)
- 15) GM P/N 12219935 (3 Bar)
- 16) GM P/N 16040749 (3 Bar)
- 17) Nissan (95-up Non Turbo)
- 18) Dodge/Chrysler 2.4L Turbo

Setting up the R-Series

Both the R-300 and R-500 can be setup to read MAP in the data logger monitor inputs menu. For instructions how to toggle to this setup menu please refer to the R-300/R-500 users guide.



The R-500 can also read VAC/Boost in the following menus. For instructions how to setup the auxiliary input for boost, please refer to the R-500 users guide.



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The R-300/R-500 needs 4 sets of data points to properly define the relationship between voltage to vac/boost.

```

→Volts1 = 0.00
Value1 = -0014.7000
Volts2 = 5.00
Value2 = 0029.4000
↑↓ SELECT ←→ CHANGE
  
```

By entering these 4 points, the R-Series unit will be able to display the correct values for Vac/Boost.

1) All Honda/Acura MAP Sensors

	PSI (kPA)
Volts1	0.32
Values1	-13.9 (5.48)
Volts2	4.84
Values2	10.94 (176.72)

2) All Toyota MAP Sensors

	PSI (kPA)
Volts1	1.09
Values1	-11.45 (22.41)
Volts2	4.98
Values2	18.2 (226.84)

3) Mazda RX-7 (93-95)

	PSI (kPA)
Volts1	0.75
Values1	-14.7 (0)
Volts2	4.98
Values2	17.93 (224.98)

4) AEM 5 Bar

	PSI (kPA)
Volts1	0.5
Values1	-14.7 (0)
Volts2	4.5
Values2	60.3 (517.1)

5) AEM 3.5 Bar

	PSI (kPA)
Volts1	0.5
Values1	-14.7 (0)
Volts2	4.5
Values2	35.3 (344.7)

6) AEM 2 Bar

	PSI (kPA)
Volts1	0.5
Values1	-14.7 (0)
Volts2	4.5
Values2	15.3 (206.8)

7) Subaru WRX/Saab 92X

	PSI (kPA)
Volts1	0.9
Values1	-14.7 (0)
Volts2	4.66
Values2	26.5 (284)

8) Dodge/Chrysler/Jeep

	PSI (kPA)
Volts1	0.3
Values1	-14.7 (0)
Volts2	4.6
Values2	0 (101)

9) GM P/N 12247561 (1 Bar)

	PSI (kPA)
Volts1	0
Values1	-13.1 (11)
Volts2	5
Values2	0.7 (106)

10) GM P/N 12219927 (1 Bar)

	PSI (kPA)
Volts1	0
Values1	-14.7 (0)
Volts2	5
Values2	0.5 (105)

11) GM P/N 12219931 (1 Bar)

	PSI (kPA)
Volts1	0
Values1	-12.5 (15)
Volts2	5
Values2	0.8 (107)

12) GM P/N 12247571 (2 Bar)

	PSI (kPA)
Volts1	0
Values1	-13.5 (8)
Volts2	5
Values2	15 (205)

13) GM P/N 12223851 (2 Bar)

	PSI (kPA)
Volts1	0
Values1	-11.1 (25)
Volts2	5
Values2	25.1 (275)

14) GM P/N 12223861 (3 Bar)

	PSI (kPA)
Volts1	0
Values1	-14.4 (2)
Volts2	5
Values2	31.1 (316)

15) GM P/N 12219935 (3 Bar)

	PSI (kPA)
Volts1	0
Values1	-8.3 (44)
Volts2	5
Values2	30.8 (314)

16) GM P/N 16040749 (3 Bar)

	PSI (kPA)
Volts1	0.08
Values1	-13.1 (11)
Volts2	4.98
Values2	29.3 (303.4)

17) Nissan (95-up Non Turbo)

	PSI (kPA)
Volts1	0.5
Values1	-12.8 (13.3)
Volts2	4.5
Values2	0.8 (106.6)

18) Dodge/Chrysler 2.4L Turbo

	PSI (kPA)
Volts1	0.3
Values1	-12.8 (13)
Volts2	4.88
Values2	18.4 (228)

Setting up the PLX Logger

User can set up the relationship of the voltage read from the MAP sensor to the corresponding values of pressure (Vac/Boost). In the PLX Logger, please go to "Config -> Analog Inputs" from the PLX Digital Dash. Select "custom" and enter in the appropriate values from the tables listed below.

1) All Honda/Acura MAP Sensors

Volts1	PSI	kPa
0	-15.659	-6.6432
0.5	-12.9112	12.2993
1	-10.1634	31.2418
1.5	-7.4156	50.1843
2	-4.6678	69.1268
2.5	-1.92	88.0693
3	0.8278	107.0118
3.5	3.5756	125.9543
4	6.3234	144.8968
4.5	9.0712	163.8393
5	11.819	182.7818

2) All Toyota MAP Sensors

Volts1	PSI	kPa
0	-19.758	-34.872
0.5	-15.947	-8.5955
1	-12.1359	17.681
1.5	-8.32485	43.9575

2	-4.5138	70.234
2.5	-0.70275	96.5105
3	3.1083	122.787
3.5	6.91935	149.0635
4	10.7304	175.34
4.5	14.54145	201.6165
5	18.3525	227.893

3) Mazda RX-7 (93-95)

Volts1	PSI	kPa
0	-20.485	-39.8953
0.5	-16.6281	-13.3018
1	-12.7711	13.29174
1.5	-8.91415	39.88524
2	-5.0572	66.47874
2.5	-1.20025	93.07224
3	2.6567	119.6657
3.5	6.51365	146.2592
4	10.3706	172.8527
4.5	14.22755	199.4462
5	18.0845	226.0397

4) AEM 5 Bar

Volts1	PSI	kPa
0	-24.075	-64.638
0.5	-14.7	0.002
1	-5.325	64.642
1.5	4.05	129.282
2	13.425	193.922
2.5	22.8	258.562
3	32.175	323.202
3.5	41.55	387.842
4	50.925	452.482
4.5	60.3	517.122
5	69.675	581.762

5) AEM 3.5 Bar

Volts1	PSI	kPa
0	-20.95	-43.088
0.5	-14.7	-0.0005
1	-8.45	43.087
1.5	-2.2	86.1745
2	4.05	129.262
2.5	10.3	172.3495

3	16.55	215.437
3.5	22.8	258.5245
4	29.05	301.612
4.5	35.3	344.6995
5	41.55	387.787

6) AEM 2 Bar

Volts1	PSI	kPa
0	-18.45	-25.85
0.5	-14.7	0
1	-10.95	25.85
1.5	-7.2	51.7
2	-3.45	77.55
2.5	0.3	103.4
3	4.05	129.25
3.5	7.8	155.1
4	11.55	180.95
4.5	15.3	206.8
5	19.05	232.65

7) Subaru WRX/Saab 92X

Volts1	PSI	kPa
0	-24.562	-67.979
0.5	-19.0835	-30.213
1	-13.605	7.553
1.5	-8.1265	45.319
2	-2.648	83.085
2.5	2.8305	120.851
3	8.309	158.617
3.5	13.7875	196.383
4	19.266	234.149
4.5	24.7445	271.915
5	30.223	309.681

8) Dodge/Chrysler/Jeep

Volts1	PSI	kPa
0	-15.73	-7.05
0.5	-14.02	4.70
1	-12.31	16.44
1.5	-10.60	28.19
2	-8.89	39.93
2.5	-7.18	51.67
3	-5.47	63.42

3.5	-3.76	75.16
4	-2.05	86.91
4.5	-0.34	98.65
5	1.37	110.39

9) GM P/N 12247561 (1 Bar)

Volts1	PSI	kPa
0	-13.10	11.00
0.5	-11.72	20.50
1	-10.34	30.00
1.5	-8.96	39.50
2	-7.58	49.00
2.5	-6.20	58.50
3	-4.82	68.00
3.5	-3.44	77.50
4	-2.06	87.00
4.5	-0.68	96.50
5	0.70	106.00

10) GM P/N 12219927 (1 Bar)

Volts1	PSI	kPa
0	-14.70	0.00
0.5	-13.18	10.50
1	-11.66	21.00
1.5	-10.14	31.50
2	-8.62	42.00
2.5	-7.10	52.50
3	-5.58	63.00
3.5	-4.06	73.50
4	-2.54	84.00
4.5	-1.02	94.50
5	0.50	105.00

11) GM P/N 12219931 (1 Bar)

Volts1	PSI	kPa
0	-12.50	15.00
0.5	-11.17	24.20
1	-9.84	33.40
1.5	-8.51	42.60
2	-7.18	51.80
2.5	-5.85	61.00
3	-4.52	70.20
3.5	-3.19	79.40
4	-1.86	88.60

4.5	-0.53	97.80
5	0.80	107.00

12) GM P/N 12247571 (2 Bar)

Volts1	PSI	kPa
0	-13.50	8.00
0.5	-10.65	27.70
1	-7.80	47.40
1.5	-4.95	67.10
2	-2.10	86.80
2.5	0.75	106.50
3	3.60	126.20
3.5	6.45	145.90
4	9.30	165.60
4.5	12.15	185.30
5	15.00	205.00

13) GM P/N 12223851 (2 Bar)

Volts1	PSI	kPa
0	-11.10	25.00
0.5	-7.48	50.00
1	-3.86	75.00
1.5	-0.24	100.00
2	3.38	125.00
2.5	7.00	150.00
3	10.62	175.00
3.5	14.24	200.00
4	17.86	225.00
4.5	21.48	250.00
5	25.10	275.00

14) GM P/N 12223861 (3 Bar)

Volts1	PSI	kPa
0	-14.40	2.00
0.5	-9.85	33.40
1	-5.30	64.80
1.5	-0.75	96.20
2	3.80	127.60
2.5	8.35	159.00
3	12.90	190.40
3.5	17.45	221.80
4	22.00	253.20
4.5	26.55	284.60
5	31.10	316.00

15) GM P/N 12219935 (3 Bar)

Volts1	PSI	kPa
0	-8.30	44.00
0.5	-4.39	71.00
1	-0.48	98.00
1.5	3.43	125.00
2	7.34	152.00
2.5	11.25	179.00
3	15.16	206.00
3.5	19.07	233.00
4	22.98	260.00
4.5	26.89	287.00
5	30.80	314.00

16) GM P/N 16040749 (3 Bar)

Volts1	PSI	kPa
0	-13.79	6.23
0.5	-9.47	36.06
1	-5.14	65.90
1.5	-0.81	95.74
2	3.51	125.57
2.5	7.84	155.41
3	12.17	185.25
3.5	16.49	215.08
4	20.82	244.92
4.5	25.15	274.75
5	29.47	304.59

17) Nissan (95-up Non Turbo)

Volts1	PSI	kPa
0	-14.50	-28.29
0.5	-12.80	-13.30
1	-11.10	1.69
1.5	-9.40	16.67
2	-7.70	31.66
2.5	-6.00	46.65
3	-4.30	61.64
3.5	-2.60	76.62
4	-0.90	91.61
4.5	0.80	106.60
5	2.50	121.59

18) Dodge/Chrysler 2.4L Turbo

Volts1	PSI	kPa
0	-14.84	-1.08
0.5	-11.44	22.39
1	-8.03	45.86
1.5	-4.63	69.33
2	-1.22	92.80
2.5	2.19	116.27
3	5.59	139.75
3.5	9.00	163.22
4	12.40	186.69
4.5	15.81	210.16
5	19.22	233.63

Revision History

Version 1.0 (10/14/05)	Initial release
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