

## TURBO RPM SENSOR INSTRUCTIONS

### Overview:

The turbo speed sensor is a special sensor that can detect when the blades of a turbo, or the teeth of a flywheel pass by it. This sensor needs a special adapter box that will come with the sensor. The adapter has the ability to amplify low signals as well as divide a signal by 2, 4, and 8. Primary uses include: monitoring the turbo speed RPM, and determining the RPM of ignition-less engines by monitoring the teeth on the flywheel. Please note that just like the RPM gauge on your street car, that is the number times 1,000, the turbo speed sensor is the same way.

### Part Numbers:

#8058          Turbo Speed RPM Sensor

### Installation:

If installing into a turbo, please refer to your specific turbo instructions on how deep to install the sensor. If installing the sensor near an open rotating mass, using either the supplied Computech 90 degree bracket or a custom bracket, position the end of the sensor facing toward the target area with a 1/4" gap between the sensor and furthest target area.

After the sensor is installed, connect it to the black divider box. We now need to set the divide by amount. Determine the amount of blades or teeth per revolution, then refer to the Turbo Speed RPM Calibration Table located below. Find your number of blades and then determine if the divide by 2 RPM is higher than expected. If it is, you can leave the box in the divide by 2 setting and move on. If the RPM is not high enough, move over to the divide by 4 and divide by 8 RPM's until you find a value that is larger than your expected RPM. If you have to go to a divide by 4 or 8, remove the 4 screws on the divider box and locate the small area of dip switches. Follow the following chart to correctly set your divide by amount.

<b>Turbo RPM Divide Box Settings</b>			
<b>Dip Switches</b>			<b>Divide By</b>
<b>#1</b>	<b>#2</b>	<b>#3</b>	
OFF	ON	ON	/2
ON	ON	OFF	/4
OFF	ON	OFF	/8

After your sensor and divide box have been properly installed and configured, wire the extension cable back to your DataMaxx Main Module. Determine which RPM channel you have free that you are not using. The most common is the Inputshaft channel. Connect the white wire to the Main module “INP WHT” terminal (id #30), the black wire to “GND BLK” terminal (id #29), the green wire to any Analog 5V terminal and the red wire to “12V RED” terminal (id#31).

Calibration:

To calibrate the turbo RPM sensor, you will first need to know how many blades or teeth per revolution. Determine the amount of blades or teeth per revolution, then refer to the “Turbo Speed RPM Calibration Table” located below. Find your number of blades and then determine if the divide by 2 RPM is higher than expected. If it is, you can leave the box in the divide by 2 setting and move on. If the RPM is not high enough, move over to the divide by 4 and divide by 8 RPM's until you find a value that is larger than your expected RPM. Write down the information below:

Divide By: \_\_\_\_\_

Max RPM: \_\_\_\_\_

To Calibrate:

- Record a short 5 second test log file and download the log file correctly using the SD button.
- Select Edit, then Properties. You are now in the Channel Properties area.
- Find the channel where you physically installed the sensor, follow it to the right, and click on the finger pushing a red button.
- To the right of the “Type of Sensor” drop down list, select the calibration button again.
- Click on the “Calibration Builder” tab, and select the check box to “Use Calibration Builder” for this sensor.
- Change decimal points to 0.
- Change units to RPM.
- Change connectivity to Digital Frequency Sensor.
- Set Low Frequency to 0 and Low Reading to 0.
- Delete any text in Mid Frequency and Mid Reading.

- Set High Frequency to 1000 and High Reading to the value you wrote above as Max RPM (do not type in any commas).
- When you are done select OK, then OK again, and then “Send Config to DataMaxx”.

For more information, please see “Initial Calibration” in the Software section.

Dip Switch Setting:            C- ON  
    D – ON

Testing:

Simply fire up the engine to test this sensor. If you have any complications, please call our technical support line at 301-884-5718.

**Turbo Speed RPM Calibration Table**

Blades/Teeth	Max RPM x1,000 Per Divide By		
	2	4	8
1	1920.00	3840.00	7680.00
2	960.00	1920.00	3840.00
3	640.00	1280.00	2560.00
4	480.00	960.00	1920.00
5	384.00	768.00	1536.00
6	320.00	640.00	1280.00
7	274.29	548.57	1097.14
8	240.00	480.00	960.00
9	213.33	426.67	853.33
10	192.00	384.00	768.00
11	174.55	349.09	698.18
12	160.00	320.00	640.00
13	147.69	295.38	590.77
14	137.14	274.29	548.57
15	128.00	256.00	512.00
16	120.00	240.00	480.00
17	112.94	225.88	451.76
18	106.67	213.33	426.67
19	101.05	202.11	404.21
20	96.00	192.00	384.00
21	91.43	182.86	365.71
22	87.27	174.55	349.09
23	83.48	166.96	333.91
24	80.00	160.00	320.00
25	76.80	153.60	307.20
26	73.85	147.69	295.38
27	71.11	142.22	284.44
28	68.57	137.14	274.29
29	66.21	132.41	264.83
30	64.00	128.00	256.00
31	61.94	123.87	247.74
32	60.00	120.00	240.00
33	58.18	116.36	232.73
34	56.47	112.94	225.88
35	54.86	109.71	219.43
36	53.33	106.67	213.33
37	51.89	103.78	207.57
38	50.53	101.05	202.11
39	49.23	98.46	196.92
40	48.00	96.00	192.00
41	46.83	93.66	187.32
42	45.71	91.43	182.86
43	44.65	89.30	178.60
44	43.64	87.27	174.55
45	42.67	85.33	170.67
46	41.74	83.48	166.96
47	40.85	81.70	163.40
48	40.00	80.00	160.00
49	39.18	78.37	156.73
50	38.40	76.80	153.60

**Turbo Speed RPM Calibration Table**

Blades/Teeth	Max RPM x1,000 Per Divide By		
	2	4	8
51	37.65	75.29	150.59
52	36.92	73.85	147.69
53	36.23	72.45	144.91
54	35.56	71.11	142.22
55	34.91	69.82	139.64
56	34.29	68.57	137.14
57	33.68	67.37	134.74
58	33.10	66.21	132.41
59	32.54	65.08	130.17
60	32.00	64.00	128.00
61	31.48	62.95	125.90
62	30.97	61.94	123.87
63	30.48	60.95	121.90
64	30.00	60.00	120.00
65	29.54	59.08	118.15
66	29.09	58.18	116.36
67	28.66	57.31	114.63
68	28.24	56.47	112.94
69	27.83	55.65	111.30
70	27.43	54.86	109.71
71	27.04	54.08	108.17
72	26.67	53.33	106.67
73	26.30	52.60	105.21
74	25.95	51.89	103.78
75	25.60	51.20	102.40
76	25.26	50.53	101.05
77	24.94	49.87	99.74
78	24.62	49.23	98.46
79	24.30	48.61	97.22
80	24.00	48.00	96.00
81	23.70	47.41	94.81
82	23.41	46.83	93.66
83	23.13	46.27	92.53
84	22.86	45.71	91.43
85	22.59	45.18	90.35
86	22.33	44.65	89.30
87	22.07	44.14	88.28
88	21.82	43.64	87.27
89	21.57	43.15	86.29
90	21.33	42.67	85.33
91	21.10	42.20	84.40
92	20.87	41.74	83.48
93	20.65	41.29	82.58
94	20.43	40.85	81.70
95	20.21	40.42	80.84
96	20.00	40.00	80.00
97	19.79	39.59	79.18
98	19.59	39.18	78.37
99	19.39	38.79	77.58
100	19.20	38.40	76.80

**Turbo Speed RPM Calibration Table**

Blades/Teeth	Max RPM x1,000 Per Divide By		
	2	4	8
101	19.01	38.02	76.04
102	18.82	37.65	75.29
103	18.64	37.28	74.56
104	18.46	36.92	73.85
105	18.29	36.57	73.14
106	18.11	36.23	72.45
107	17.94	35.89	71.78
108	17.78	35.56	71.11
109	17.61	35.23	70.46
110	17.45	34.91	69.82
111	17.30	34.59	69.19
112	17.14	34.29	68.57
113	16.99	33.98	67.96
114	16.84	33.68	67.37
115	16.70	33.39	66.78
116	16.55	33.10	66.21
117	16.41	32.82	65.64
118	16.27	32.54	65.08
119	16.13	32.27	64.54
120	16.00	32.00	64.00
121	15.87	31.74	63.47
122	15.74	31.48	62.95
123	15.61	31.22	62.44
124	15.48	30.97	61.94
125	15.36	30.72	61.44
126	15.24	30.48	60.95
127	15.12	30.24	60.47
128	15.00	30.00	60.00
129	14.88	29.77	59.53
130	14.77	29.54	59.08
131	14.66	29.31	58.63
132	14.55	29.09	58.18
133	14.44	28.87	57.74
134	14.33	28.66	57.31
135	14.22	28.44	56.89
136	14.12	28.24	56.47
137	14.01	28.03	56.06
138	13.91	27.83	55.65
139	13.81	27.63	55.25
140	13.71	27.43	54.86
141	13.62	27.23	54.47
142	13.52	27.04	54.08
143	13.43	26.85	53.71
144	13.33	26.67	53.33
145	13.24	26.48	52.97
146	13.15	26.30	52.60
147	13.06	26.12	52.24
148	12.97	25.95	51.89
149	12.89	25.77	51.54
150	12.80	25.60	51.20

**Turbo Speed RPM Calibration Table**

Blades/Teeth	Max RPM x1,000 Per Divide By 2		
	2	4	8
151	6.49	12.97	25.95
152	6.44	12.89	25.77
153	6.40	12.80	25.60
154	6.36	12.72	25.43
155	6.32	12.63	25.26
156	6.27	12.55	25.10
157	6.23	12.47	24.94
158	6.19	12.39	24.77
159	6.15	12.31	24.62
160	6.11	12.23	24.46
161	6.08	12.15	24.30
162	6.04	12.08	24.15
163	6.00	12.00	24.00
164	5.96	11.93	23.85
165	5.93	11.85	23.70
166	5.89	11.78	23.56
167	5.85	11.71	23.41
168	5.82	11.64	23.27
169	5.78	11.57	23.13
170	5.75	11.50	22.99
171	5.71	11.43	22.86
172	5.68	11.36	22.72
173	5.65	11.29	22.59
174	5.61	11.23	22.46
175	5.58	11.16	22.33
176	5.55	11.10	22.20
177	5.52	11.03	22.07
178	5.49	10.97	21.94
179	5.45	10.91	21.82
180	5.42	10.85	21.69
181	5.39	10.79	21.57
182	5.36	10.73	21.45
183	5.33	10.67	21.33
184	5.30	10.61	21.22
185	5.27	10.55	21.10
186	5.25	10.49	20.98
187	5.22	10.43	20.87
188	5.19	10.38	20.76
189	5.16	10.32	20.65
190	5.13	10.27	20.53
191	5.11	10.21	20.43
192	5.08	10.16	20.32
193	5.05	10.11	20.21
194	5.03	10.05	20.10
195	5.00	10.00	20.00
196	4.97	9.95	19.90
197	4.95	9.90	19.79
198	4.92	9.85	19.69
199	4.90	9.80	19.59
200	4.87	9.75	19.49