## 52mm DIGITAL OLED WIDEBAND AIR/FUEL RATIO GAUGE

## W/ANLOG OUTPUT SERIES

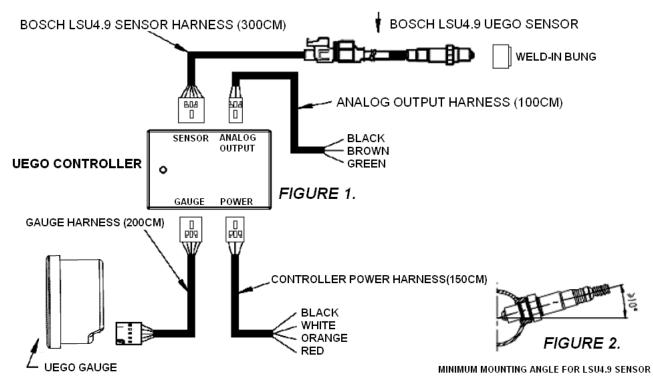
**UEGO CONTROLLER INSTALLATION INSTRUCTIONS:** 

RED - 12V ACCESSORY POWER (+)

WHITE - ENGINE ACCESSORY POWER (+)

BLACK - ENGINE GROUND(-)

ORANGE - CONNECT TO HEADLIGHT SWITCH 12V(+).



A WELD-IN M18 X 1.5 BOSS IS SUPPLIED FOR SENSOR INSTALLATION. MOUNT THE 02 SENSOR IN THE EXHAUST SYSTEM AT LEAST 18 INCHES DOWNSTREEM FROM THE ECHAUST PORT. IF YOU ANTICIPATE HIGH EGT'S (OVER 800C), RUN A TURBOCHARGER, RUN AT HIGH RPM FOR EXTENDED PERIODS OF TIME OR PLAN ON RUNNING LEADED RACE FUEL THEN YOU MUST MOUNT THE SENSOR AT LEAST 36 INCHES OR MORE DOWNSTREAM OF THE EXHAUST PORT AS ALL OF THESE CAN CAUSE THE SENSOR TO OVERHEAT. ON TURBOCHARGED ENGINES THE UGEO SENSOR MUST BE INSTALLED AFTER THE TURBO CHARGER, IF NOT, THE PRESSURE DIFFERENTIAL WILL GREATLY AFFECT THE ACCURACY OF THE UNIT. FOR ACCURATE READINGS, THE SENSOR MUST BE MOUNTED BEFORE CATALYTIC CONVERTERS AND/OR AUXILIARY AIR PUMPS. TO PREVENT COLLECTION OF LIQUIDS BETWEEN THE SENSOR HOUSING AND SENSOR ELEMENT DURNING THE COLD START PHASE, THE INSTALLATION ANGLE SHOULD BE INCLINED AT LEAST 10° FROM HORIZONTAL WITH THE ELECTRICAL CONNECTION UPWARDS, SEE BELOW (FIGURE 2)

VOLT	LAMBDA	GASOLINE AFR
0.00	0.683	10.00
0.16	0.705	10.32
0.31	0.725	10.62

0.47       0.747       10.94         0.62       0.768       11.24         0.78       0.790       11.56         0.94       0.811       11.8         1.09       0.832       12.18         1.25       0.854       12.50         1.40       0.874       12.80         1.56       0.896       13.12         1.72       0.918       13.74         2.03       0.980       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74			
0.78       0.790       11.56         0.94       0.811       11.8         1.09       0.832       12.18         1.25       0.854       12.50         1.40       0.874       12.80         1.56       0.896       13.12         1.72       0.918       13.44         1.87       0.939       13.74         2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04	0.47	0.747	10.94
0.94       0.811       11.8         1.09       0.832       12.18         1.25       0.854       12.50         1.40       0.874       12.80         1.56       0.896       13.12         1.72       0.918       13.44         1.87       0.939       13.74         2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.343       19.66	0.62	0.768	11.24
1.09       0.832       12.18         1.25       0.854       12.50         1.40       0.874       12.80         1.56       0.896       13.12         1.72       0.918       13.44         1.87       0.939       13.74         2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.343       19.66	0.78	0.790	11.56
1.25       0.854       12.50         1.40       0.874       12.80         1.56       0.896       13.12         1.72       0.918       13.44         1.87       0.939       13.74         2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	0.94	0.811	11.8
1.40     0.874     12.80       1.56     0.896     13.12       1.72     0.918     13.44       1.87     0.939     13.74       2.03     0.960     14.06       2.18     0.981     14.36       2.34     1.003     14.68       2.50     1.025     15.00       2.65     1.045     15.30       2.81     1.067     15.62       2.96     1.087     15.92       3.12     1.109     16.24       3.28     1.130     16.54       3.43     1.152     16.86       3.59     1.173     17.18       3.74     1.194     17.48       3.90     1.216     17.80       4.06     1.236     18.10       4.21     1.258     18.42       4.37     1.280     18.74       4.52     1.301     19.04       4.68     1.343     19.66	1.09	0.832	12.18
1.56       0.896       13.12         1.72       0.918       13.44         1.87       0.939       13.74         2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	1.25	0.854	12.50
1.72       0.918       13.44         1.87       0.939       13.74         2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	1.40	0.874	12.80
1.87       0.939       13.74         2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	1.56	0.896	13.12
2.03       0.960       14.06         2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	1.72	0.918	13.44
2.18       0.981       14.36         2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	1.87	0.939	13.74
2.34       1.003       14.68         2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	2.03	0.960	14.06
2.50       1.025       15.00         2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	2.18	0.981	14.36
2.65       1.045       15.30         2.81       1.067       15.62         2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	2.34	1.003	14.68
2.81     1.067     15.62       2.96     1.087     15.92       3.12     1.109     16.24       3.28     1.130     16.54       3.43     1.152     16.86       3.59     1.173     17.18       3.74     1.194     17.48       3.90     1.216     17.80       4.06     1.236     18.10       4.21     1.258     18.42       4.37     1.280     18.74       4.52     1.301     19.04       4.68     1.322     19.36       4.84     1.343     19.66	2.50	1.025	15.00
2.96       1.087       15.92         3.12       1.109       16.24         3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	2.65	1.045	15.30
3.12     1.109     16.24       3.28     1.130     16.54       3.43     1.152     16.86       3.59     1.173     17.18       3.74     1.194     17.48       3.90     1.216     17.80       4.06     1.236     18.10       4.21     1.258     18.42       4.37     1.280     18.74       4.52     1.301     19.04       4.68     1.322     19.36       4.84     1.343     19.66	2.81	1.067	15.62
3.28       1.130       16.54         3.43       1.152       16.86         3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	2.96	1.087	15.92
3.43     1.152     16.86       3.59     1.173     17.18       3.74     1.194     17.48       3.90     1.216     17.80       4.06     1.236     18.10       4.21     1.258     18.42       4.37     1.280     18.74       4.52     1.301     19.04       4.68     1.322     19.36       4.84     1.343     19.66	3.12	1.109	16.24
3.59       1.173       17.18         3.74       1.194       17.48         3.90       1.216       17.80         4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	3.28	1.130	16.54
3.74     1.194     17.48       3.90     1.216     17.80       4.06     1.236     18.10       4.21     1.258     18.42       4.37     1.280     18.74       4.52     1.301     19.04       4.68     1.322     19.36       4.84     1.343     19.66	3.43	1.152	16.86
3.90     1.216     17.80       4.06     1.236     18.10       4.21     1.258     18.42       4.37     1.280     18.74       4.52     1.301     19.04       4.68     1.322     19.36       4.84     1.343     19.66	3.59	1.173	17.18
4.06       1.236       18.10         4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	3.74	1.194	17.48
4.21       1.258       18.42         4.37       1.280       18.74         4.52       1.301       19.04         4.68       1.322       19.36         4.84       1.343       19.66	3.90	1.216	17.80
4.37     1.280     18.74       4.52     1.301     19.04       4.68     1.322     19.36       4.84     1.343     19.66	4.06	1.236	18.10
4.52     1.301     19.04       4.68     1.322     19.36       4.84     1.343     19.66	4.21	1.258	18.42
4.68     1.322     19.36       4.84     1.343     19.66	4.37	1.280	18.74
4.84 1.343 19.66	4.52	1.301	19.04
	4.68	1.322	19.36
4.99 1.356 19.98	4.84	1.343	19.66
	4.99	1.356	19.98

## 1. CALIBRATION MODE:

PRESS THE BUTTON ON THE CONTROLLER FOR 3 SECONDS TO CALIBRATE THE CONTROLLER. WHEN THE LED SCREEN DISPLAYS [2], THE CONTROLLER IS CALIBRATING.

- 2. SENSOR ERROR DIAGNOSIS: WHEN THE LED SCREEN DISPLAYS [3], IT IS A SENSOR ERROR CODE. PLEASE CHECK IF THE SENSOR IS DISCONNECTED OR DEFECTIVE.
- 3. ORIGINAL MANUFACTURE SETTING MODE:
  PRESS THE BUTTON THE CONTROLLER FOR 8 SECONDS TO OPERATE THE ORIGINAL

MANUFACTURE SETTING OF THE CONTROLLER. THE LED SCREEN WILL DISPLAY [2] FIRST. AFTER THE LED SCREEN DISPLAYS [4], THE ORIGINAL MANUFACTURE SETTING IS PROGRAMMED.

4. ANALOG OUTPUT WIRE HARNESS INSTRUCTION:

BLACK – ENGINE GROUND BROWN – WIDE BAND ANALOG OUTPUT 0-5V (0V  $\rightarrow$  10AFR, 5V  $\rightarrow$  20AFR) GREEN – NARROW BAND ANALOG OUTPUT 0-1V (0V  $\rightarrow$  20AFR, 1V  $\rightarrow$  10AFR)