LCDBC

USER MANUAL VERSION 3.40

What does it do?

► monitor all ECU datalog parameters in real time
► read and clear ECU error codes
► perform ECU diagnostic tests such as injector disable, fuel pump test, SAS mode.
► monitor turbo boost pressure
► hook up your WBO2 controller and monitor WBO2 AFR results
► hook up to 4 external inputs (such as, oil pressure sensor, fuel pressure sensor, oil temperature, AEM EGT, second WBO2)
► allow you to datalog ECU results via secondary serial port
► allows you to datalog new items such as: turbo boost pressure/vacuum pressure, WBO2 results, Ext1-Ext4 sensors (such as Fuel pressure, Oil pressure, etc.), boost duty cycle
► function as an electronic boost controller with many advance features
► reduce boost pressure if knock is detected (user adjustable)
► run at wastegate boost pressure if engine is still cold (to protect engine)
► run lower boost pressure if your alchy/water injection fluid is low
► most cars experience a boost drop off at higher rpm, this allows you to add more duty cycle to compensate as RPMs increase
► cheat turbo spoolup and temporarily run 100% duty cycle for faster turbo spoolup using (PSI Start, PSI End features)
► allows boost duty cycle to be compensated either by Engine Load, or by Gear selection
► audible buzzer if you're knocking too much, or other alarm event (user definable)
► less gauge clutter as all information can be accessed through one LCD display
► thief will look into your car and find nothing easy to steal, as it will look OEM looking. :)

Which cars are supported?

All 1991-1996 Dodge Stealths, all 1991-1999 Mitsubishi 3000GTs, Mitsubishi GTOs.
DSM vehicles (Lasers/Talons/Eclipses) between 1990-1999.

SETUP CONFIG

To enter configuration menu, press and hold down on knob and then power up the device. After a few seconds you will see a copyright message displayed on the screen, you can now let go. It will also display software revision number of the firmware before displaying this first configuration menu.

Boost Sensor =
►None, no sensor. If you break your sensor, use this option so you may continue using your LCDBC device in limp mode.

►Internal 4250GP - Uses internal pressure sensor 0.0psi to 36.3psi, vacuum is not measured. Found on older LCDBC units.

►GM 3 bar sensor -Uses external 3 BAR GM pressure sensor (vacuum to 32psi).

►External 4250GP – uses external pressure sensor (0 to 36.3psi)

►OMNI 4 Bar – uses external pressure sensor.

►EVO 3.25 Bar -uses external pressure sensor.

►Greddy 4 Bar -Uses external 4 BAR greddy pressure sensor (vacuum to 43.5psi).
Tested to work well with the original Greddy pressures sensor, and black plastic clone version too.

The silver metal clone version does not work well, and not recommended, see picture below.

►4.5 volts sensor = 3 Bar, external pressure sensor. These sensor are commonly used on AEM EMS.

►4.5 volts sensor = 3.5 Bar, external pressure sensor. These sensor are commonly used on AEM EMS.
►4.5 volts sensor = 5.0 Bar, external pressure sensor. These sensor are commonly used on AEM EMS.
►Internal 4250AP (vacuum to 22psi) – current default sensor on new LCDBC units.
►External 4250AP (vacuum to 22psi).

Calibrate boost sensor to 0 psi.
Engine must be off.
Some pressure sensors take atmospheric pressure into the reading, so this will adjust your current reading to zero.

Screen Refresh = xx
Screen Refresh delay, if this number is too low, your eyes won't be able to read the data before it changes once again.
During the winter months you might want to increase this number because LCD screens are sluggish in the cold.

Contrast = 50
Adjusts the contrast display, low value=darker, high value=lighter.
If the display flickers, the contrast value is set too high, go to a lower number.

R255 G255 B255
Custom LED color
Adjust color intensity for each color LED, Red, Green, and Blue.

LCD Boostcontroller available colors.

R255 G0 B0
R255 G41 B0
R255 G255 B0
R0 G255 B0
R0 G255 B255
R0 G0 B255
R0 G255 B255
R255 G0 B130
R255 G0 B64
R255 G255 B255

Push to toggle color.
Sets the power on default color: Red, Green, Blue, Purple, Cyan, Yellow, White, None, or Custom.

Aux input = latch.
If the auxiliary input receives a ground signal, it will remain triggered until
the device is powered off. Example usage: Water/Alchy injection fluid level indicates low fluid or
empty, the Aux will remain triggered and Aux Duty Cycle can reduce boost to preset safe level.

Aux input= normal.
When auxiliary input receives a ground signal, it only stays triggered
while the ground signal is present. Example usage: Toggle switch that selects low/high boost. Low
boost could be used for Valet mode.

Car type = 3/S
3/S for Mitsubishi 3000GT / GTO / Dodge Stealth cars.

Car type = DSM
DSM for Talons, Eclipse, Lasers.

98/99 3000GT = Yes / No
LCDBC will use different requesting codes to display rear fuel trims. Vehicle speed information is only available on 98/99
ECUs, so this will unlock hidden menus inside the LCDBC that pertain to it.

Chrome ECU = Yes / No
Some commands are different for Chrome, be sure to select Yes
if you have chrome firmware installed on your flashable ECU.

ECU Type = OBD1
1991-1993 3/S vehicle, or 1990 – 1994 DSM.

ECU Type = MUT
94-95,98-99 North American 3/S, 94-99 Euro/Japan 3/S, or 1997-99 DSM.

ECU Type = MUToverOBD2
96-97 North American 3/S, or 95-96 DSM.

ECU Clock=100%
For most users this should remain at 100% .
If your ECU crystal has been replaced with a faster crystal, then make your correction here.

Knock Alert > xx.
If knock exceeds this threshold, it will warn the driver with a flashing screen, and audio alert.
Audible alert will only sound during knock event, but the knock message will remain for a few seconds.
To avoid a possible false knock event, two consecutive knock events must occur before it is triggered.

Coolant Alert > xxx.
If coolant temperature exceeds this threshold, it will warn the driver with a flashing screen, and
audio alert will sound. Handy for front mount intercooler users that suffer from overheating.

Cold Engine < Off (xxx)
In an effort to protect your engine, you can limit boost to wastegate pressure until the engine has
fully warmed up.

Datalog = Off
Dataloging is turned off, and second serial port is not used.

Datalog = PassThru *(recommended)*
LCDBC will simulate an OBD1 ECU so PC programs such as Evoscan and Hand Held Halo (HHH)
can communicate with the LCDBC. Be sure to use a FTDI chipset USB-to-serial adapter.

Datalog = Text Mode1
Serial datalog stream at 57600 baud that prints out Time Stamp, Boost, WBO2, Knock, RPM.
Use a free program such as CoolTerm to capture results and view results on Excel.

Datalog = Text Mode2
Serial datalog stream at 57600 baud that prints out Time Stamp, Boost, WBO2, Knock, RPM, EngineLoad.

Datalog = Text Mode3
Serial datalog stream at 57600 baud that prints out Time Stamp, Boost, WBO2, Knock, RPM, EngineLoad, Timing.

PassThru = 1953 baud
Configures passthru for OBD1 datalog speed. For use with TMO software, MMCd, Pocketlogger.

PassThru = 57600 baud *(recommended)*
Configures passthru for 57600 for HHH, Evoscan, MMCd.

PassThru=15625 baud
Configures passthru for 15625 MUT speed, for Evoscan.

Test solenoid
Activates boost solenoid at 50% duty cycle for 2 seconds.
Handy if you suspect your solenoid is not functioning.

Test Buzzer
Activates audio buzzer for 1 second.

Audio Buzzer = On
Allows device to use audio buzzer to get driver's attention.

Audio Buzzer = Off
Turns off audio buzzer completely.

ECU Cable type =
Normal OBD1 (standard cable),
Enhanced OBD1 (avoids ABS light from coming on),
Normal OBD2/MUT (standard cable),
Enhanced OBD2/MUT (avoids ABS light from coming on, OBD2 plug is 90degrees)

Config WBO2 #1

WBO2 input = EGRT.
Use this if you have your WBO2 wire fed into an unused Exhaust Gas Recirculation Temperature input on your ECU.
Dataloging will be faster if this is moved directly to the WBO2 input on the device.

WBO2 input = wire
Use this if your WBO2 wire is wired directly to the device (preferred method).

WBO2 input =none
If you have no WBO2 at all, set this to none and the main screen will switch to NBO2 (narrow band O2) and display the front O2 sensor voltage.

WBO2 low = xx
Set the lowest AFR value that your wideband reads (at 0 volts).

WBO2 high= xx
Set the highest AFR value that your wideband reads (at 5 volts)

WBO2 factor = 1.00
Multiplies the WBO2 wire by this value . In case of weak signal use this.

WBO2 offset = 0.0
Adds a small correction value to your WBO2 results.

WBO2 units =
AFR or Lambda

Config WBO2 #2

WBO2 input = Ext1, Ext2, Ext3, Ext4
Use Allow you to use one of the extra ports to hook up a second WBO2.

WBO2 input =none
If you have no second WBO2 at all, set this to none.

WBO2 low = xx
Set the lowest AFR value that your wideband reads (at 0 volts).

WBO2 high= xx
Set the highest AFR value that your wideband reads (at 5 volts)

WBO2 factor = 1.00
Multiplies the WBO2 wire by this value . In case of weak signal use this.

WBO2 offset = 0.0
Adds a small correction value to your WBO2 results.

Extra Sensor 1 =
None (no extra sensors wired in),
Oil Pressure 0-150psi (4.5 volt type),
AEM EGT gauge,
Fuel pressure 0-100psi (4.5 volt type),
Oil pressure 0-100psi (4.5 volt type),
WBO2 #2 (Second WBO2).
This is where extra sensors are plugged into the LCDBC and let the LCDBC know what is attached.

Extra Sensors 2, 3, and 4 are similar to Extra Sensor 1, no need to repeat them again.

Ext Sensor 1 alarm =
not available (if Extra Sensor is not defined earlier),
alarm is off (no alerts are given),
if Oil pressure < XXX alert,
if AEM EGT > XXX alert,
if Fuel pressure < XXX alert.

Ext Sensor 2, 3, and 4 alarms are similar to Ext Sensor 1 alarm, no need to repeat them again.

Units = Imperial temperature in degrees Fahrenheit and boost in PSI.
Units = Metric temperature in degrees Celsius and boost in BAR.

Tune Monitoring = On / Off.
Active tune monitoring will alert you if your engine is experiencing significant knock during turbo boost and detects a lean condition. The RPM, Knock severity, WBO2 reading, and turbo boost pressure event is recorded for your review – this information is useful to someone who is tuning their car, or needs to be made aware of the seasonal tune drift that occurs on some piggyback fuel controllers.

Push to exit config menu
Quits the config menu and starts the LCDBC unit.

Boost controller Menus

When powering up OBD1 users will jump directly to the default screen as there's no handshake needed when communicating to the ECU. For MUT or MUToverOBD2 users, a handshake is required before communication to the ECU, the user doesn't have to do anything, as this is done automatically. A two second handshake will take place, and then transfer over to the main screen.
The default main screen is shown below:

14.7   0.0   0
WBO2 PSI KNOCK

First value shows the wideband O2 AFR. The second value is the pressure sensor in PSI. The third value is knock sum reported from the ECU.
Pressing down on the knob quickly will dim the screen (good for night time driving), pressing it again will brighten the screen. This function only works on the main screen.
Pressing down on the knob for 1 second or more will change the color. This is handy so you don't have to go through the config menu. To make this color permanent you will need to go to config menu. Powering down the device will lose this temporary color change.
To navigate to other screens use the rotary knob. Turning the rotary knob clockwise will display ECU related screens and turning counter-clockwise will show boost controller menus. To edit information, you must push down on the knob and the screen characters will go into capital characters to let you know that you're in edit mode. To exit edit mode, press down on the knob again or follow the instructions on the screen.

xx.x   PSI Peak
xx Knock Peak

Displays highest recorded boost pressure and knock values. To the right you may notice a small graph. It's a small datalog of PSI vs RPMs. The PSI scales from 1 to 17psi. Because the display is not a graphics display but a character display, the scale for 9psi will be absent. You can easily see your boost response curve. By pressing down on the knob, you reset the values.

(Boost) Dutycycle = xx.x

This works just like many electronic boost controllers out there. Small duty cycle numbers gives you low boost, large duty cycle numbers gives you high boost. Start off with small numbers and gradually work your way up. Examples: 30% duty cycle=10 PSI, 50.0% = 18 PSI on my 15G turbos.

Dutycycle offset (adjust boost curve)

Allows you to add or subtract duty cycle based on RPM, starting at 4000 RPMs, 4500 RPMs, etc. Add duty cycle if you have wastegate creep problem, subtract duty cycle if you have boost creep problem. The picture below shows an example of wastegate creep problem with boost falling off at higher RPMs (dotted line). By introducing extra duty cycle, the boost curve becomes more consistent (solid line).

Here's the values I used on my car:
4000 RPM + 0.0%,
4500 RPM + 0.6%,
5000 RPM + 1.3%,
5500 RPM + 2.0%,
6000 RPM + 2.6%,
6500 RPM + 3.3%,
7000 RPM + 4.0%,
7500 RPM + 4.0%,
8000 RPM + 4.0%.

-DC% / Knock = x.xx

If we get engine knock, this will reduce our duty cycle numbers and lower our boost pressure. The greater amount of knock, the more duty cycle is reduced. Note, on 3/S vehicles, the maximum amount of knock that can be read is 28. On DSM vehicles the maximum amount of knock is 43.

For example, if a value of -0.50 ratio is programmed in, and let's say we had a knock value of 20, multiplied we would have -10.0% duty cycle reduction (or about 5psi drop on my car). When knock is gone, the original duty cycle is restored. As boost ramps up again, you may experience knock again. It is quite possible for the driver to experience a bouncy boost curve if the driver continues to drive in this manner. If you do not want any boost reduction when knock occurs, set the ratio value to 0.00.

Alarm Boost=xx.x PSI

When boost reaches this amount or more, the boost solenoid will shut down for 1 second, reducing turbo boost pressure to wastegate levels. An overboost warning message along with peak offending boost pressure will be displayed for 5 seconds. An audible alert will only be heard if boost is above alarm boost preset. Should the driver ignore the warnings, and because the boost solenoid is only shut down for 1 second, it is quite possible for the driver to experience a bouncy boost (high boost, low boost, high boost, low boost).

Dutycycle temp

This compensation allows you to add or subtract duty cycle based on temperature readings from the MAF. All boost solenoid are slightly influence by temperature. Instead of the driver compensating for weather changes, it would make sense for this to be automatic. Here's the calculated values I have setup on mine, 20F -3%, 50F -1.5%, 80F 0%, 110F +1.5%, 140F +3%.

Aux Duty =xx.x

When the auxiliary input is triggered by a ground signal, the aux duty cycle is added to the overall duty cycle. So for example, if Aux Duty is set to -10.0 and duty cycle=50.0 the result would be 50-10=40. This feature can be used to run a high/low boost setting with a switch, or low boost for valet mode. Another use is when water/alchy is low on fluid, is for the boost controller to automatically switch to low boost mode. A latching option should be also set in the config menu for boost to stay in low boost mode until device is powered off.

PSI Start=xx.x

Default set to 1.0 PSI. This parameter allows your turbocharger(s) to spool up more quickly by delaying the opening of the wastegate. By keeping the wastegate completely closed the turbocharger reaches your desired boost pressure sooner. Having an on/off approach as some electronic boost controllers use can easily create boost spikes, so we use two parameters to ramp in this change and the boost spike problem is gone. "PSI Start" is where the ramp begins, and "PSI End" is where the ramp change is completed. For a more aggressive spool up increase the PSI Start parameter.

PSI End=xx.x

Default set to 2.0 PSI. The stock wastegate spring is 6psi on the 3S vehicles, and with a default value of 2.0 PSI any spool up assistance is effectively off. To turn on spoolup assistance, this value must be increased past 6 psi to realize any spool up gain. For example, if you want 18psi as your target boost value, I would suggest using "PSI END=16.0". This means anything below 16PSI is using a higher duty cycle temporarily to assist in spool up, however when it reaches past 16PSI it is using your normal target duty cycle numbers. If you want to be more aggressive try increasing the "PSI Start" value too.

Load vs Dutycycle

Allows the user to adjust boost dutycycle in different increments of Engine Load.

Boost vs Gears

This menu is only available for 98-99 ECU equipped 3/S cars.

Gears Enabled = Off/On

If enabled, this tells the LCDBC will allow adjustment of boost duty cycle per gear.

Tranny = 6spd

User can select between 5 or 6 speed AWD transmission.

Tire Width=xxx

Tire Width (ie 245mm) is used in calculating tire circumference.

Tire Profile = xx

Tire Profile (ie 40 is used in calculating tire circumference.

Tire Rim = xx

Tire Rim (ie 18") is used in calculating tire circumference.

Gear 1 Duty cycle% = xx.x

Adjust boost duty cycle based on Gear 1.

Gear 2 Duty cycle% = xx.x

Adjust boost duty cycle based on Gear 2.

Gear 3 Duty cycle% = xx.x

Adjust boost duty cycle based on Gear 3.

Gear 4 Duty cycle% = xx.x

Adjust boost duty cycle based on Gear 4.

Gear 5 Duty cycle% = xx.x

Adjust boost duty cycle based on Gear 5.

Gear 6 Duty cycle% = xx.x

Adjust boost duty cycle based on Gear 6.

View tuner msg

This particular menu doesn't fit neither ECU or Boost controller description, it had to go somewhere. This device keeps a close eye on knock, boost, WBO2, RPMs and compares it against a chart. If the tune is deemed unsafe (due to weather changes, or poor tuning), it will alert the driver of the offending values (5 second warning display). These values are temporarily stored for the driver to view when he/she has time to view it by displaying the message again in this menu. Powering off the device erases the stored values, or new offending values will overwrite this.

ECU INFORMATION

Extra Sensor 1 xxx
Extra Sensor 2 xxx

The "Extra Sensor" will be replaced with "Oil Pressure", "Fuel Pressure", "EGT", etc. depending on what was configured for Ext1, Ext2. If none are configured, this menu will be not be visible.

Extra Sensor 3 xxx
Extra Sensor 4 xxx

The "Extra Sensor" will be replaced with "Oil Pressure", "Fuel Pressure", "EGT", etc. depending on what was configured for Ext3, Ext4. If none are configured, this menu will be not be visible.

100   115   98   81
TRIM LOW MED HIG

TRIM = Instant O2 feedback trim. Anything above 100 is adding fuel, anything below 100 is subtracting fuel.
LOW = Low Hz fuel trim
MED = Medium Hz fuel trim
HIG = High Hz fuel trim
NOTE: For MUT users, if you press down on the knob it will switch from the default front O2 trims to the rear O2 trims.

Throttle 13.1 %
Airflow xx Hz

Throttle displays TPS sensor reading from 0 to 100%. Generally our cars will show more than 10% throttle at idle, anything below generally sets off bad TPS sensor code.

Airflow reported to the ECU. If you have a fuel controller that intercepts this signal from the MAF, you will see the change reflected here.

Pressing the knob quickly will toggle colors more quickly.

Coolant 200F
Air intake 80F

Shows engine coolant temperature and air intake temperature.

Timing xx
Engine RPMs xxxx

Shows engine timing number and engine RPMs.

Inj Pulse 4.1 ms
Injector DC 5 %

Inj Pulse = fuel injector pulse width in milliseconds.
Injector DC = Injector Duty cycle from 0 – 100%.

Front O2 0.96 V
Rear O2 0.94 V

Front and rear O2 sensor voltages from 0 to 1.00 Volts

Battery 13.1 V
Barometer 0.97 BAR

Battery voltage at the ECU, not necessarily the battery voltage at the battery because of voltage losses of wire, etc. Barometer reading from MAF.

Idle Switch Off
Throttle xx.x %

The idle switch is located on the throttle body. At idle with the foot off the throttle the Idle Switch should read On. The throttle % lets you know at which point it switches from Off to On.

IdleSC xxx steps
RPMS xx Timing

Idle Stepper Controller (ISC), range 0 to 255. If the ISC step value is 0 or 255, this indicates the ISC is unable to lower or raise idle any further.

Air Volume xxx
Airflow/Rev xxx

Air Volume is ECU calculated value based on MAF airflow, barometer pressure, and intake temperature.

Speed xxx
Gear x

This menu only available on 98-99 ECUs. Tells you the speed of the vehicle, and calculated gear the LCDBC thinks you're in based off of tire circumferences, known gear ratios and car speed.

Aux-input status

not triggered or triggered.

The Auxiliary input status can be verified by monitoring this menu. Auxiliary input can be used to automatically lower your turbo boost if your water/alchy fluid level is low, or if you have a switched to trigger higher or lower boost.

Active Faults

Push to Scan

This will display current CEL fault codes in english that were triggered recently. For 96 and newer cars, use "SCAN OBD2 codes".

Stored Faults

Push to Scan

This will display stored CEL fault codes in english. For 96 and newer cars, use "SCAN OBD2 codes".

Clear Faults

Push to clear

Clears all engine fault codes. For 96 and newer cars, use "SCAN OBD2 codes".

Scan OBD2 codes

Push to begin

For 96 and newer cars only, this will retrieve stored error codes. MUT mode is disabled during this time, and will operate in the slower OBD2 mode until the device is powered off.

Clear OBD2 codes
Push to erase

For 96 and newer cars only, this will clear stored error codes. MUT mode is disabled during this time, and will operate in the slower OBD2 mode until the device is powered off.

ECU Delay = 10

Introduces a communication delay between the LCDBC and the ECU. For most people this should be set to zero. Some 94+ cars have trouble staying connected at high engine RPM, or during aggressive throttle, then this is for you. By introducing a delay, the ECU behavior is altered somewhat in a beneficial way. With the LCDBC constantly requesting information from the ECU, the ECU self imposes a short delay before responding. During this delay, noise can be introduced and mistakenly be read as bad data. However, if the LCDBC imposes this delay on itself, the ECU will almost instantly respond with the correct data making it harder for noise to interfere.

ECU Diagnostic tests

Fuel pump test
Push to begin

With your engine not running, it is easy to listen to the fuel pump get activated for a few seconds and then automatically power off.

Purge Solenoid test
Push to begin

Powers on the purge solenoid momentarily.

EGR Solenoid test
Push to begin

Only useful on California based cars that are equipped with EGR solenoid. Powers on solenoid momentarily.

Wastegate solenoid test
Push to begin

Turbocharger wastegate solenoid is momentarily powered on. Not to be confused with the LCDBC's own boost solenoid.

MVIC motor test
Push to begin

Powers on the MVIC motor temporarily.

Fuel Pressure solenoid test
Push to begin

Powers on Fuel Pressure solenoid momentarily.

Test injector 1
Push to begin

With your engine running, temporarily disable (turn off) fuel injector 1. If your rpm did not go down, this indicates your injector is clogged or has a problem.

Test injector 2
Push to begin

With your engine running, temporarily disable (turn off) fuel injector 2. If your rpm did not go down, this indicates your injector is clogged or has a problem.

Test injector 3
Push to begin

With your engine running, temporarily disable (turn off) fuel injector 3. If your rpm did not go down, this indicates your injector is clogged or has a problem.

Test injector 4
Push to begin

With your engine running, temporarily disable (turn off) fuel injector 4. If your rpm did not go down, this indicates your injector is clogged or has a problem.

Test injector 5
Push to begin

With your engine running, temporarily disable (turn off) fuel injector 5. If your rpm did not go down, this indicates your injector is clogged or has a problem.

Test injector 6
Push to begin

With your engine running, temporarily disable (turn off) fuel injector 6. If your rpm did not go down, this indicates your injector is clogged or has a problem.

Idle: SAS mode
Push to begin

Put your car into Speed Adjustment Screw mode. This turns off the ISC motor so you can adjust your base idle set screw (BISS) without the ISC interfering with your efforts.

EXTERNAL DATALOGING CONFIG

The second serial port on the LCDBC simulates an OBD1 ECU, so you can use software such as Hand Held Halo OBD1 edition, or Evoscan, etc. This includes all 3/S year models, the LCDBC will convert OBD2 and MUT into OBD1 format. I recommend that you purchase an FTDI chipset USB-to-serial adapter because this works with all PC dataloging software, and supports uncommon baud rates . It's recommended that you leave the LCDBC at the default configuration passthru speed of 57600 baud and re-configure HHH or Evoscan for 57600 baud. The table below shows new request codes (or Sensor ID) that you can now use in your favourite dataloging software.

Description	Sensor ID	Lower limit	Upper limit	Formula
Boost in PSI	0x08	-14.7psi	36.3psi	($pid*2-147)/10
WBO2 in AFR	0x09			$pid/10
Boost duty cycle%	0x20	0 byte = 0 %	255 byte = 100%	$pid/2.55
Ext 1 sensor Volts	0x18	0 byte = 0 volts	255 byte = 5 volts	$pid*5/255
Ext 2 sensor Volts	0x19	0 byte = 0 volts	255 byte = 5 volts	$pid*5/255
Ext 3 sensor Volts	0x22	0 byte = 0 volts	255 byte = 5 volts	$pid*5/255
Ext 4 sensor Volts	0x23	0 byte = 0 volts	255 byte = 5 volts	$pid*5/255

Recommended configuration for Hand Held Halo OBD1 version:

In the pull down menu, choose User Definable Sensors and create these two new entries:

Now edit your current dataloging profile and add the following:

Example datalog with the new Boost and WBO2 feature:

Recommended changes for Evoscan software:

Choose OpenPort 1.3x (FTDI/12pin/SSM)
Select ECU: Chrome or EFI.
Choose MMC (1G/12pin)
Change Baud Rate to 57600.

Dataloging TIPS: Make sure the LCDBC has established a connection to your ECU before attempting to communicate with your dataloging software. Best to wait a few seconds before attempting. If you do this incorrectly, turn off the PC dataloging software, restart the LCDBC and then turn on the PC software.

ACTIVE TUNE MONITORING

Between season changes, our tunes may drift so this EBC is monitoring for this. If knock of 5 or more is detected and the WBO2 AFR is considered lean for the given boost pressure, it will alert the driver with a message of " **Tune is lean**" with flashing red lights. It will then display the following screen

xx KNOCK, xx.x PSI,
x.xx AFR, xxxx RPMS

OVERBOOST MESSAGE

Should you accidentally exceed your Alarm Boost setting, you will receive an overboost message flashing in red along with the peak overboost in PSI. The solenoid will shut down for 5 seconds dropping your boost down to wastegate boost pressure.

Configuring various WBO2s

PLX M300
WBO2 LOW = 10.0 afr
WBO2 HIGH = 20.0 afr

AEM Part Number 30-2310
WBO2 LOW = 7.3 afr
WBO2 HIGH = 19.2 afr

Innovative LC1
WBO2 LOW = 7.3 afr
WBO2 HIGH = 22.4
Use brown wire.
Note: LC1 allows AFR vs voltage custom programming.

Configuring LCDBC for your car.

- For OBD1 ECU vehicles (91-93 3/S vehicles, or 90-94 DSM vehicles):
- ECU type = OBD1
- ECU cable type = enhanced OBD1

- If your 3/S car is equipped with a 98-99 flashable ECU or Chrome ECU:
- ECU type = MUT
- ECU cable type = enhanced OBD2/MUT
- 98/99 3000GT = yes
- Chrome ECU = yes   (use only if you have chrome firmware on your ECU)

- For MUT ECU vehicles (North America 94-95 {aka hybrid ECU}, or Euro/Japan 94-99 3/S vehicles, or 97+ DSM vehicles):
- ECU type = MUT
- ECU cable type = enhanced OBD2/MUT

- For OBD2 ECU vehicles (96-97 3/S vehicles, or 95-96 DSM vehicles):
- ECU type = MUTOBD (MUT over OBD2)
- ECU cable type = enhanced OBD2/MUT

- For 98-99 North American 3/S vehicles or Chrome ECUs:
- ECU type = MUT
- ECU cable type = enhanced OBD2/MUT
- 98/99 3000GT = yes
- Chrome ECU = yes   (use only if you have chrome firmware on your ECU)

SOURCING BOOST SOLENOIDS

Go on www.ebay.com and search for "*AEM boost solenoid*", or "*MAC boost solenoid*". I found one vendor selling them for $25+ $5 shipping that included brass fittings. These AEM boost solenoids are manufactured by Mac
valves (part number 35A-AAA-DDBA-1BA). You can also purchase these boost solenoid directly from www.macvalves.com for $17.50. Prices as of 2010.

FLASHING NEW SOFTWARE

1. Insert key into ignition but do not turn key yet.
2. On the PC, run ArduinoUploader.exe and change microprocessor to m1284, and also adjust the COM port number if necessary.
3. Click the Browse button to select the FIRMWARE.hex file.
4. When you are ready, press the UPLOAD button and wait for a black box screen to appear, now quickly (within 2 seconds) turn your ignition key on to power up the boost controller.
5. If you did this correctly, the ArduinoUploader program is flashing an update with some activity displayed in the black screen box. Total flash time will be approximately 60 seconds.
The LCDBC screen will be blank during a flash update.

Troubleshooting:
6. If you messed up, wait for the ArduinoUploader program to timeout (approx 20 seconds or less). Turn the ignition key off. Repeat step 4.

TIPS / FAQ.

1. Can I use my Tactrix 2.0 or Tactrix 1.3 USB cable?
No it won't work because we need a DB9 serial connector to hook up to the LCDBC.
2. Can my older v2.xx LCDBC be upgraded to the latest version?
Yes, contact me to purchase a replacement 20Mhz microprocessor, so you can run firmware v3.xx.
3. Can my older LCDBC be hacked to support EXT1, EXT2, EXT3, or EXT4 sensors?
Yes, send me a picture of your LCDBC circuit board, and I'll tell you where to solder new wire.

DISCLAIMER

Increased turbo boost pressure could harm your engine and/or turbocharger, the customer assumes full responsibility for any damages that may occur.