07-14-2013, 11:10 PM #1

crownaviation o

Great guy will be missed



Join Date Location Posts

Oct 2012 Wichita KS 968

Remote Tuning With Lito

DO NOT OVER-THINK THIS!! Human nature tends to do this to us when we are in unfamiliar territory. After reading this thread you should be able to setup your car for datalogging. You do NOT need to be a computer geek to get thru the process.

Regardless of your desire to Dyno or remote tune, I still recommend using a Wideband to monitor AFR. If you have a handheld tuner, the firewire cable is cheap and LiveLink is free. I will discuss that in this thread. This will give you the ability to monitor your car and more important what the engine is doing.

With that in mind, if you choose to setup a Wideband and livelink, you can install these items and learn the system well before you install the blower. Neat stuff indeed!

Basic terms used: NOTE: You do not need to be well versed in these terms to setup for remote tuning. I just include them to save you some time if you hear them in this thread. Some definitions are basic just to simplify. Not meant for the engineer that has to troubleshoot or design this stuff IoI. So, kid terms work well for this purpose.

AFR. Air to Fuel ratio. It is important this number is correct or performance could suffer or engine damage could result

Bung. Small piece of metal used to provide a threaded surface in the exhaust. A hole is cut into the exhaust and the bung is welded in. Now you can screw a sensor in to the bung

Lean Air to Fuel ratio that is out of balance. Not enough fuel is being delivered. Typically a very bad thing and can cause/lead to catastrophic engine damage.

Rich Air to Fuel ratio that is out of balance with excessive fuel. Typically acceptable to a certain level **Detonation** A condition where the fuel/air charge explodes inside the cylinder causing excessive engine damage. Lean fuel condition and incorrect spark timing can easily contribute to this condition. No piston (not even the best forged pistons) can sustain this condition. **CEL**. Check engine light. A engine or power-train

CEL. Check engine light. A engine or power-train parameter is out of designed operating spec and a DTC has been recorded. See DTC blow

Closed loop. This is when the computer is actively interacting with the system. Your car after startup and not full throttle will be in closed loop and "tuning" the car constantly for optimal performance (within its design

capability).

Datalog. A recording of requested engine parameters used to monitor performance parameters. I use free SCT software called LiveLink 6.5 when using SCT handheld tuner.

DTC Generic term in automotive tech meaning "Diagnostic Technical Code" This code can be referenced to determine possible cause of a system not operating correctly. When something is out of whack a DTC is stored in the computer memory. Many times a DTC will trigger the check engine light.

FI. Forced Induction. Any device used to add large volumes of air to the engine basically so we can burn more fuel. More fuel.. more power

Firewire cable. This is what we use to connect the AFR signal from our wideband sensor to the datalog software. This will be hardwired into the car and will plug into the SCT tuner when datalogging

KAM. Keep Alive Memory. Your cars computer will "learn". It makes fine adjustments as you drive and records them for optimal performance when in "closed loop".

Open loop. This is when the car is a WOT (see below). When we use a blower on this normally N/A car we will take the computer adjustment ability out of the system at full throttle.

SJB Smart Junction Box Located in the passenger kick panel. Good source of switched power for gauges etc. **WB**. Abbreviation often used for Wideband Sensor. This sensor is a extremely complex unit used to measure AFR (air/fuel ratio). Similar theory to a oxygen sensor but far more accurate with a wider range of measurement. **WOT**. Wide Open Throttle. When we go into WOT, the computer is taken to open loop. It will no longer make adjustments to the tune. This is sensed by two separate signals coming from the Throttle Position Sensor. One is a rising voltage and the other is a falling voltage for a cross reference to commanded position.

As many of you know I am partial to remote tuning for street cars. Either way, our cars need to be tuned for the addition of the supercharger. Options are a custom dyno tune or a custom remote tune.

Like most things, both methods have Pro's and Con's. NEITHER will be good if your tuner does not know what they are doing or familiar with the S197. In either case I would recommend asking your tuner how much experience he/she has with POSITIVE displacement blowers on the S197. How many have they done? How long have they been tuning the S197 so on.. Your installation must also be correct and your components in operational condition (obviously).

I now use Lito exclusively for my car and my customers cars

Pro's Dyno...

-you do not have to do anything but wait for them to finish.

- -you will have some number saying how much HP and Torque you made.. so what..
- -you will have someone there in person to help you if you have geeked something up on your install

Con's Dyno

- -you may have to travel long distance to get to a GOOD tuner and dyno.
- -If you have issues during tuning.. hope that dyno is close to home or it is a very simple fix.
- -expensive.. not shops fault. Dyno equipment is NOT cheap
- -you will know and understand little about the process or how your car is performing in the future.
- -difficult to schedule time
- -future upgrades may require a new tune (CAI etc).. so there you go again on your journey to the dyno. Not convenient at all.
- -drive-ability is normally not as good as dyno only "simulates" driving conditions
- -Many tuners do not just GIVE you the datalogs. If they do they may not give you all of them. You are going off faith here.. and hope they know what they are doing.

Pro's Remote tuning

- -You will have a better understanding of how your car is performing
- -You WILL have instruments to help you monitor the health of the system
- -CHFAF
- -If you have any problems you are not stuck on a dyno hours away from home.. no trailer needed here
- -scheduling is much easier
- -future changes are normally free (like change CAI)

Con's Remote tuning

- -you will have to purchase some basic equipment (yes but you will still be in this initially for about the same as a 1 time dyno. When done there is value of the equipment you now have)
- -you will have to do some wiring
- -you will have to have a shop or someone weld a bung into the exhaust (cheap about \$20)
- -you will not have a pretty sheet of paper with HP/Torque numbers but we can just about tell you what your numbers are going to be anyway Iol. So... if you HAVE to measure your dick.. go to the dyno.

<u>To setup for remote tuning you will need the</u> following

- -Wideband sensor (normally comes with bung, gauge and harness)
- -SCT handheld tuner (XP3 or X3 recommended). This is the SCT model 3000. The XP versions are the newer "enhanced" models and generally better.
- -Laptop computer
- -Add-a-circuit (recommended) and some butt spices,

ground lugs, electrical tape and additional 18-14 gauge wire.

-Access to a good tuner that provides this service (most do now). Do NOT run a "canned" tune only based off "educated guess"

Ok, so to start collecting stuff.

Wideband AFR

I personally use a Autometer phantom WB with a few bells and whistles. Cost is much higher and not really any better than the other units out there. I do recommend the AEM 30-4100. This unit is a deal. It comes with interchangeable face and bezel, wideband sensor, bung for exhaust and **most** of the wiring stuff you need. Super simple to install and change the color of the bezel and face if you wish. This unit is easy to wire as the backlight is controlled via a photo sensor (auto dim). You **WILL** need some electrical butt splices and ground lugs to install this unit as they are not included. I have heard of people finding these for under \$150 shipped new.

http://www.amazon.com/AEM-30-4100-UE.../dp/B000CFQM4G

Add-a-circuit

This will help you wire the WB gauge with little mess and be on a switched circuit. Can be found cheap at local parts supply stores like O'reillys. Make sure you get one for a "mini-fuse"

http://www.amazon.com/Littelfuse-FHA.../dp/B0002BGELQ

Gauge pod

I have used several options for the S197 from dash mounted pods, pillar pods and vent pods.

-For a single gauge (no boost or other gauges) the vent pod gauges are actually real simple to install and much better than I initially expected.

http://www.americanmuscle.com/roush-...epod-0509.html



-The dash pods are a PITA to install, especially if you do not want to drill into your dash to run wires. Not happy with the Autometer Dash pod either. Poor quality and they tend to fit poorly.

-The pillar pod impressed me. I did not feel I lost any vision as I had expected. This is my preference. Furthermore, SOS (Speed of Sound) is by FAR the best quality I have seen but they are expensive. Pillar pods come in 1, 2 or three gauge options. The side of the case (plastic) on the AEM gauges may need to be filed down some to slide into the pod on the SOS. The pop rivets on the inside of the pods potrude slightly and may cause a fitment issue with the AEM gauge. No big deal and still the way I would do it if asked.

http://www.speedofsoundllc.com/2005-upMustangPod.html

Last edited by Department Of Boost; 06-24-2015 at 11:39 AM.

COMPLETE DOB KIT WITH UPGRADES!!!----->
>>>http://www.departmentofboost.com/vbu...ete-dob-kit!!!

HIGH SPEED..LOW DRAG 😎

07-14-2013, 11:56 PM

#2

crownaviation o

Great guy will be missed



Join Date Oct 2012

Firewire cable

I prefer the VMP firewire cable. It has a wiring diagram so we have easy access to the correct color codes of wire. More important, they use MUCH larger wire and I have not had signal problems with this cable. Other IEEE-1394 cables may be used but don't complain to me if it does not work Iol.. DO.. Make sure you complain to VMP about the shipping and "handling" fee as that is almost as much as the damn cable. The cable is like \$16.99 and shipping is about that much more.. Anyway, after complaining I suppose it is the cable that has given me

Location Posts Wichita KS 968 the best results and I now will NOT install any other cable.

http://vmptuning.com/cables-and-accessories/6pin/

Handheld tuner

When choosing a handheld, consult your tuner first.

When you buy a SCT or similar handheld USED.. you NEED TO MAKE SURE the device is "unlocked" or "unmarried" to the previous vehicle. To use the handheld the manufacture locks itself to the vehicle computer. This is so you do not buy ONE and use it on all you buddies cars. To "unlock" the current vehice you will need to "return to stock" with the OEM stock tune. SCT allows their product to be programmed on up to 5 separate vehicles before they require you to send it to them for additional \$\$\$\$.

Additionally, most tuners lock their tune to that specific handheld so you don't do the same thing to them and share your tune with others. This will likely prevent you from making certain changes in your tune without them. It is like a "write protected" word document for example. I do not blame them as they would quickly work themselves out of business and yes it cost money for them to be a SCT dealer not to mention the training/equipment they need.

I recommend using the SCT XP. This is still the SCT model 3000 which is for our year mustangs. The XP is the newer "enhanced" X3 which can record more info faster and offers quicker updates and loading etc. The serial number of a XP will start with XPxxxxx instead of X3xxxxxxThis works well with livelink. Yes, SCT has had issues with glitches etc, but when it works it works well. Less problems with the newer XP. Typical problems with the SCT stuff are with firmware. It is important to do the system updates which I will cover later. I normally pay around \$200 shipped for a used model. Do NOT pay more for one with "custom" tunes loaded. they will not work on your setup anyway.

http://www.sctflash.com/products.php?PID=1

Now you have everything for the car

You will start installing your hardware. Lets start with the gauges. Once you have selected the WB of your choice you need to follow the directions for wiring the gauge. You will need a good switched power source for the WB. I choose the SJB if not using a stand alone fuse box like the painless wiring kit.

You are going to route the power wire from the gauge to the SJB. MAKE SURE YOU DISCONNECT THE BATTERY FIRST. You should also make sure you read the information provided by the gauge manufacturer. They will specify what fuse to use in their system (fuse and add-a-circuit not included) When routing the

wire pay attention to how you are going to route it with the pod in mind.

The SJB is located in the passenger foot-well behind the right side kick panel. Remove the plastic cover.

Now you will see another black cover protecting the SJB. There are two securing tabs on each side of the black cover. It can be a little fussy but it will come off.



Location "A" or "C" may be used. I prefer to use a "mini add-a-circuit" in either location,, typically I use "A"



Add-a-circuit. Note: I dremel out the cover and use a grommet but you decide what you want to do..



Now the power wire is in place, you will need to find a suitable ground location. I prefer to use the tabs behind the console kick panel. You have to remove the center console (2 screws under the console lid) and that comes out pretty easy. Once the console is out you can remove the kick panel to gain clean access to the tabs. I prefer this as it will later give me a nice place to ground the firewire which will remain in the car. When not in use you can cleanly slip it behind the kick panel and never know it is there

Here are a few pics of that.. it is simple. Mine is a auto. On a stick car then same deal only the boot is a little different but actually an easier process.

pics...

Leave the console out until you have finished wiring the VMP firewire and tested the components.

Now go ahead and start to wire up the Firewire cable.

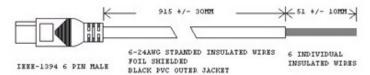
We will only actually use two of the wires from that cable. The remaining wires will be individually capped off.

SCT FIREWIRE ANALOG CABLE

IEEE-1394 (Firewire)

IEEE-1394 6 Pin Male Connector Pin Orientation

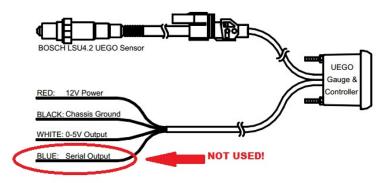




	PIN OUT	
Signal Name	IEEE 1394 6P/M	Cable
. 5	1	\A/l=:4=
+5 Ext	1	White
Gnd	2	Black
Analog 1	3	Orange
Analog 1 Gnd	4	Blue
Analog 2	5	Red
Analag 2 Gnd	6	Green

We ONLY use the ORANGE and BLUE wires from the VMP cable.

-The **ORANGE** wire will connect to your WB gauge (**ANALOG 1**) from the harness as specified. If using the AEM 30-4100 it will be connected to the WHITE AEM wire. -The **BLUE** wire on the **FIREWIRE CABLE** will go to a **SEPARATE** ground. Use the same grounding source as you used to ground the WB AFR gauge, just do not connect them on top of each other or the signal could experience issues (there is a whole writeup on that). I just drill two holes on the ground tab, 1 for the gauge, 1 for the firewire ground.



THIS IS FOR THE AEM 30-4100 ONLY!! Others will likely be different. Follow those directions as applicable. The BLUE wire on the AEM will NOT be used. Cap this off.

THE WHITE WIRE IS ANALOG 1. THIS WILL GO TO THE ORANGE FIREWIRE (IF USING VMP CABLE)

When you have the bung installed you will now route the WB harness thru the firewall to the sensor. BE CAREFUL the harness does not lay on anything that will create chaffing or on the exhaust system.

PLEASE NOTE: Some systems like the LC1 will need to be "calibrated" in free-air. meaning not in the exhaust. There will be instructions if your model requires this.

Here is a pic of a AEM harness and sensor. There are actually two harnesses for this unit. One plugs into the gauge and goes to the sensor. One plugs into the gauge and goes to the power source, ground and tuning equipment (firewire)



Last edited by crownaviation; 08-10-2013 at 08:14 PM.

COMPLETE DOB KIT WITH UPGRADES!!!----->>>http://www.departmentofboost.com/vbu...ete-dob-kit!!!

HIGH SPEED..LOW DRAG 😎

07-15-2013, 12:51 AM

#3

crownaviation o

Great guy will be missed

Now we need to have the bung installed

If you are not ready to do the wiring, you can have the bung welded in and have the shop install (screw in) a plug for now.

The bung should be welded in. If you need to go to a shop to have this done it will likely be around \$20-\$25 if you take them the bung. The bung should go in the **LEFT BANK** (drivers side exhaust). The sensor needs to be in



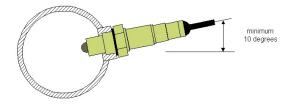
Join Date Location Posts Oct 2012 Wichita KS 968 a position just after the "collector". If using Headers, this is the portion of the header (away from the engine) that all the individual tubes come together and the exhaust is "mixed". **The sensor should be within 2-3" from the collector for accurate reading.** With some headers it is possible to mount the sensor in the actual header itself just prior to the flange. The "flange" is the part of that bolts the header to the rest of the exhaust downstream.

If using stock manifolds, fine. You will mount the sensor in the exhaust section just past the flange (again within 2-3" of the flange as the "collector portion of the manifold is right there anyway).

IF USING CATALYTIC CONVERTERS THE SENSOR MUST GO PRIOR TO THE CONVERTER IN THE EXHAUST STREAM.

Once you have determined the location.. now one more consideration. The WB sensors are delicate and internally heated (electrically). Most units have a delay before they warm and cycle. This is so hopefully any moisture that has potentially collected in the sensor can be blown out. To prevent this, most recommend mounting the sensor in the manner below when possible. This is most likely going to happen when mounted in a horizontal pipe configuration as found in Long Tube headers. The factory exhaust is a little different as they will be mounted in the down-tube section after the flange. Still try to have the sensor in a position where it screws in a downward position like in the pic below.

Make sure the shop understands this when welding the bung.



Once you have the firewire and WB installed you can now get ready for tuning and data logging

If you have a laptop with XP, windows 7,8 or Vista you

are good to go. I have had some driver issues using Vista but we can figure that out if necessary. I currently use Windows 7 and have no problems.

Not sure about equipment like MAC etc.. if using a mac you will need a windows emulator to use LiveLink.

Device updater

Ok.. to get started with the SCT stuff. First you will need to have the SCT device updater on your computer. Does not "have" to be on the laptop you use for datalogging but it is convenient. We will not only use this to update the SCT handheld but also use it to load custom tunes. Here is the link and what you look for

This link should take you to this page for if you have a SCT model 3000. You will fill in your serial number on the back of your handheld in this field.

http://www.sctflash.com/tsupdates.ph...0&GUD=1&GSER =1



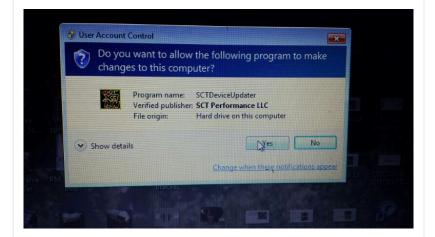
Now you will get this page.. click this link to download the device updater



Once you follow the instructions to install the updater you will have this icon on your desktop



Open the program by selecting the icon. Now you get this



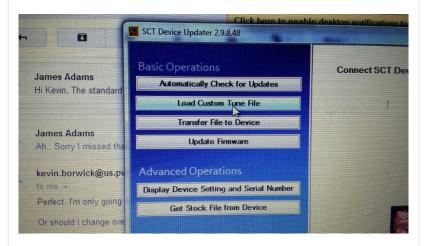
Now you are on the main page for the Device updater



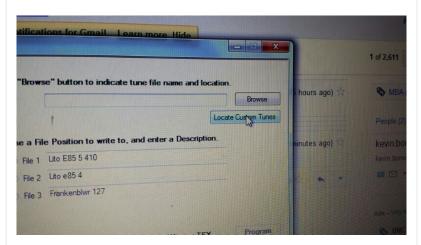
Next you need to plug your SCT into the USB port. The SCT will power up when you do this and you should have the default screen. To do this you need the cable supplied with the SCT. If you do not have one then a typical printer cable will work. The USB port will plug into the computer. Some USB ports will not work. When you have one that works you will see this



Now you are ready to load the custom tune from your tuner to the SCT. Select "Load custom tune"

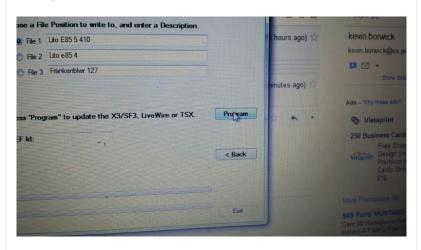


Now you get this page. You will "locate custom tunes". This will or should bring up the file your tuner emailed you. Once you download that file the software should be able to locate it (normally this will be a file ending in .cef). Select this and select the first location to place the tune. You can ultimately load and store up to 3 custom tunes on the SCT. To avoid confusion label it as Base tune 1.



Now you are ready to program the SCT. On the lower right hand corner there is a place to select "program device". You will see the top progress bar on the bottom of the page move as it transfers the file. When complete it will say "transfer complete". You

may now unplug the SCT from the laptop. You will be ready to load that tune in the car next.



Last edited by crownaviation; 08-06-2013 at 02:29 AM.

COMPLETE DOB KIT WITH UPGRADES!!!----->>>http://www.departmentofboost.com/vbu...ete-dob-kit!!!

HIGH SPEED..LOW DRAG 😎

07-15-2013, 05:46 AM

#4

crownaviation o

Great guy will be missed



Join Date Location Posts

Oct 2012 Wichita KS 968

Ok..

Loading custom tunes to the car

IT IS IMPORTANT TO FOLLOW THE MENU ON THE SCT. DO NOT DISCONNECT THE SCT WHILE IT IS TRANSFERRING THE TUNE! I also turn the radio, AC and lights off when loading tunes. I try not to change anything in the car while transferring a tune.. like operate the windows or open/close doors.

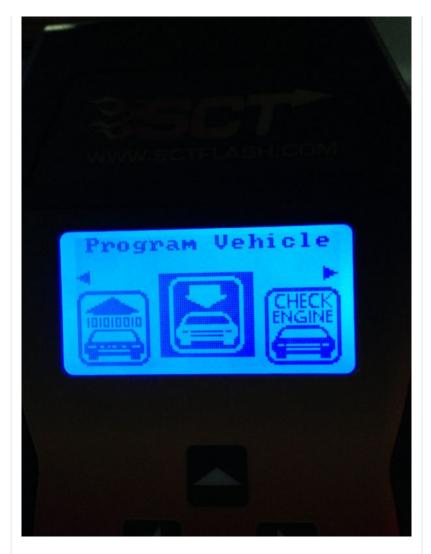
ALSO.. WHEN YOU ARE DONE
TRANSFERRING THE TUNE, YOU
SHOULD SAVE YOUR STOCK TUNE ON
YOUR PC OR LAPTOP!! If anything
were to happen to the SCT you will be
locked out of your ECU. You would
then have to have the car re-flashed

by the Dealer.. possibly towed to the dealer to do that depending on what happened. Even then it is a PITA for the dealer to complete this. You will wish you saved your stock tune if anything ever happened! To do this you simply plug the SCT back into the PC or laptop and go thru the SCT Device updater. Simple

Notice the end plug on the sct. The large odd-shaped plug. If you look under the dash on the drivers side you will notice the CAN bus this plugs into. It is toward the left side of the panel and the ONLY plug the SCT will fit on the entire car. Plug your SCT in to this port and the SCT will power up regardless of if the car is on or not.

You get this.. same as when you plugged into the PC or laptop. Select the load button.

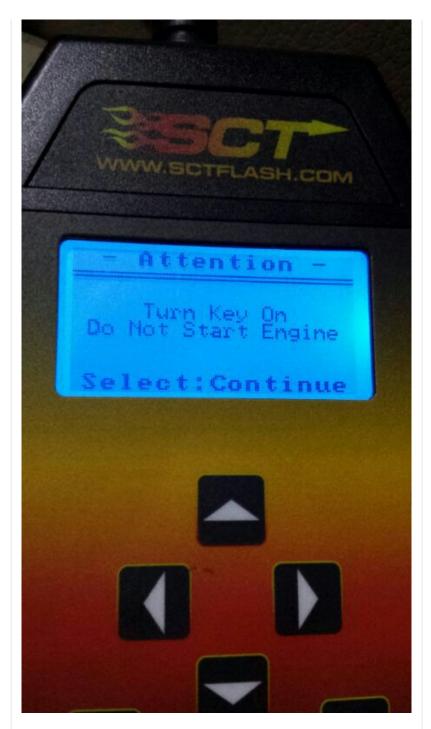




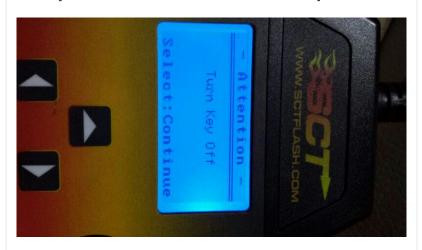
Next menu will allow you to load :custom tune". Select that



When you do it will ask you to turn the key on. This will take a few seconds.



Then you will be instructed to turn the key back off



Now it will let you choose your tune. Select the base tune you transferred earlier and continue.



If an additional menu appears asking you to "engine" "adjust additional parameters".. SELECT NO and continue.





It will now ask you to "begin program"



Now it will ask you to turn key on DO NOT START



Now you will see it setting up ECU

Last edited by crownaviation; 07-15-2013 at 07:03 AM.

COMPLETE DOB KIT WITH UPGRADES!!!----->>>http://www.departmentofboost.com/vbu...ete-dob-kit!!!

HIGH SPEED..LOW DRAG 😎

07-15-2013, 07:02 AM #5

crownaviation o

Great guy will be missed



Join Date Location Posts

Oct 2012 Wichita KS 968



It will now store your stock tune and give you this screen



Now you get this. This takes several minutes



Download of your new tune is complete



Follow the instructions on the SCT. When it transfers the tune to your car it will take a little time but there will be a progress bar. DO NOT UNPLUG SCT OR TURN THE CAR ON OR OFF WHEN TRANSFERRING THE TUNE!!

The vehicle gauges will cycle and then return to normal when complete. You also get that 1980's nintendo-like jingle when it is done lol. When it says complete it will tell you to turn key off. Now you can disconnect the sct and viola! You just transferred a custom tune to the car.

AGAIN... save your stock tune to your PC or laptop!

The first few starts may idle high or a little rough till the computer can make corrections and "learn". This will happen every time you load a tune. Until the car as filled that particular cell (based on load/rpm) it has not adjusted for it yet. This is why when you drive the car for a while it will get better in the closed loop range. WOT will not matter at all as that is all going to be custom settings from your tuner.

Last edited by crownaviation; 07-17-2013 at 06:49 PM.

COMPLETE DOB KIT WITH UPGRADES!!!-----> >>>http://www.departmentofboost.com/vbu...ete-dob-kit!!!

HIGH SPEED..LOW DRAG 😎

07-15-2013, 07:48 AM #6

crownaviation o

Great guy will be missed



Join Date Location Posts Oct 2012 Wichita KS 968

Now time to setup LiveLink

You can have your tuner or someone (me) email you this file. You may be able to find it on the net somewhere but it is free. I can not upload this file to this thread or have not figured it out yet.

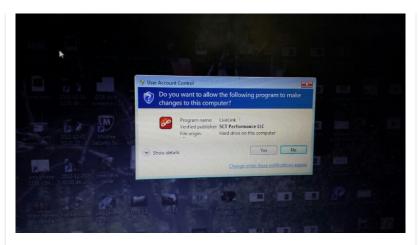
You are looking for SCT livelink 6.5

When you successfully download the program you will see this icon on your laptop. Needs to be uploaded on the laptop as you will take it with you to do some driving later.

When your tuner sends you a tune they should also send you a configuration file. If not, ask for one for livelink 6.5. The file they send will end in .cf3.

Find the SCT livelink icon and open the program.

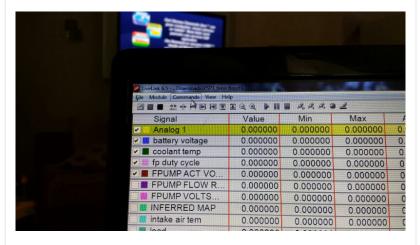






Now go ahead and plug your SCT into the laptop, and the firwire cable into the top of the SCT. Then plug the sct into the car and turn the key to the ON position. You do not have to start the car yet.

Now You will go to load your analog equation in the "commands" section. We need to convert the AFR signal we see on the gauge into a number your tuner can use (voltage). I normally do this now. Disregard extra info on the screen as you won't have that just yet..



I normally just save my analog equation in a MS word document that I can later cut-n-paste to livelink.

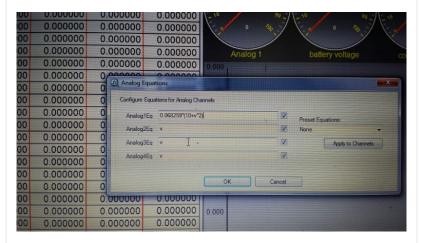
Here are a couple equations for a few different WB gauges

Autometer 0.06803*(10+1.5*V)

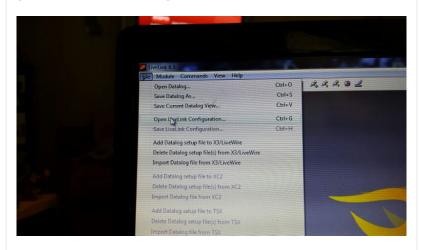
LC1? 0.068023*(7.35+v*3.008)

AEM? 0.068259*(10+v*2)

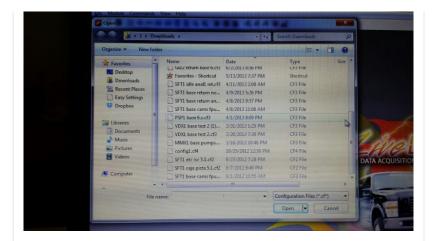
Place your equation in the first field under Analog 1. Make sure to delete the "v" that is in the default position. The equation must be loaded exactly with the (*) symbol serving as a multiplication command



Now go to "file" in the upper left corner and select "open LiveLink configuration". At various stages in tuning your tuner will want to record specific items and parameters. To simplify this so you do not have to go thru a confusing menu they can send you a file you can load this way.



You should now see (or will have to locate) the .cf3 configuration file sent to you by your tuner.



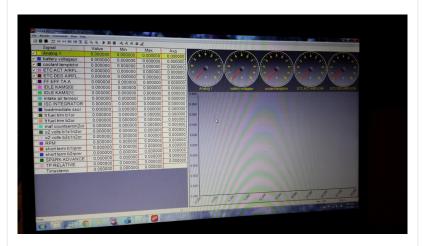
NOTE.. the key must now be in the ON position.

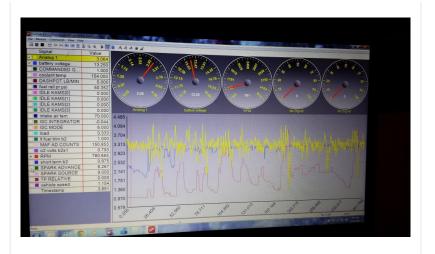
Once you load this you will see this screen appear.. select yes.



Once you see the screen with all the information and gauges you have 10 seconds to start the vehicle. Note.. you can also start the datalog recording prior to engine start if you wish.

You can check a few boxes to be displayed on the graph and on the gauges. When you get time, experiment with it as it really is a cool program. You can later play back the files etc..





Last edited by crownaviation; 07-17-2013 at 06:53 PM.

COMPLETE DOB KIT WITH UPGRADES!!!-----> >>>http://www.departmentofboost.com/vbu...ete-dob-kit!!!

HIGH SPEED..LOW DRAG 🞅

07-15-2013, 08:08 AM

crownaviation o

Great guy will be missed



Join Date Oct 2012 Location Wichita KS Posts 968 To start or stop the recording you can use the green and red buttons on the top left of the screen or make the selections under "commands" in the task bar on the top of the screen. You can start the datalog prior to starting the vehicle or after.



Once you are done recording you can simply stop datalog with car running or not. Sometimes when you shut the key off first, it will stop the system.. and deliver a message. That is OK. You can close the program down and it will still allow you to save the datalog. Save the file as something you can remember. On my base tunes I will label them with my last name, which tune and what function I am

tuning
(Example):
Adams Base 1 cold start 1. This will help you and your tuner keep track of things
Last edited by crownaviation; 07-17-2013 at 06:57 PM.