

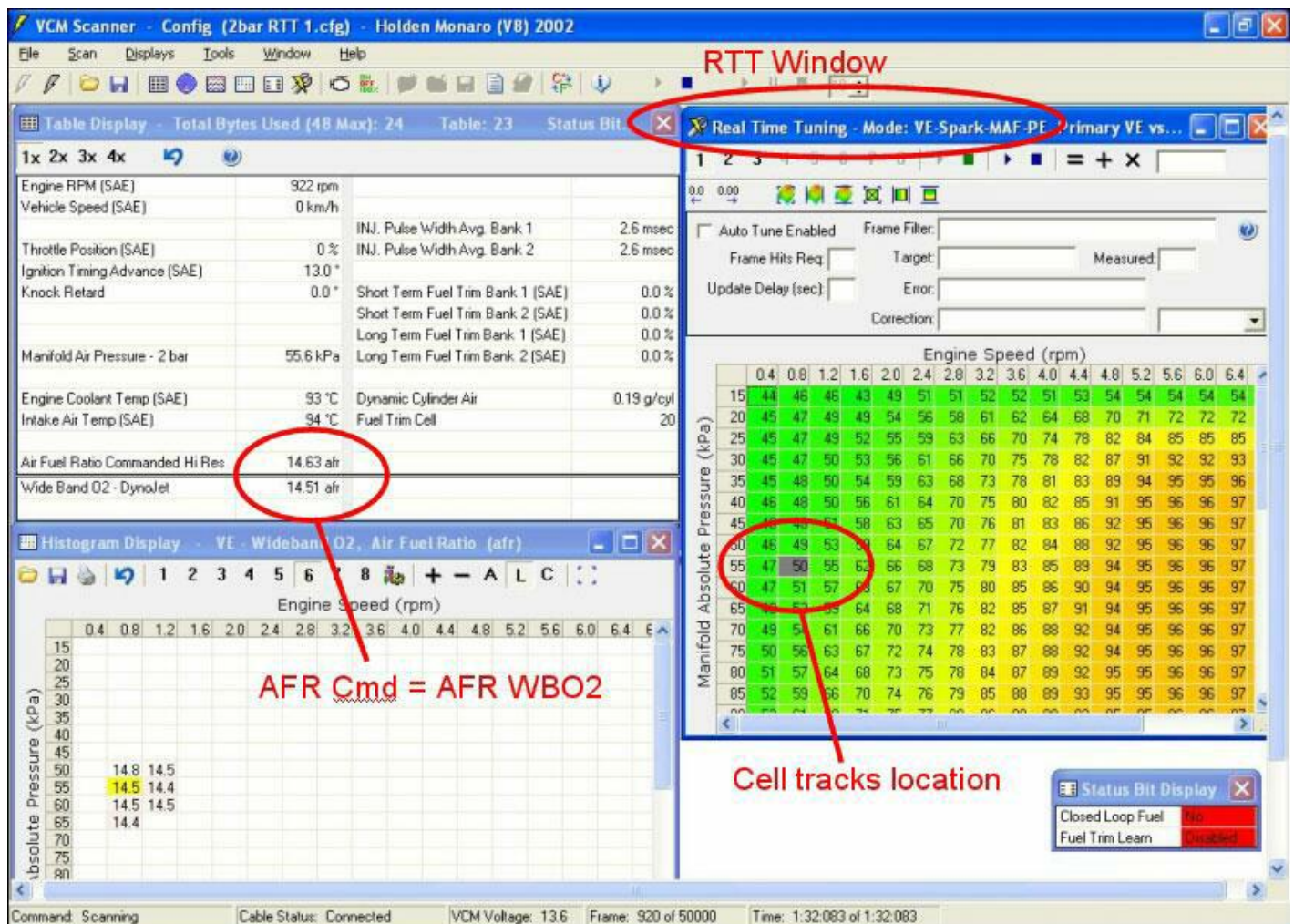
Additional VCM Enhancements

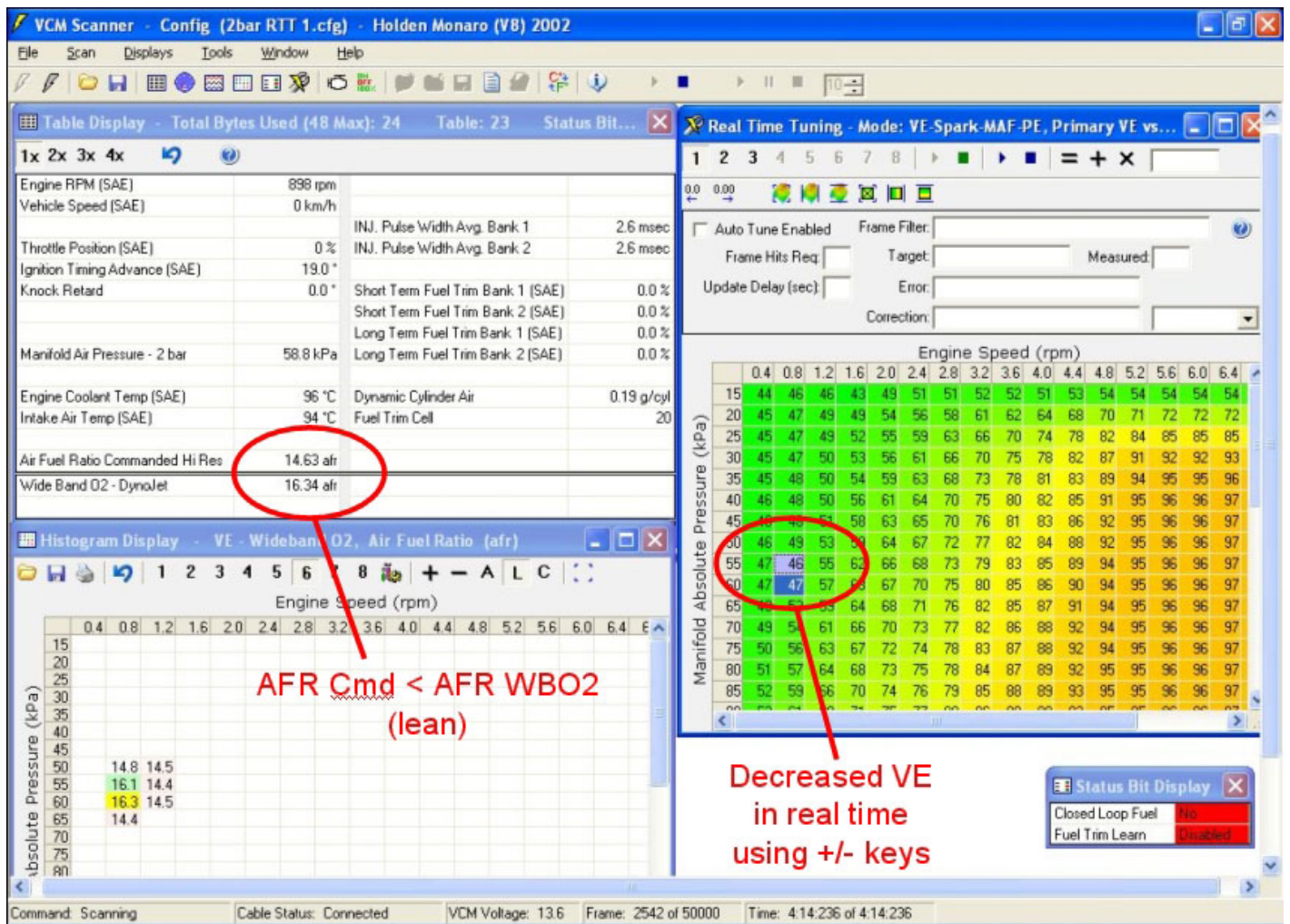
Real Time Tuning (RTT™)

Applications: 1999+ Gen3 V8 (Most Operating Systems)

RTT™ is an enhanced operating system that allows real time modification of selected parameters in the PCM's calibration. Parameters are updated via customized OBD2 commands in real time using the existing OBD2 port. No need to remove the PCM or run any separate cabling. The user can select various operation "modes" that defines which tables are enabled for RTT™. The RTT™ system is primarily controlled by VCM Scanner and, when enabled, tables can be modified in real time via the integrated RTT™ user interface. After tuning is complete, the final tune can be written to the PCM and stored permanently using regular editor processes.

HP Tuners RTT™ is an excellent way to tune selected vehicle parameters in real time, without the high cost and inconvenience of dedicated hardware solutions.





2bar and 3bar Speed Density

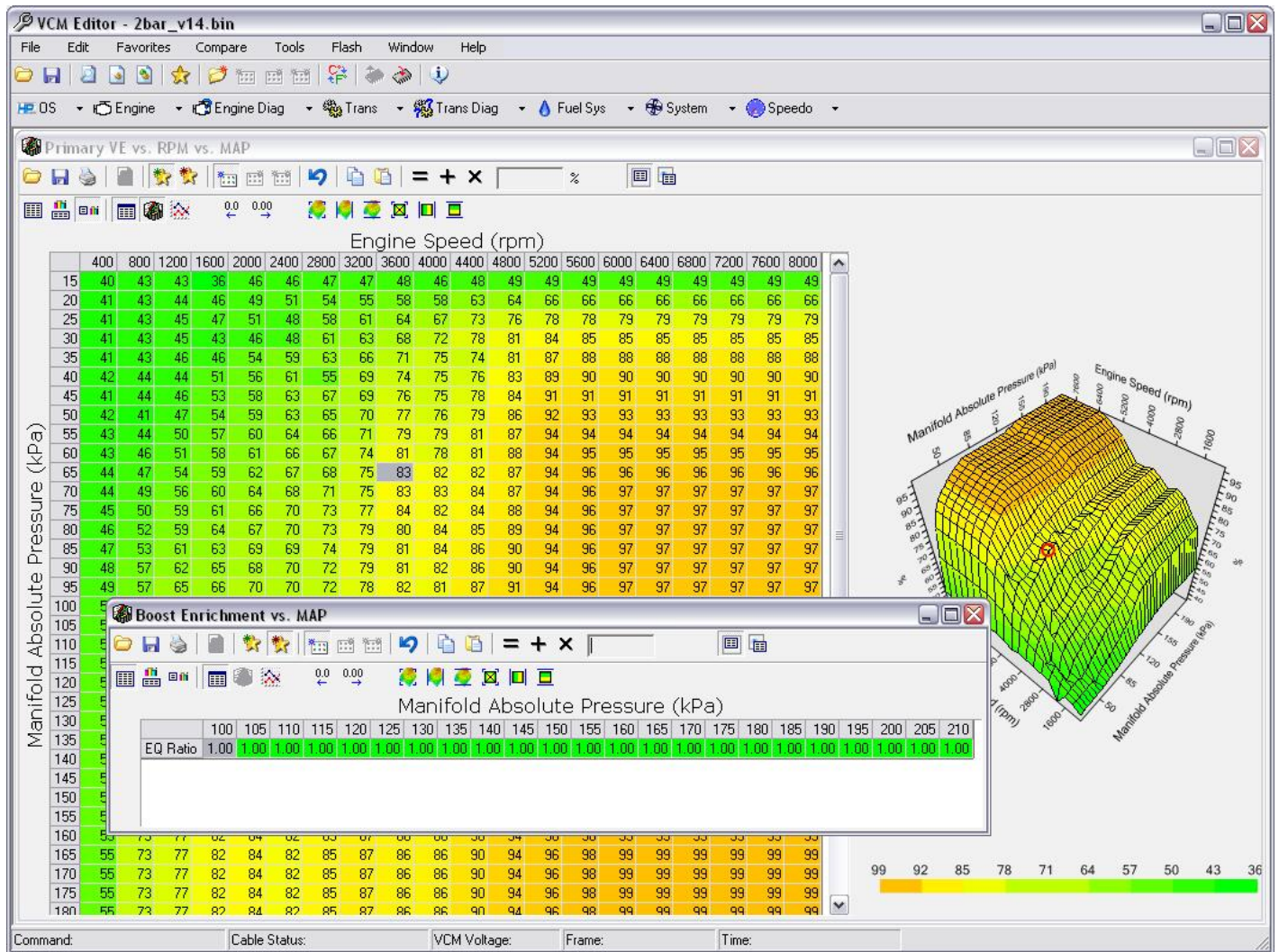
Applications: 1998+ Gen3 V8 (Most Operating Systems)

The enhancement is designed for the serious forced induction enthusiast who is struggling to make the stock PCM do everything that is needed at the racetrack and is tired of using the various VCM "tricking" techniques during the tuning process. HP Tuners has spent months of in-house and external testing and development time, utilizing some of the worlds best forced induction tuning houses as beta testers to make sure the features meet the requirements for both supercharged and turbocharged applications.

The 2bar Speed Density enhancement includes:

- 2bar MAP support (calibration capability for 0-5V linear sensors)
- Retains 5 kPa resolution in non-boost regions (2bar pre 04/05)
- 5 kPa resolution in boost regions (2bar pre 04/05)
- 10 kPa resolution in boost regions (2bar and 3bar post 04/05)
- Secondary VE table not used (if applicable)

- New MAP referenced "Boost Enrich" table
- New openloop MAP threshold
- Dual (High and Low Octane) Spark table support
- Speed Density mode only
- VCM Scanner histogram automatically recognizes and adjusts for 2bar/3bar feature
- New 2bar/3bar MAP PID for VCM Scanner



2.5 bar Speed Density

Applications: GenIV V8 (E40 ECM only) (Most Operating Systems)

HP Tuners brings speed density forced induction tuning to the GenIV engine! Announcing, 2.5 bar Speed Density enhancement for GenIV engines equipped with the E40 ECM. This enhancement is a must for any serious forced induction setup, leveraging the proven track record, experience and features of HP Tuners 2 and 3bar enhancements for the LS1.

This enhancement contains the following features:

- 2.5 bar max MAP support (calibrate for 0-5V linear sensors)
- New Boost VE table from 105-255 kPa (2.5 bar or 22.5 psi boost)
- Retains stock VE table resolution in non-boost regions
- better than 5 kPa resolution in boost regions (105 kPa - 255 kPa)
- New MAP referenced "Boost Enrich" table in 5 kPa increments
- New Boost Enrich MAP threshold
- Speed Density mode only
- Rescaled fan temperature axis 163-250F (73-121C), stock is 192-250F (89-121C)
- VCM Scanner histogram for Boost VE table included in histogram library

1 bar Speed Density Enhanced

Applications: 1999+ Gen3 V8 (Most Operating Systems)

This enhancement is designed to aid in tuning vehicles operating in speed density mode (MAF-less). It includes a re-enabling of the dual spark table operation and also a TPS/RPM referenced VE table modifier feature designed in co-operation with some of the worlds leading LS1 speed density tuners. This new table is designed to assist in tuning of very large camshafts and intake designs that lose a lot of MAP resolution and/or have very narrow MAP dynamic range during idle and cruise transitions. It allows for traditional SD tuning methods, Alpha-N (TPS vs. RPM) methods or a mix of both to achieve the optimum tuning result. Another feature of the Speed Density Enhanced option is the lesser resolution secondary VE table is not used when in speed density mode.

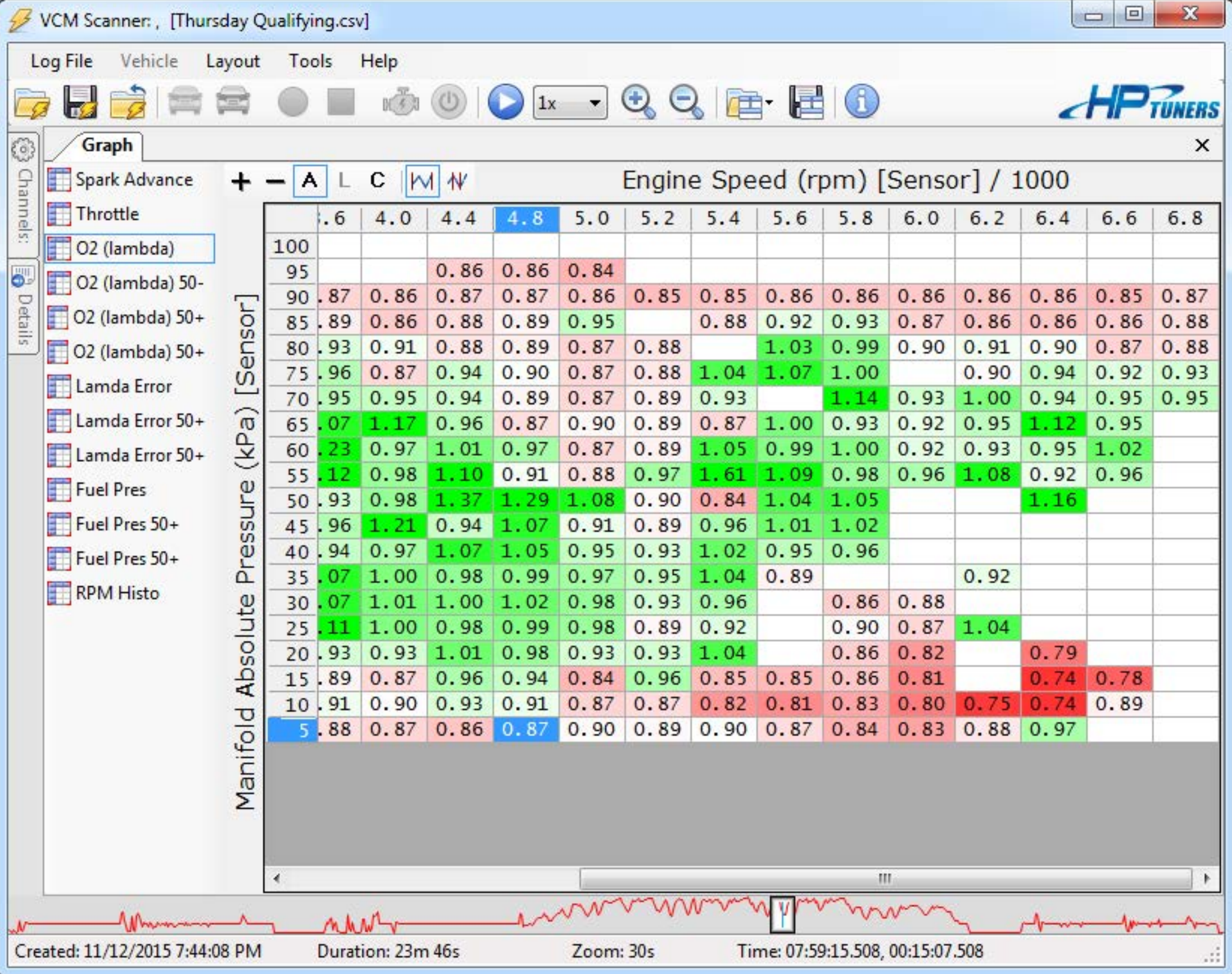
The 1bar Speed Density Enhanced option includes:

- Speed Density mode only
- Dual (High and Low Octane) Spark table support
- new VE Multiplier vs. TPS vs. RPM table, with non-linear TPS resolution and RPM resolution
- Secondary VE table not used (if applicable)

1 bar Speed Density Enhanced in action...

Here's an example of the advanced capabilities of the 1bar Speed Density Enhanced option in use on a large camshaft naturally aspirated stroker engine fitted with an 8 throttle body intake (courtesy Sam's Performance). This engine exhibits the classic symptom of a large duration (270+), sub 108 lobe center camshaft: low idle vacuum. It also shows erratic and fast moving MAP readings, where just 2-3% throttle application results in MAP heading over 80kPa even at substantial engine speeds. This results in similar zones of the VE table being hit under different driving conditions and also gives very little tuning freedom for fueling in the available MAP ranges. This is where the new VE Multiplier table plays an important role. The new VE Multiplier table adds throttle position as a new dimension to tuning these engines. You can now adjust the VE table result at different TPS and RPM conditions and therefore eliminate troublesome fueling issues.

"With this feature from HP Tuners I can make even the wildest naturally aspirated engines behave on the street. Fueling issues that create drivability and idle quality compromises are definitely a thing of the past." - Sam (owner Sam's Performance, Sydney, Australia)



VCM SCANNER

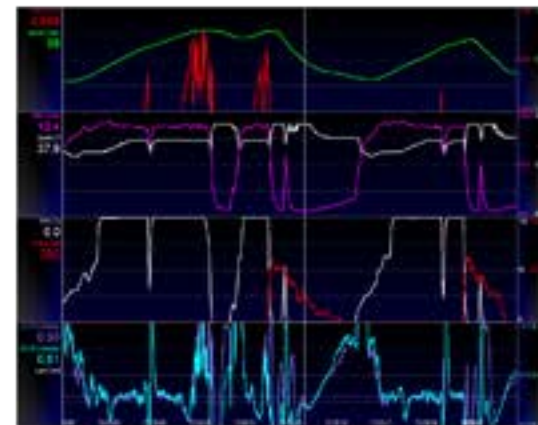


<- Polling Channels ->
Broadcast Channels ->
MPVI A/D Inputs ->

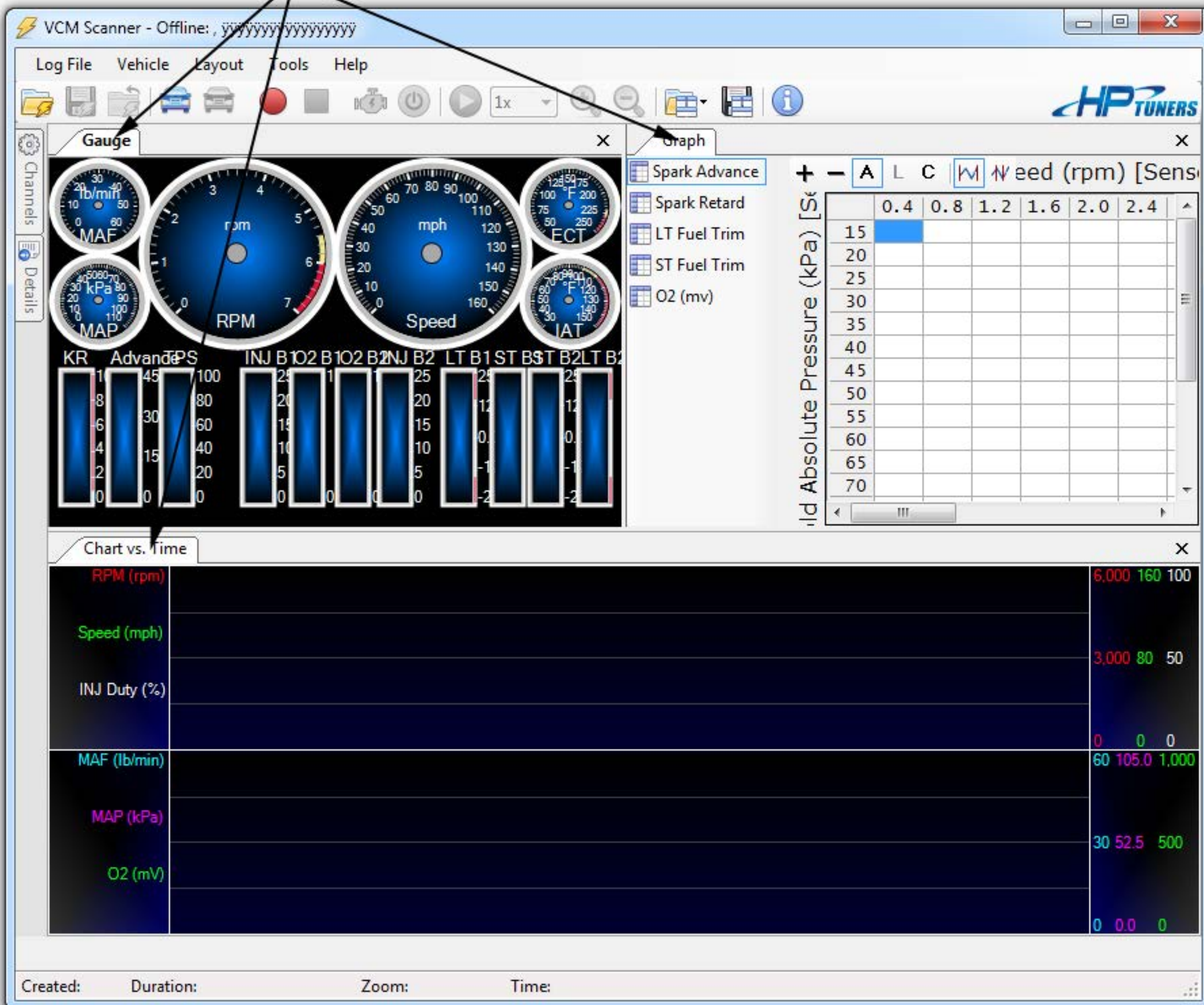
Serial Inputs ->



Channels	
Co Name	Value
Engine RPM (SAE)	
Vehicle Speed (SAE)	
Engine coolant Temp (SAE)	
Intake Air Temp (SAE)	
Mass Air Flow (SAE)	
Intake Manifold Absolute Pressu...	
Timing Advance (SAE)	
Knock Retard	
Accelerator Pedal Position	
Throttle Position	
Relative Throttle Position (SAE)	
Commanded Throttle Actuator (SAE)	
Air/Fuel Ratio Commanded	
O2 voltage B1S1	
O2 voltage B2S1	
Fuel System #1 Status (SAE)	
Short Term Fuel Trim Bank 1 (SAE)	
Long Term Fuel Trim Bank 1 (SAE)	
Short Term Fuel Trim Bank 2 (SAE)	
Long Term Fuel Trim Bank 2 (SAE)	
Fuel Pressure (SAE)	
Fuel Rail Pressure (SAE)	
Fuel Tank Level	
Ethanol Fuel % (SAE)	
Control Module voltage	
Absolute Load (SAE)	
Barometric Pressure (SAE)	
Ambient Air Temp (SAE)	

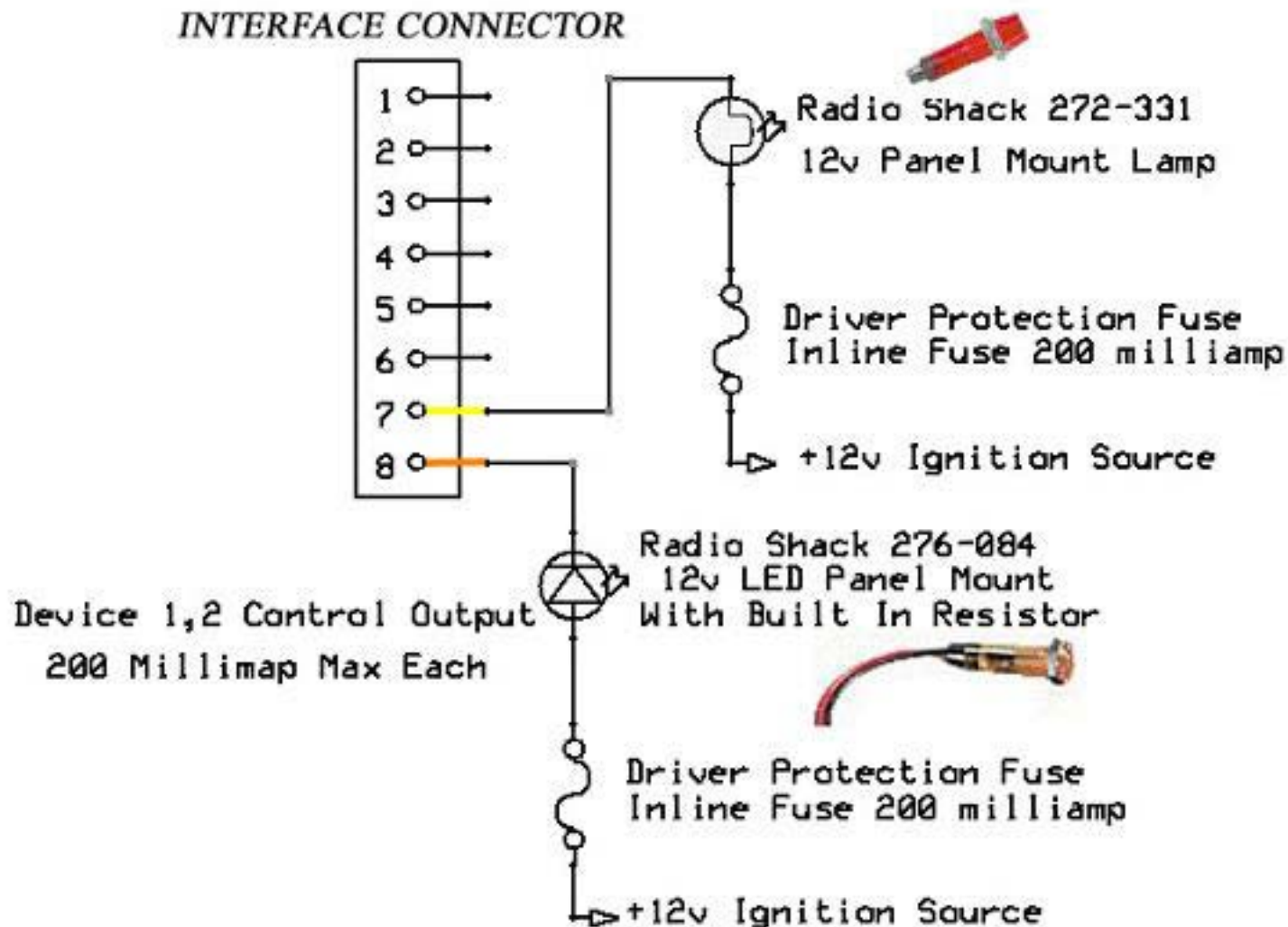


To arrange the display controls,
click and hold a tab and drag it
to another pane.



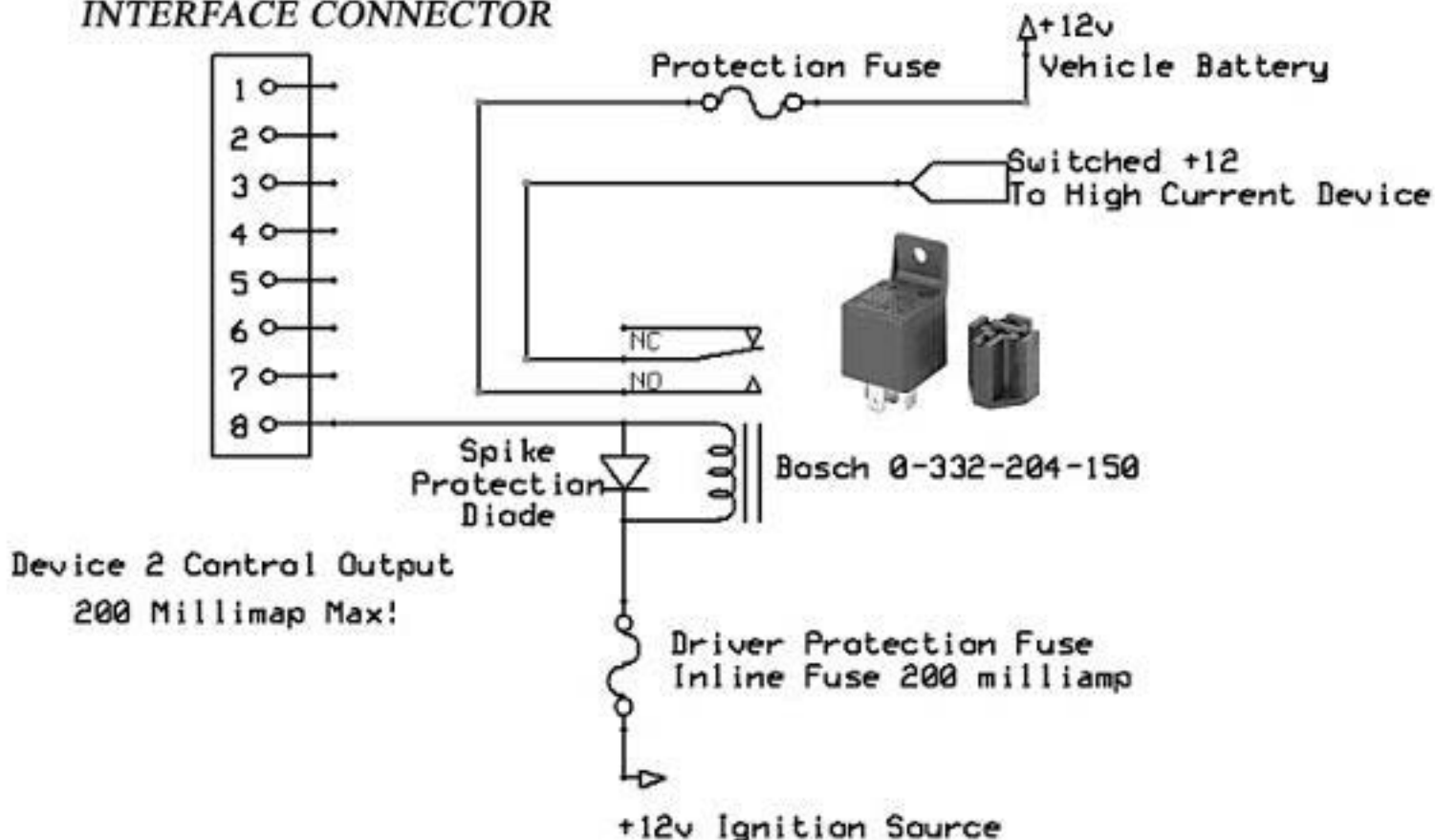
DRIVING LAMPS OR LED'S

INTERFACE CONNECTOR



DRIVING RELAYS

INTERFACE CONNECTOR



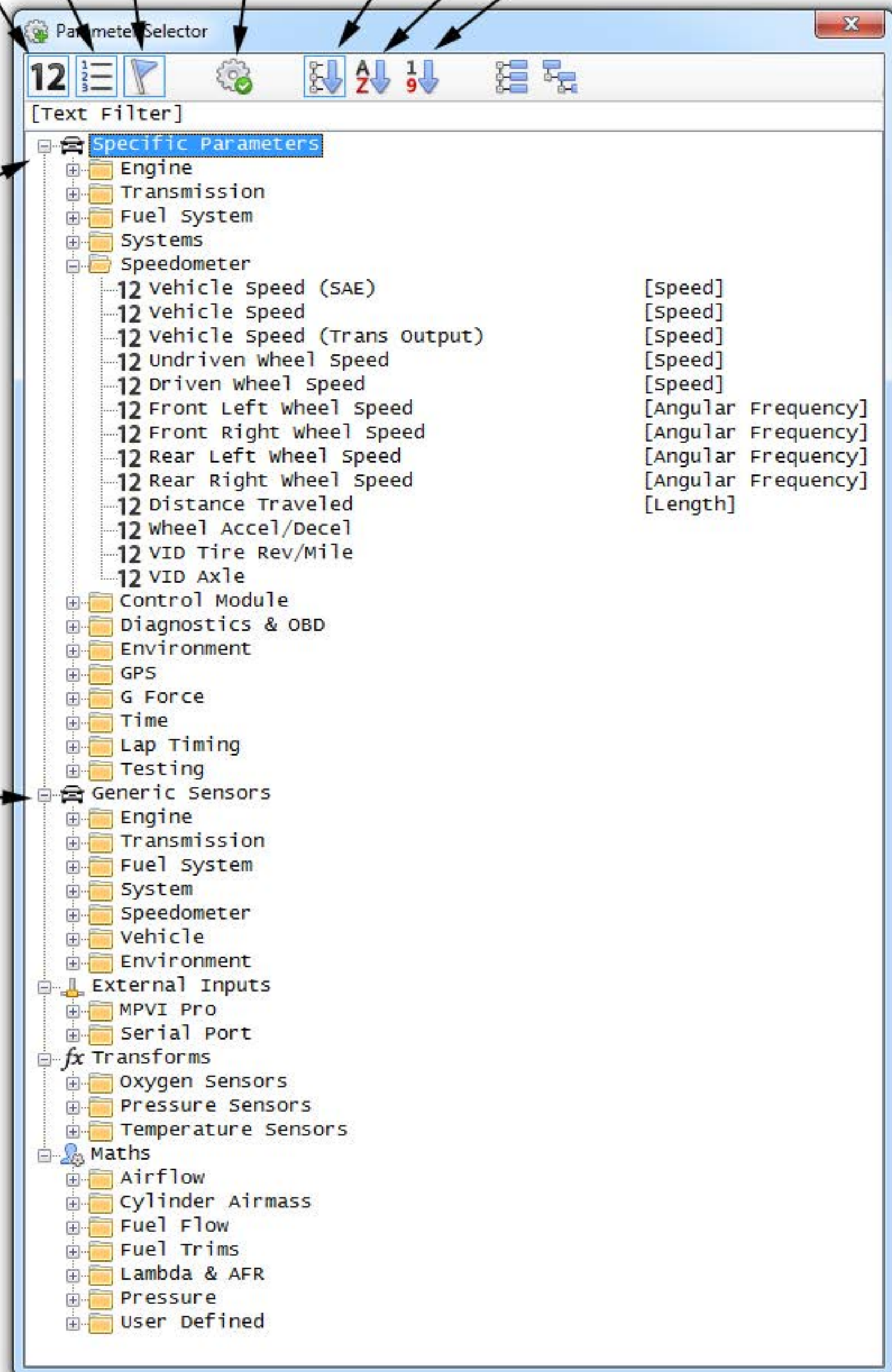
**Filter out Parameters
not backed by a Channel**

**Data Type Filtering
Scalar, Flags, Switch**

**Sort by
Section, Name, ID**

**Specific Parameters represent
a 1:1 relationship
with a channel.**

**Generic Sensors represent
a one to many relationship
with channels.**



Open/Save individual
or all Graphs

Add new Graph

Remove current Graph

Default Graph
Layouts

Duplicate current Graph

Move current Graph Up/Down

Graph Display Layout Editor

Spark Advance

Throttle

O2 (lambda)

O2 (lambda) 50-

O2 (lambda) 50+

O2 (lambda) 50+

Lamda Error

Lamda Error 50+

Lamda Error 50+

Fuel Pres

Fuel Pres 50+

Fuel Pres 50+

RPM Histo

Label: Spark Advance

Parameter: [Spark Advance \[Sensor\]](#)

Unit: Degree (°)

Decimals: 1

Filtering

Function:

Cell Hits Required: 10

Shading

High Value: 40

Mid Value: 10

Low Value: 0

Color:

Color:

Column Axis

Parameter: [Engine Speed \[Sensor\]](#)

Unit: Revolution Per Minute (rpm)

Header Cell Factor: 1000

Values: 1000 1600 2000 2400 2800 3200 3600 4000 4400 4800 5000 5200 5400 5600 58

Row Axis

Parameter: [Manifold Absolute Pressure \[Sensor\]](#)

Unit: Kilopascal (kPa)

Header Cell Factor: 1

Values: 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5

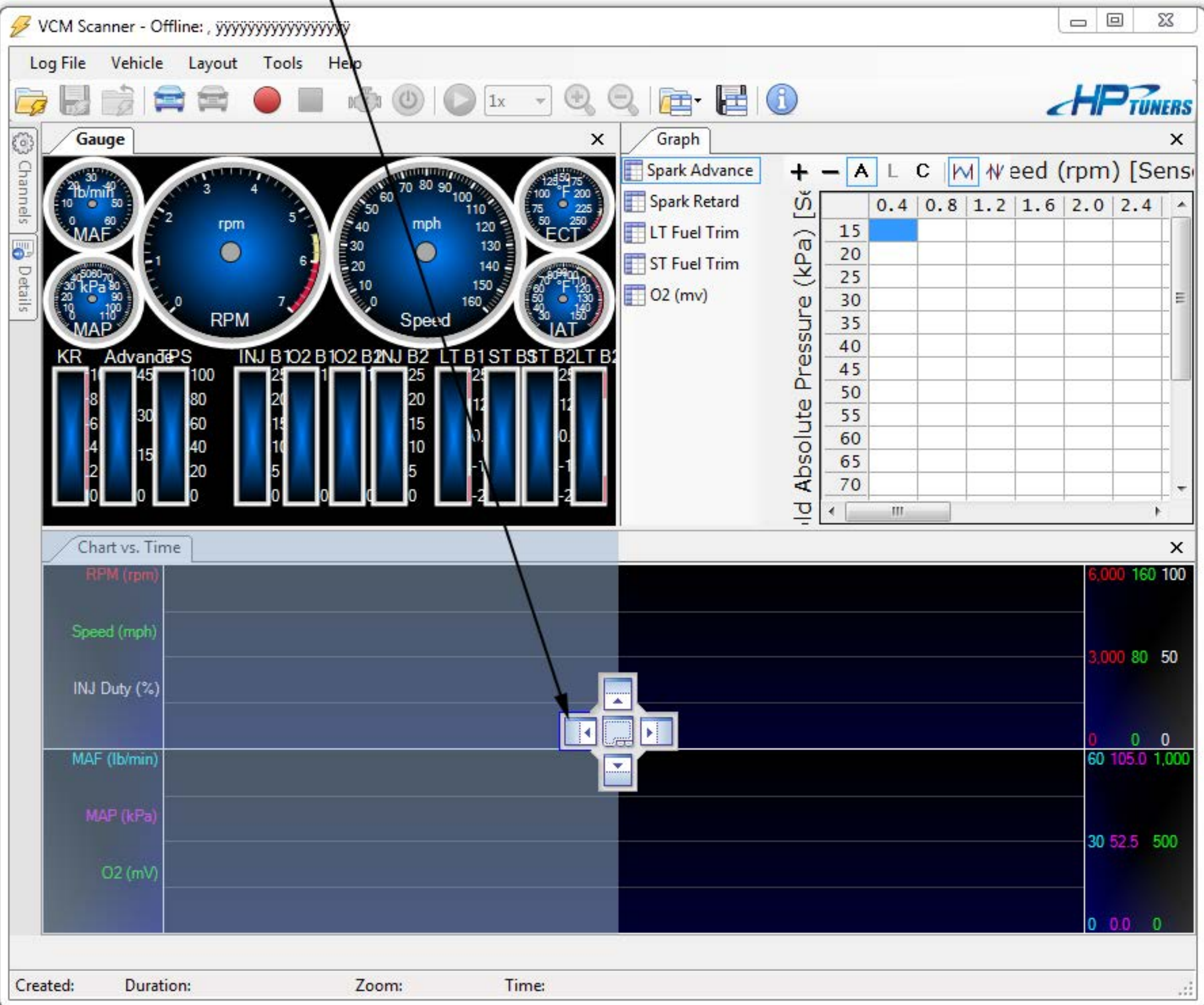
View

Average

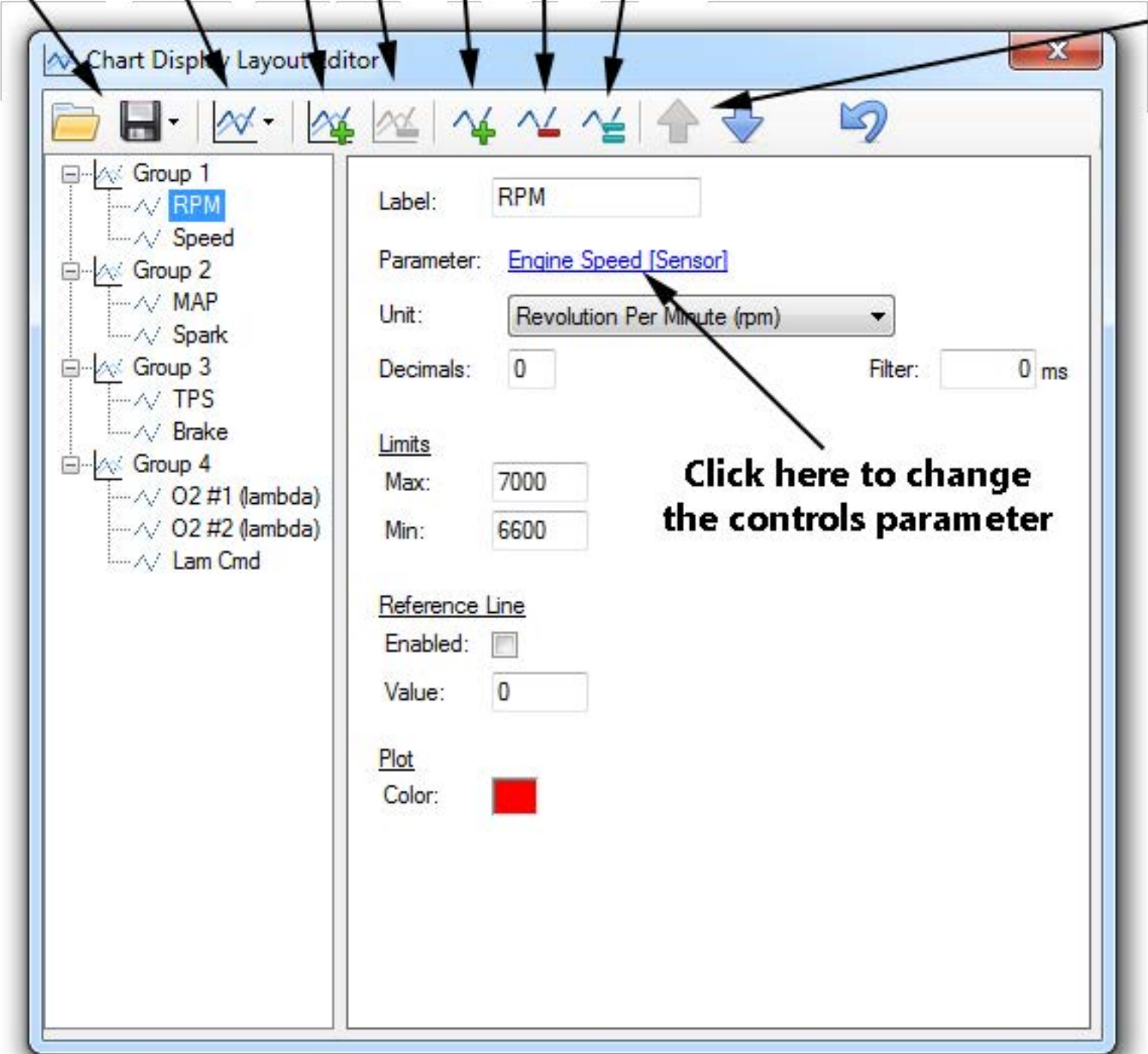
☐ View Zoom Data Only

Click here to change
the controls parameter

While hovering over your target pane, release the left mouse button to move the control.



- Open/Save individual or all Charts
- Default Chart Layouts
- Add new Chart Group
- Remove current Chart Group
- Add new Chart Series
- Remove current Chart Series
- Duplicate current Chart Series
- Move current Chart/Series Up/Down



Click here to change the controls parameter

Open/Save individual
or all Gauges

Add new Gauge

Remove current Gauge

Duplicate current Gauge

Move current Gauge Up/Down

Default Gauge
Layouts

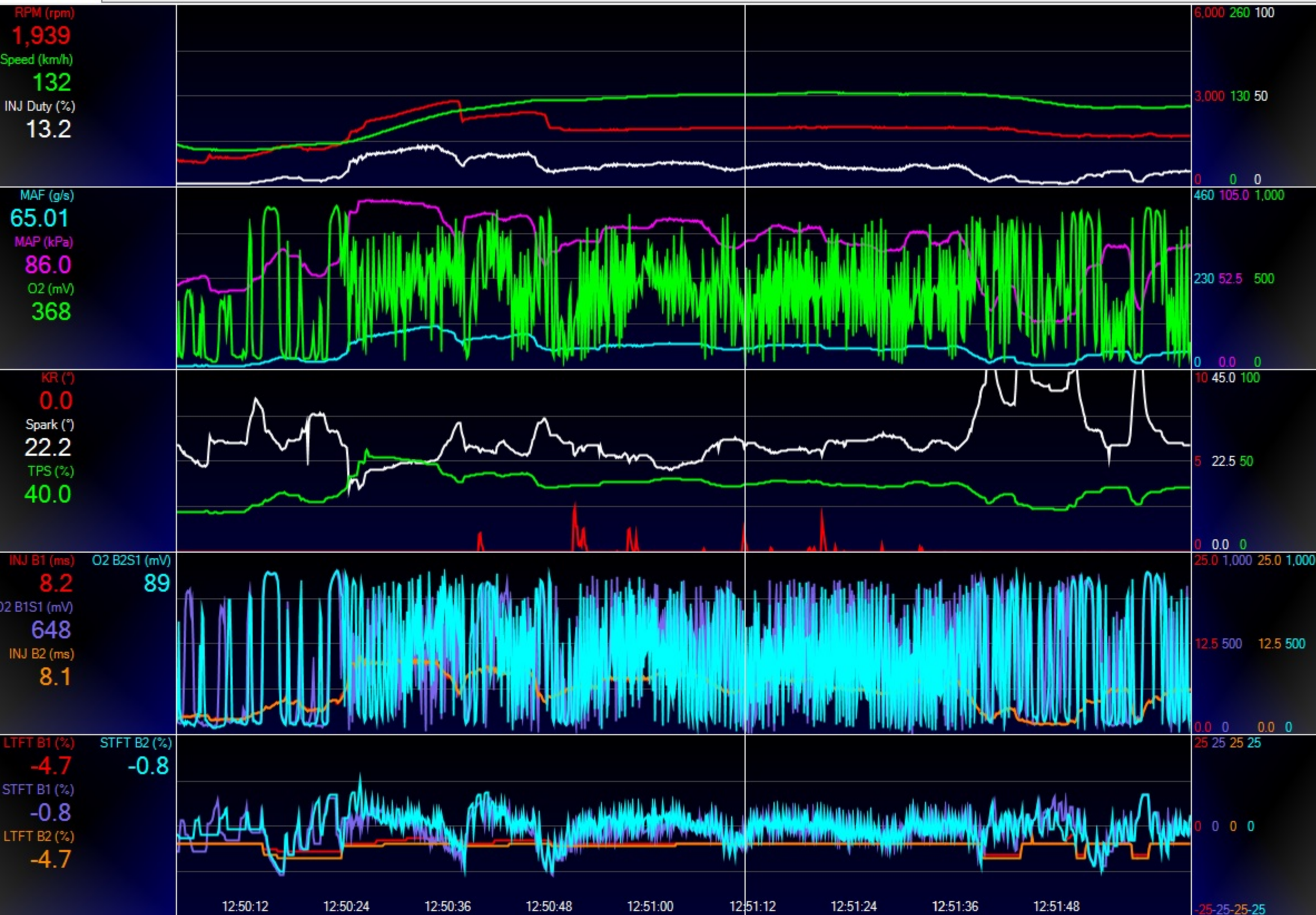
The screenshot shows the 'Gauge Display Layout Editor' window. The title bar includes a close button (X). The toolbar contains icons for opening/saving layouts, adding a new gauge, removing a gauge, duplicating a gauge, moving a gauge up/down, and a refresh icon. The left sidebar lists various parameters: MAP, RPM (selected), Speed, ECT, TPS, Brake, Front, Rear, Bias, Advance, INJ, O2, O2 #1, and O2 #2. The main panel displays the configuration for the selected 'RPM' gauge. It includes fields for Label ('RPM'), Type ('Ellipse'), Parameter ('Engine Speed [Sensor]'), Unit ('Revolution Per Minute (rpm)'), Decimals ('0'), and Filter ('0 ms'). Below these are sections for 'Limits' (Max: 7000, Min: 0), 'Major Ticks' (Count: 8, Factor: 1000), 'Peaks' (Draw Max checked, Draw Min unchecked), 'Minor Ticks' (Count: 5), 'Ranges' (a table with Start, End, and Level columns), 'Ellipse Properties' (Arc Start: 135, Arc Sweep: 270), and 'Location and Size' (Left: 16.61%, Top: 1.80%, Width: 33.06%, Height: 49.09%).

Start	End	Level
6000	6500	2
6500	7000	3

Location and Size	
Left:	16.61 %
Top:	1.80 %
Width:	33.06 %
Height:	49.09 %

Click here to change
the controls parameter

Chart vs. Time



Channels:

co	Name	value
	Engine RPM (SAE)	1,766 rpm
	Vehicle speed (SAE)	119 km/h
	Throttle Position (SAE)	40.4 %
	Timing Advance (SAE)	17.0 °
	Knock Retard	0.0 °
	Mass Air Flow (SAE)	61.6 g/s
	Engine Coolant Temp (SAE)	89 °C
	Intake Air Temp (SAE)	23 °C
	Delivered Engine Torque	316 N m
	TCS Desired Engine Torque	868 N m
	Intake Manifold Absolute Pressure (SAE)	88 kPa
	O2 voltage B1S1	0.317 V
	O2 voltage B2S1	0.087 V
	INJ. Pulse width Avg. Bank 1	9.0 ms
	INJ. Pulse width Avg. Bank 2	9.2 ms
	Short Term Fuel Trim Bank 1 (SAE)	4.7 %
	Short Term Fuel Trim Bank 2 (SAE)	6.3 %
	Long Term Fuel Trim Bank 1 (SAE)	-4.7 %
	Long Term Fuel Trim Bank 2 (SAE)	-4.7 %
	Torque Mgt Advance	0.0 °
	Cylinder Airmass	0.53 g
	IAT Advance	0.0 °
	Injector Flow Rate	4.023 g/s
	Base Advance	17.2 °
	Equivalence Ratio Commanded (SAE)	1.000 λ
	Volumetric Efficiency Airflow	59.8 g/s
	Mass Air Flow Sensor	6,168 Hz
	Air/Fuel Ratio Commanded	14.68
	Trans Input Shaft RPM	1,715.4 rpm
	Trans Current Gear	6

Channels: Details



Tune Details

Tune Overview Controllers Remote Tuning

Creation Date: 12/5/2013 9:07:18 AM

VIN: 2G1FP32GX22120917

2002 Chevrolet Camaro Sport Coupe_CONV., 5.7 L, 8 Cyl, GM_P01

Notes:

Transmission

Auto Shift Speed

Auto Shift Properties

Auto TCC

Part Throttle Shift

Normal

Normal

D1

D1 Urban

Upshift D2 2nd

Downshift D2 2nd

Upshift D2 3rd

Downshift D2 3rd

Performance

Performance

Cruise

Cruise

Hot

Hot

Full Throttle Shift Speed

Normal

Normal

Performance

Perf

Hot

Hot

Hot

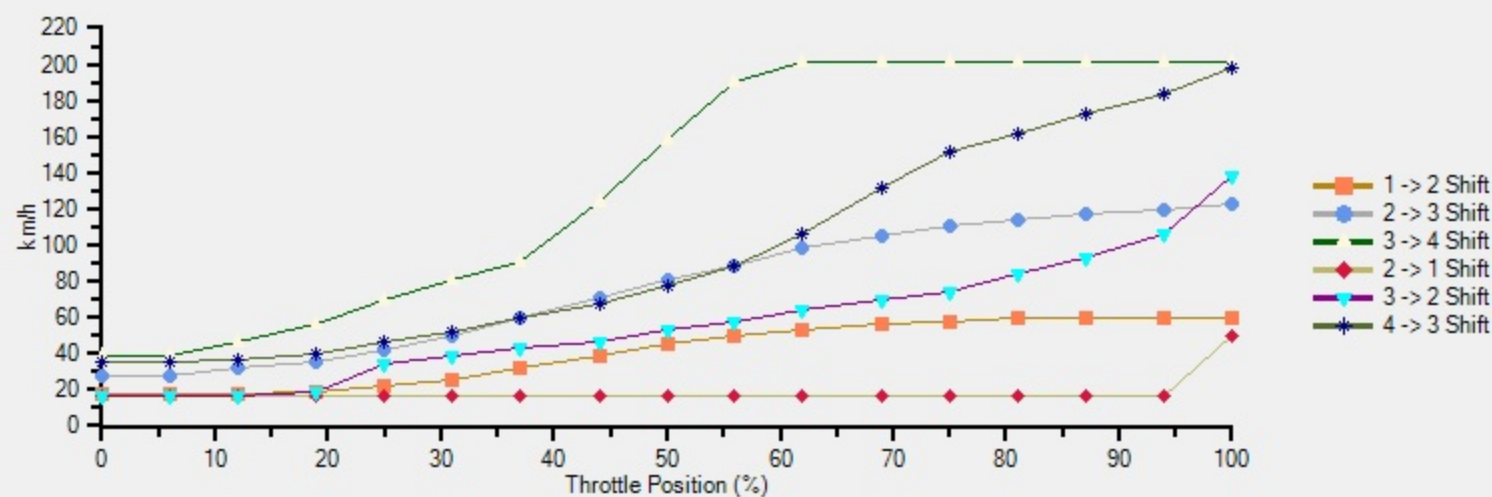
Hot

Full Throttle Enable

Enable TPS 94 %

Disable TPS 84 %

[ECM] 15000 - Shift Speed vs. TPS vs. Shift - Normal



Tune History

Current Unsaved Changes

Complete Saved History Logs

Engine

General

Idle

Airflow

Fuel

Spark

Torque Management

Advance

Retard

Dwell

Knock Sensors

Main Spark Advance

Idle Spark Advance

Spark Correction

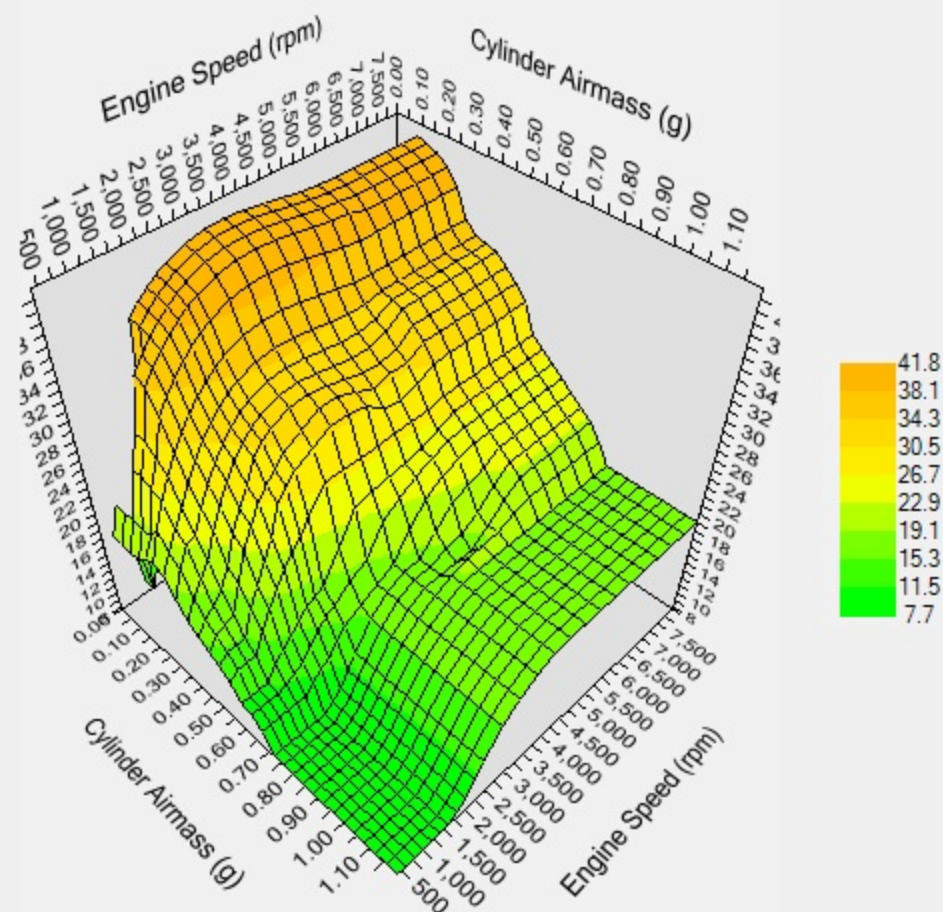
[ECM] 12600 - Main Spark vs. Airmass vs. RPM Open Throttle, High Octane

= + x

.00 .00 .00 .00

Engine Speed (rpm)

	1,400	1,600	1,800	2,000	2,200	2,400	2,800	3,200	3,600	4,000	4,400	4,800	5,200	5,600	6,000	6,400	6,800	7,000
0.08	25	38	39	39	40	41	41	42	42	42	41	41	41	41	41	41	41	41
0.12	25	38	39	39	40	41	41	42	42	42	41	41	41	41	41	41	41	41
0.16	36	37	38	39	40	40	41	41	41	41	41	41	40	40	40	40	40	40
0.20	36	37	38	39	39	40	40	41	41	41	41	41	40	40	40	39	39	39
0.24	34	35	36	37	38	38	39	39	39	39	39	39	38	38	38	38	38	38
0.28	31	32	34	34	35	36	36	37	37	37	36	36	36	35	35	35	35	35
0.32	29	31	32	33	33	34	35	35	35	35	34	34	34	34	34	34	34	34
0.36	28	29	30	31	32	33	34	34	34	33	33	33	33	34	34	34	34	34
0.40	26	28	29	31	32	32	33	33	33	32	32	32	33	34	34	34	34	34
0.44	24	26	28	30	31	32	32	33	32	32	31	31	32	33	33	33	33	33
0.48	23	25	27	28	29	30	31	32	32	31	31	31	31	32	32	32	32	32
0.52	20	22	24	27	28	29	30	31	31	31	29	29	30	31	31	31	31	31
0.56	18	20	21	23	24	25	27	27	27	27	28	28	28	28	28	28	28	28
0.60	14	15	16	17	17	18	21	24	25	25	25	25	26	27	27	27	27	27
0.64	12	13	14	15	16	17	18	19	22	23	24	25	26	26	26	26	26	26
0.68	10	11	12	13	14	15	16	17	18	21	23	24	25	25	25	25	25	25
0.72	8	8	9	9	11	13	15	17	18	18	20	22	22	23	24	24	24	24
0.76	8	8	9	9	11	13	15	17	18	18	19	19	20	22	23	23	23	23
0.80	8	8	9	9	11	13	15	17	18	18	19	19	20	21	22	22	23	23
0.84	8	8	9	9	11	13	15	17	18	19	19	19	20	21	21	21	21	21
0.88	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
0.92	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
0.96	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
1.00	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
1.04	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
1.08	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
1.12	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
1.16	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19
1.20	8	8	9	9	11	13	15	17	18	19	19	19	19	19	19	19	19	19





Channels:
Details

Gauge

