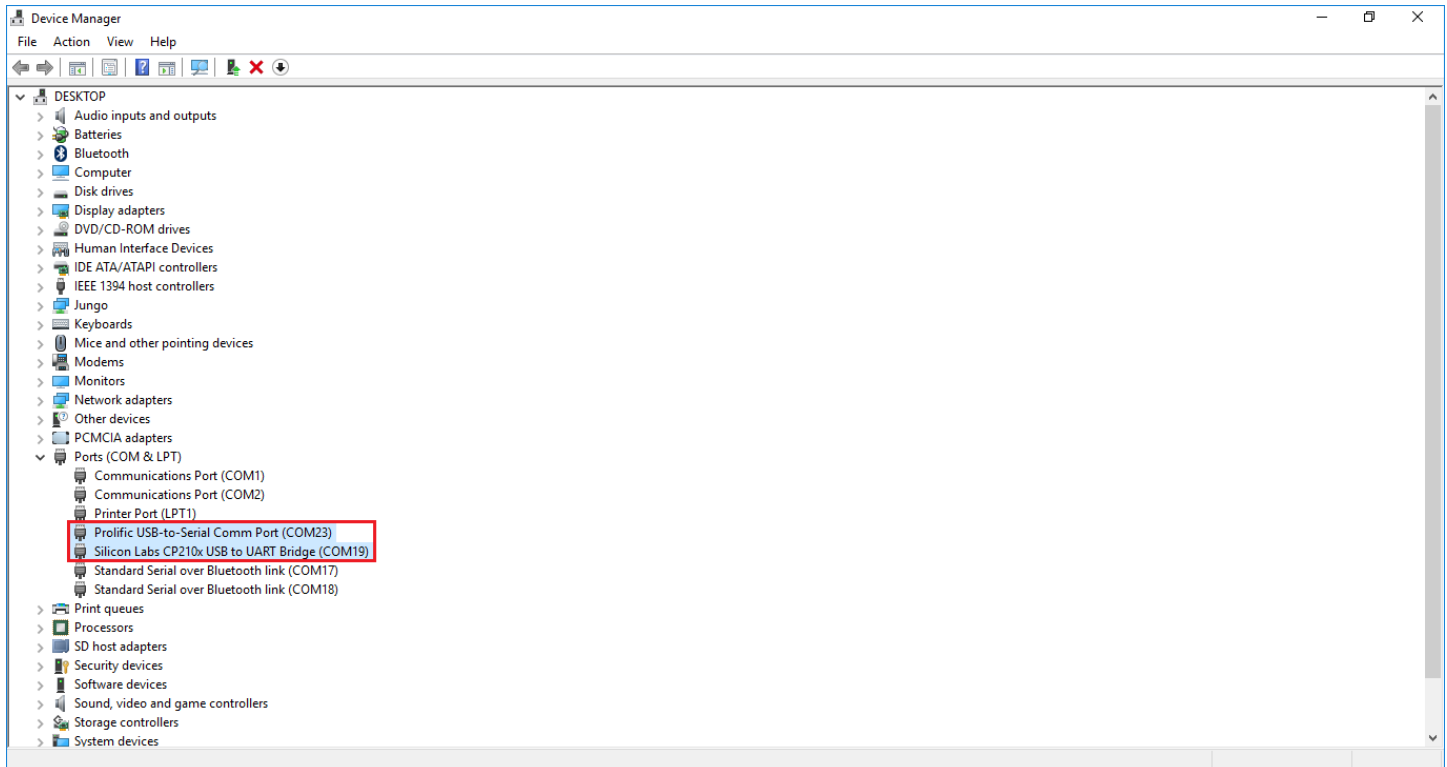
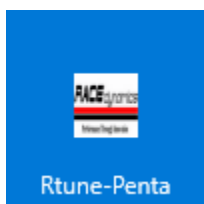


RTune Penta (PowerTune)

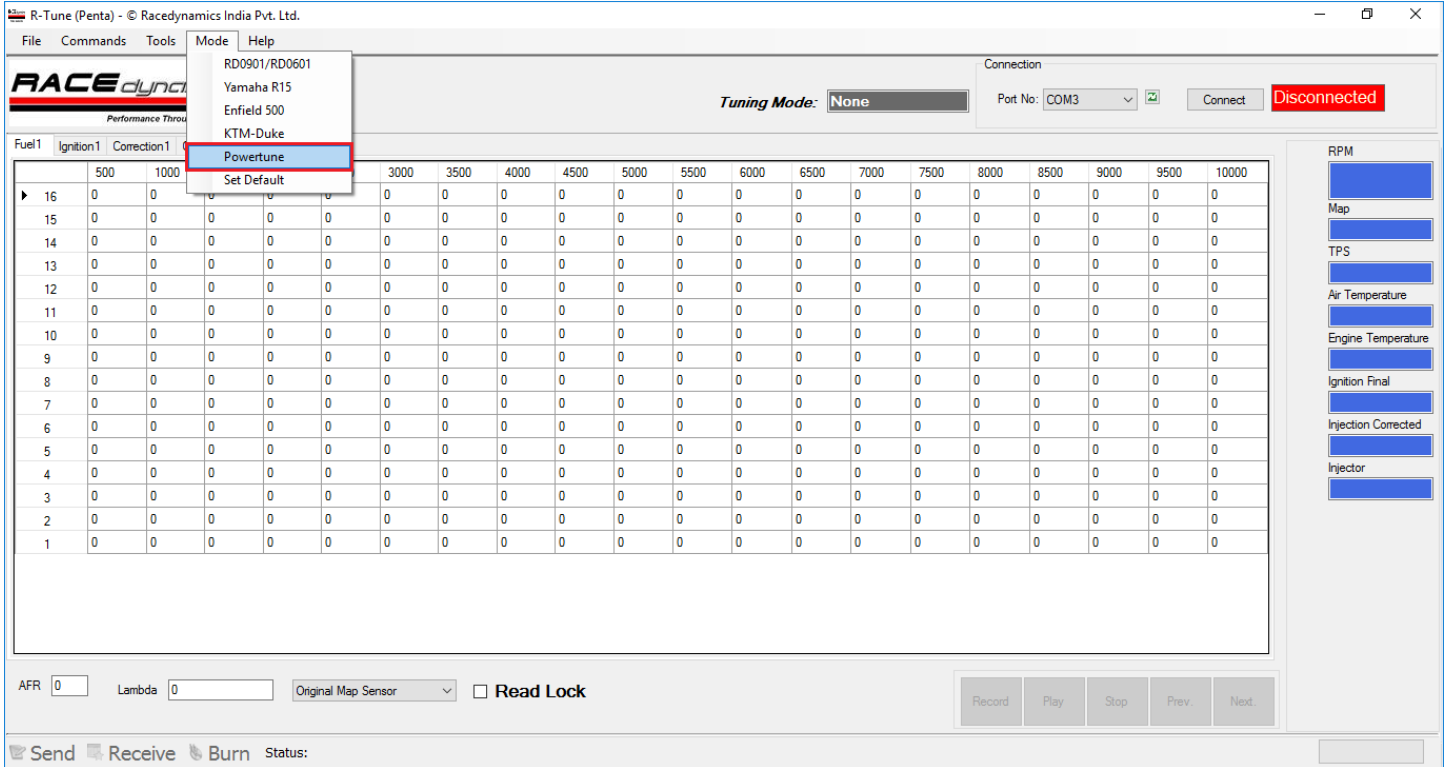
Install the necessary drivers. If drivers installed successfully the same will be displayed in the Device Manager.



Note down the respective COM Number and double click the RTune Penta icon to launch the RTune Penta software.



Once the RTune Penta software is open please choose the PowerTune option under the Mode tab.



The screenshot shows the R-Tune (Penta) software interface. The 'Mode' menu is open, and 'PowerTune' is highlighted with a red box. The interface includes a menu bar (File, Commands, Tools, Mode, Help), a connection status area (Tuning Mode: None, Port No: COM3, Connect, Disconnected), a large data table, and a right-hand panel with various sensor indicators (RPM, Map, TPS, Air Temperature, Engine Temperature, Ignition Final, Injection Corrected, Injector). At the bottom, there are input fields for AFR and Lambda, a 'Read Lock' checkbox, and control buttons (Record, Play, Stop, Prev, Next).

	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Choose the recorded COM number and click Connect.

R-Tune (Penta) - © Racedynamics India Pvt. Ltd.

File Commands Tools Mode Help

RACE dynamics
Performance Through Innovation

Tuning Mode: **Power Tune**

Connection Port No: COM3 **Connect** **Disconnected**

COM3
COM23
COM2
COM19
COM18
COM17
COM1

Fuel1	Ignition1	Correction1	Correction2	Graph	Dials	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	10000	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

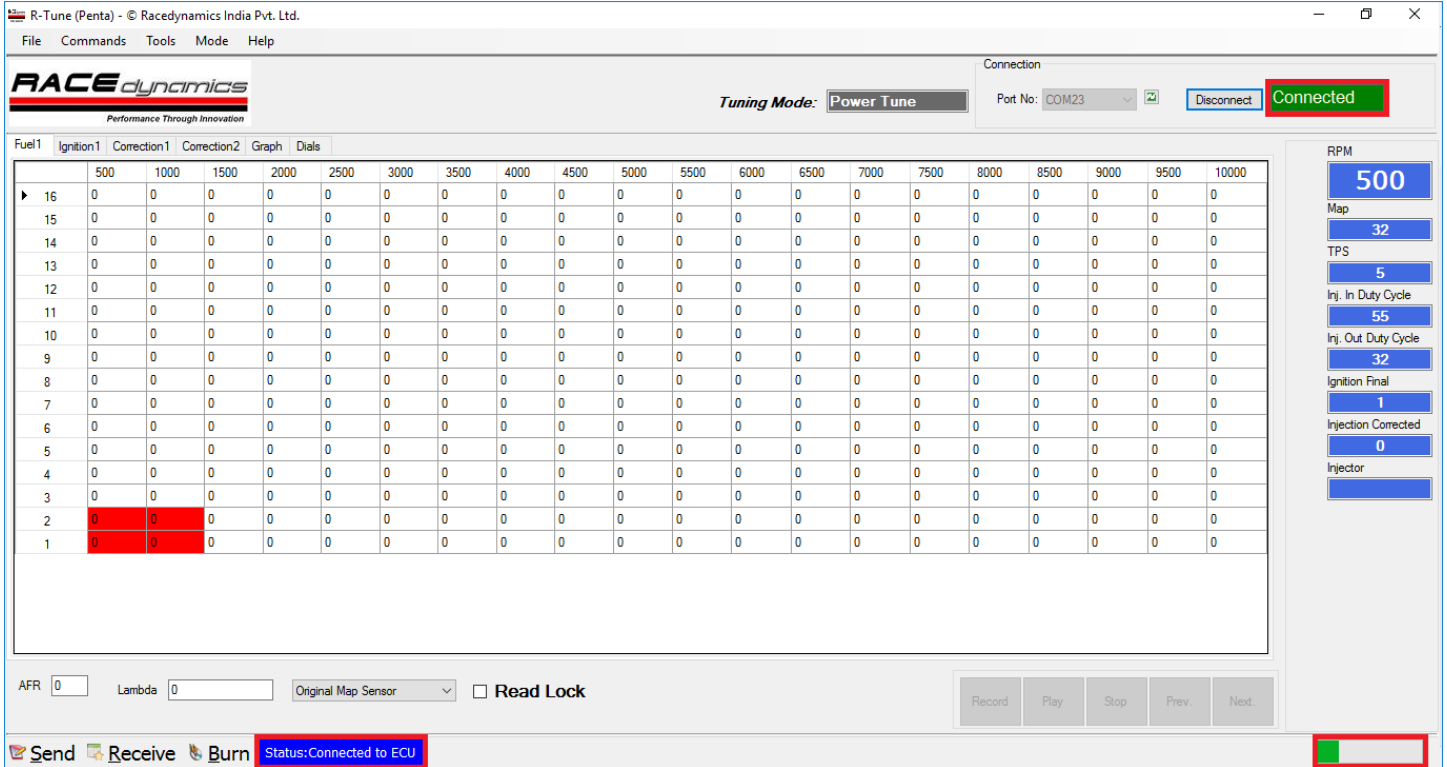
AFR Lambda Original Map Sensor Read Lock

Record Play Stop Prev. Next.

Send Receive Burn Status:

RPM
Map
TPS
Inj. In Duty Cycle
Inj. Out Duty Cycle
Ignition Final
Injection Corrected
Injector

When the PowerTune is successfully connected to the RTune Penta software the following messages and status will be displayed.



R-Tune (Penta) - © Racedynamics India Pvt. Ltd.

File Commands Tools Mode Help

RACE dynamics
Performance Through Innovation

Tuning Mode: **Power Tune** | Port No: COM23 | **Connected**

Fuel1	Ignition1	Correction1	Correction2	Graph	Dials																
	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000	
▶ 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AFR: 0 | Lambda: 0 | Original Map Sensor | Read Lock

Record | Play | Stop | Prev | Next

Send | Receive | Burn | Status: Connected to ECU

RPM: 500

Map: 32

TPS: 5

Inj. In Duty Cycle: 55

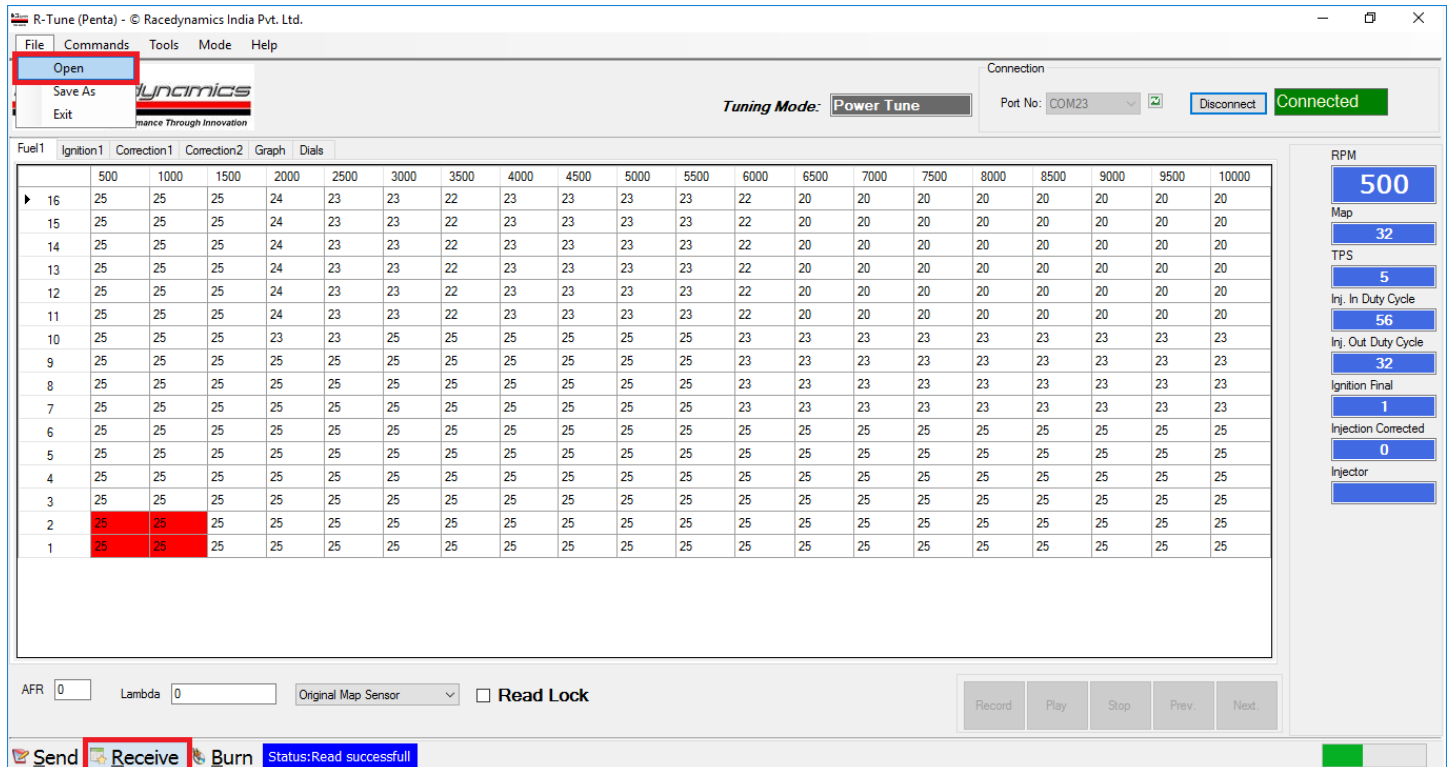
Inj. Out Duty Cycle: 32

Ignition Final: 1

Injection Corrected: 0

Injector

Once connected either click Receive to retrieve the map on the PowerTune or click File, Open and load a saved map. If loading saved map first open then click Send to transfer the opened map to the PowerTune. To make this map permanent on the PowerTune click Burn after clicking Send else the sent map will be lost when the PowerTune is powered off and on.



The screenshot shows the R-Tune software interface. The main window displays a table of map data with columns for Fuel1, Ignition1, Correction1, Correction2, Graph, and Dials. The table has 16 rows and 19 columns. The first two columns (Fuel1 and Ignition1) are highlighted in red. The table data is as follows:

Fuel1	Ignition1	Correction1	Correction2	Graph	Dials	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000
16	25	25	25	24	23	23	22	23	23	23	22	23	23	23	23	22	20	20	20	20	20	20	20	20	20
15	25	25	25	24	23	23	22	23	23	23	22	23	23	23	23	22	20	20	20	20	20	20	20	20	20
14	25	25	25	24	23	23	22	23	23	23	22	23	23	23	23	22	20	20	20	20	20	20	20	20	20
13	25	25	25	24	23	23	22	23	23	23	22	23	23	23	23	22	20	20	20	20	20	20	20	20	20
12	25	25	25	24	23	23	22	23	23	23	22	23	23	23	23	22	20	20	20	20	20	20	20	20	20
11	25	25	25	24	23	23	22	23	23	23	22	23	23	23	23	22	20	20	20	20	20	20	20	20	20
10	25	25	25	23	23	23	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23
9	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23
8	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23
7	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23
6	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
5	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
4	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
3	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
2	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
1	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25

The interface also includes a menu bar (File, Commands, Tools, Mode, Help), a toolbar with buttons for Open, Save As, and Exit, and a status bar with buttons for Send, Receive, and Burn. The status bar shows "Status: Read successful". On the right side, there are several control panels for RPM (500), Map (32), TPS (5), Inj. In Duty Cycle (56), Inj. Out Duty Cycle (32), Ignition Final (1), Injection Corrected (0), and Injector.

The four red dots represent the current real-time situation of the vehicle. The PowerTune retrieves values for fueling and ignition timing based on the location of the four red dots called Load Cell on the Fuel or Ignition table. The vertical column represents load, either TPS or MAP with 0 being the minimum load and 16 being the maximum load. Similarly, the horizontal row represents RPM from 500RPM to 10000RPM. The right most column represent the real-time situation of the engine in numbers.

R-Tune (Penta) - © Racedynamics India Pvt. Ltd.

File Commands Tools Mode Help

RACE dynamics
Performance Through Innovation

Tuning Mode: **Power Tune** Port No: COM23 Disconnect **Connected**

Fuel1	Ignition1	Correction1	Correction2	Graph	Dials	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000	
16	25	25	25	24	23	23	22	23	23	23	23	23	23	23	22	20	20	20	20	20	20	20	20	20	20	20
15	25	25	25	24	23	23	22	23	23	23	23	23	23	23	22	20	20	20	20	20	20	20	20	20	20	20
14	25	25	25	24	23	23	22	23	23	23	23	23	23	23	22	20	20	20	20	20	20	20	20	20	20	20
13	25	25	25	24	23	23	22	23	23	23	23	23	23	23	22	20	20	20	20	20	20	20	20	20	20	20
12	25	25	25	24	23	23	22	23	23	23	23	23	23	23	22	20	20	20	20	20	20	20	20	20	20	20
11	25	25	25	24	23	23	22	23	23	23	23	23	23	23	22	20	20	20	20	20	20	20	20	20	20	20
10	25	25	25	23	23	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23	23	23
9	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23
8	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23
7	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	23	23	23	23	23
6	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
5	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
4	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
3	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
2	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
1	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25

AFR 0 Lambda 0 Original Map Sensor Read Lock

Record Play Stop Prev Next

Send Receive Burn Status: Read successful

RPM: 3251

Map: 59

TPS: 59

Inj. In Duty Cycle: 86

Inj. Out Duty Cycle: 86

Ignition Final: 3

Injection Corrected: 59

Injector: []

To change values on the Fuel or Ignition table just highlighting the required region then right click for options. The Auto Tune option is disabled for PowerTune. If required one can enter values individually in each cell.

The screenshot shows the R-Tune software interface. At the top, there is a menu bar (File, Commands, Tools, Mode, Help) and a connection status bar (Port No: COM23, Disconnect, Connected). The main window displays a tuning table with columns for Fuel1, Ignition1, Correction1, Correction2, Graph, and Dials, and rows for RPM values from 1600 to 1000. A context menu is open over the table, listing options: Auto Tune, Increase By Percent, Decrease By Percent, Set Value, Increase By Value, Decrease By Value, Copy, and Paste. On the right side, there are several control buttons for RPM (3251), Map (59), TPS (59), Inj. In Duty Cycle (86), Inj. Out Duty Cycle (86), Ignition Final (3), Injection Corrected (59), and Injector. At the bottom, there are input fields for AFR (0) and Lambda (0), a dropdown for Original Map Sensor, a checkbox for Read Lock, and a status bar showing 'Status: Read successful'.

This gives the user option to choose load input to the PowerTune.

R-Tune (Penta) - © Racedynamics India Pvt. Ltd.

File Commands Tools Mode Help

RACE dynamics
Performance Through Innovation

Tuning Mode: **Power Tune** Connection: Port No: COM23 Disconnect **Connected**

Fuel1 Ignition1 Correction1 Correction2 Graph Dials

MAF Signal Clamp

	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
▶	0	0	0	0	0	0	0	0	0	0

MAF Signal Clamp

	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000
▶	0	0	0	0	0	0	0	0	0	0

MAP Signal Clamp

	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
▶	0	0	0	0	0	0	0	0	0	0

MAP Signal Clamp

	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000
▶	0	0	0	0	0	0	0	0	0	0

Batt. dependent Injector Opening Time (ms) [Low Batt Volt <--> High Batt Volt]

	1	2	3	4	5	6	7	8	9	10
▶	2	2	4	4	3	3	8	8	10	10

Batt. dependent Ignition dwell time (ms) [Low Batt Volt <--> High Batt Volt]

	1	2	3	4	5	6	7	8	9	10
▶	2	2	9	9	5	5	1.1	1.1	1	1

AFR 0 Lambda 0 Original Map Sensor Read Lock

Record Play Stop Prev Next

(5=OE TPS) (6=OE MAP) (7=OE MAF) (8=On-board MAP)
6

RPM: 3251
Map: 59
TPS: 59
Inj. In Duty Cycle: 86
Inj. Out Duty Cycle: 86
Ignition Final: 3
Injection Corrected: 59
Injector: []

Send Receive Burn Status: Read successful

Choose the right Ignition typed based on the vehicle PowerTune is controlling.

For E.g. Suzuki Esteem and Honda City VTEC is single coil

Suzuki Baleno and Honda Civic is dual and quad coil respectively

Fuel Mul. will multiply the values in the fuel table overall by 2, 4, 6, 8 or 10 times.

Noise filter is to software filter input noises from real world conditions.

The screenshot shows the RACE dynamics software interface. The main window is titled "R-Tune (Penta) - © Racedynamics India Pvt. Ltd." and has a menu bar with "File", "Commands", "Tools", "Mode", and "Help". The interface is divided into several sections:

- Connection:** Tuning Mode: Power Tune, Port No: COM23, Disconnect, Connected.
- Ignition Selection:** Ign. Selection (2=single coil) (4=Dual/Quad coils) is set to 2.
- Fuel Multiplier:** Fuel Mul. (2=x1)(4=x2)(6=x4)(8=x6)(10=x8) is set to 2.
- Noise Filter:** Noise Filter (x100ms) is set to 4.
- Idle Control:** Idle Control [Low Engine Temp <--> High Engine Temp] table with values: 10, 10, 8, 8, 6, 6, 4, 4, 2, 2.
- Acceleration Enrich:** Acceleration Enrich (%) [Low TP Change <--> High TP Change] table with values: 10, 10, 25, 25, 32, 32, 32, 32, 32, 32.
- Altitude based Injection Correction:** Altitude based Injection Correction [High Alt. <--> Low Alt.(Sea Level)] table with values: -98, -98, -96, -96, -94, -94, -92, -92, -90, -90.
- Altitude based Ignition Correction:** Altitude based Ignition Correction [High Alt. <--> Low Alt.(Sea Level)] table with values: -98, -98, -96, -96, -94, -94, -92, -92, -90, -90.
- Other Parameters:** Lift-Off Idle increase (0), Idle Period - adj as per spec (30), Idle Clk P (20), Idle Clk S (0), AC-on Idle Increase (0), AC-on Injection Trim (0), AC-on Ignition Trim (0).
- AFR and Lambda:** AFR 0, Lambda 0, Original Map Sensor, Read Lock checkbox.
- Control Buttons:** Record, Play, Stop, Prev, Next.
- Right Panel:** RPM 3251, Map 59, TPS 59, Inj. In Duty Cycle 86, Inj. Out Duty Cycle 86, Ignition Final 3, Injection Corrected 59, Injector.
- Status Bar:** Send, Receive, Burn, Status:Read successfull.

The value 25 represent stock OEM value which means the PowerTune will replicate stock OEM values for fueling and ignition timing. Any value greater than 25 represent richer fueling than stock OEM values for fueling and more advance timing than stock OEM values. Any value greater than 25 represent leaner fueling than stock OEM values for fueling and more retard timing than stock OEM values. Ignore remaining parameters in the RTune Penta software as they are preset values and should not be changed.