

Gas-Guzzling EFI



Russ Radke

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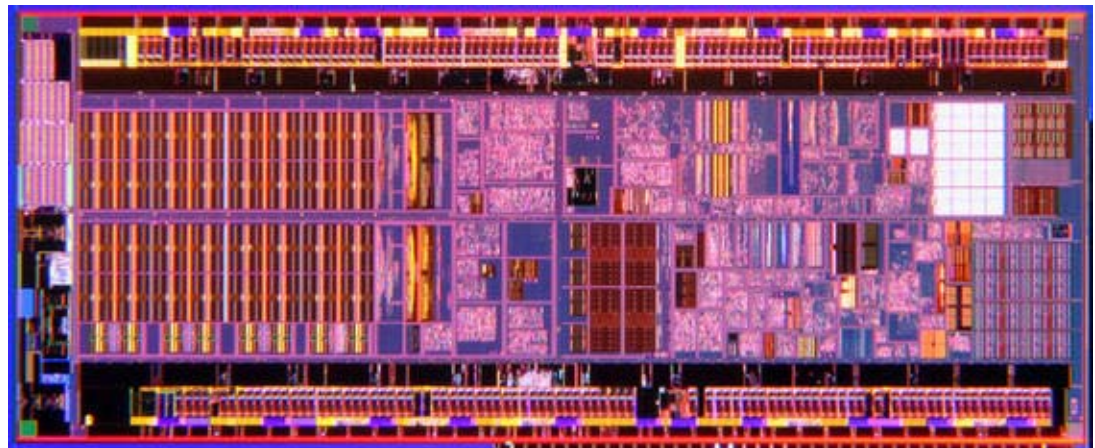
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Overview

- CarPuter
 - Intel Atom 230 Processor / D945GCLF
 - CF-2-IDE Storage
 - M3-ATX Intelligent Auto Power Supply
 - 8" Touchscreen LCD
 - XUbuntu
 - MMS (Media System)
 - MegaTunix (ECU Programming / Gauge Visualization)
- ECU (Fuel and Spark)
 - MegaSquirt MS-II

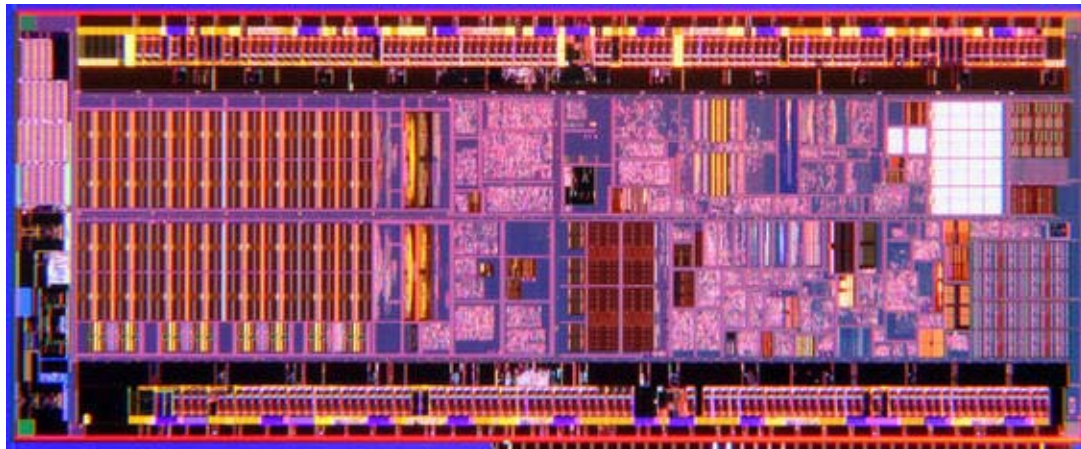
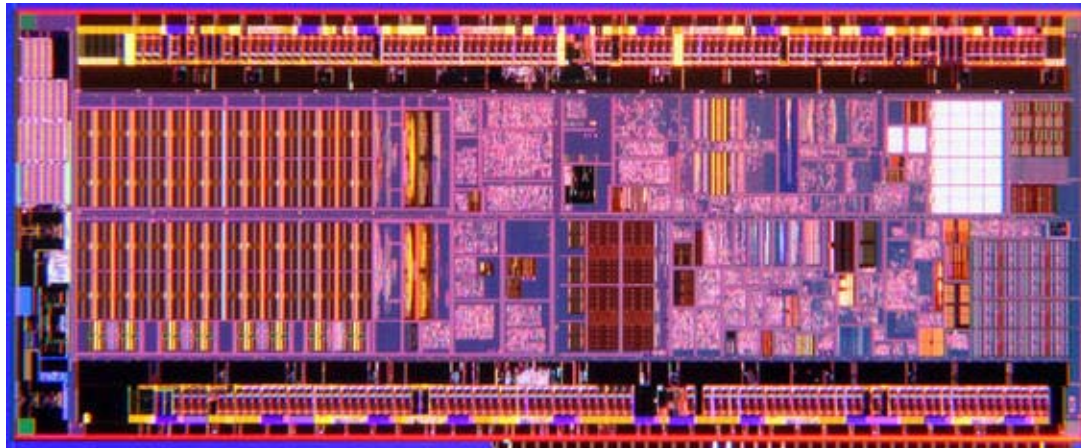
Intel Atom 230

- 45nm Diamondville core, 25mm²
- 64-bit, hyper-threaded architecture
- 1.6GHz Clock, 533MHz FSB
- 0.9V – 1.625V, 4W Max, 400mW Idle



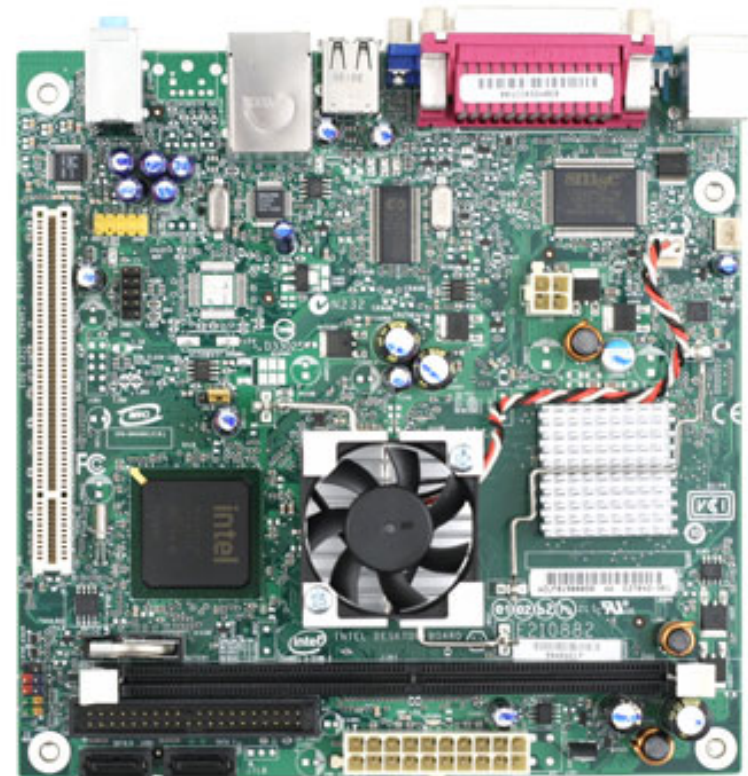
Intel Atom 330

- Two Atom 230s in one (dual-core)



Intel D945GCLF

- Atom 230 Mini-ITX motherboard (~\$70):
 - 945GC / ICH7 (POWER!!!!!!!!!!!!!!)
 - DDR2 667 / 1 PCI / 1 ATA / 2 SATA-II
 - 4.1 Audio / 100Mbps
 - 2 PS/2 / Serial / Par
 - USB: 4 ext / 2 int

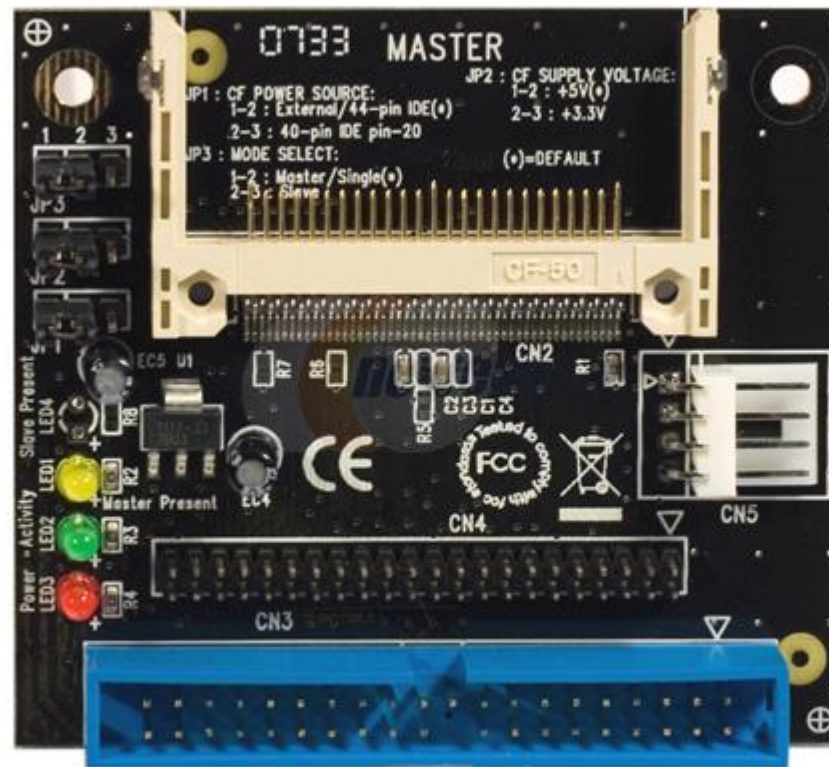


Intel D945GCLF2

- Atom 330 Mini-ITX motherboard (~\$80):
 - 945GC / ICH7 (POWER!!!!!!!!!!!!!!)
 - DDR2 667 / 1 PCI / 1 ATA / 2 SATA-II
 - 6.1 Audio / 1Gbps / 1 S-Video
 - 2 PS/2 / Serial / Par
 - USB: 4 ext / 4 int

CF-2-IDE Storage

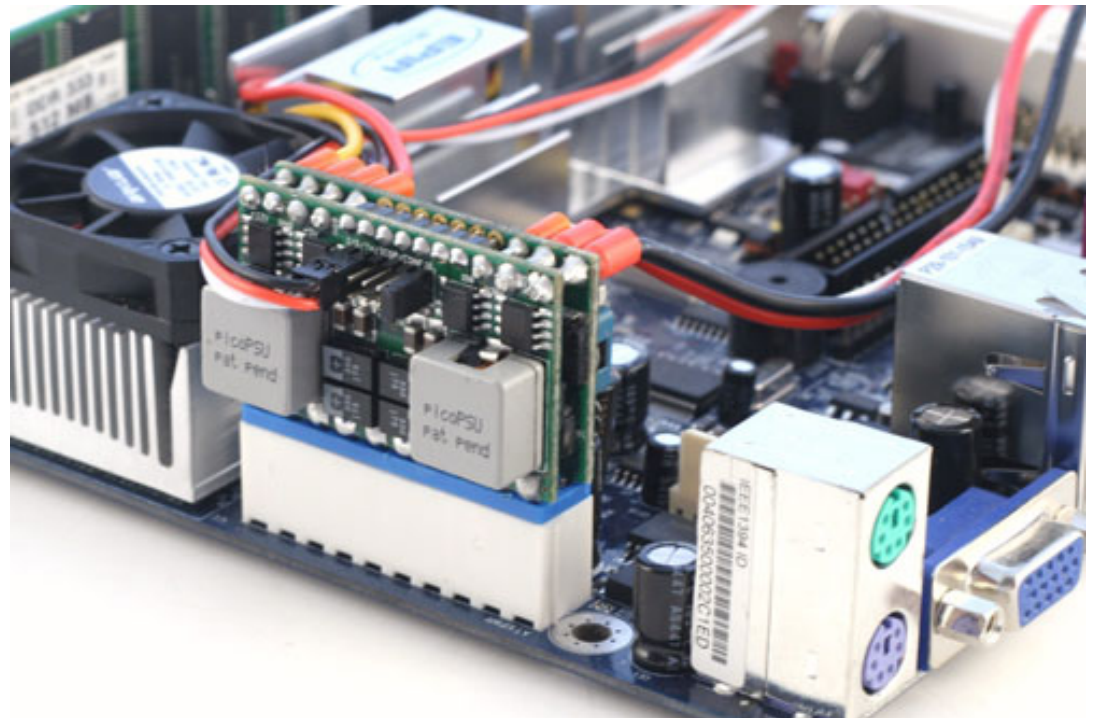
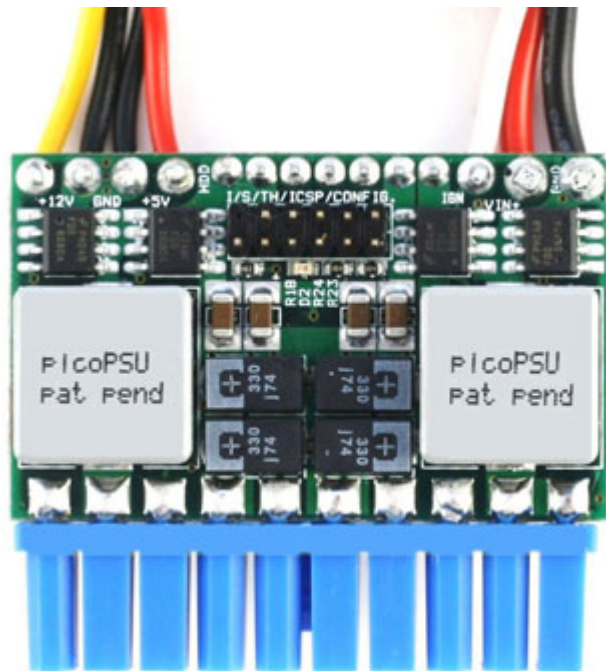
- SYBA SD-CF-2IDE-U
 - Supports UDMA (VERY IMPORTANT!)



M3-ATX Auto Power Supply

www.mini-box.com

- 6V – 24V Input, 125W ATX Output (~\$70)
- Programmable sequencing from ignition
- High-efficiency switching architecture



Touchscreen

- VM-80 (no brand) (~\$200)
- 8" TFT LCD touchscreen
- 800x600 (native)
- XGA/VGA input (15 pin D-SUB)
- USB touchscreen interface
- Input: 11.5-14.5V (10W)

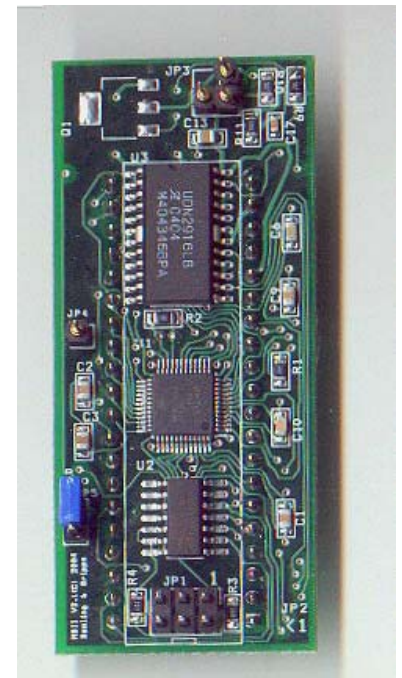
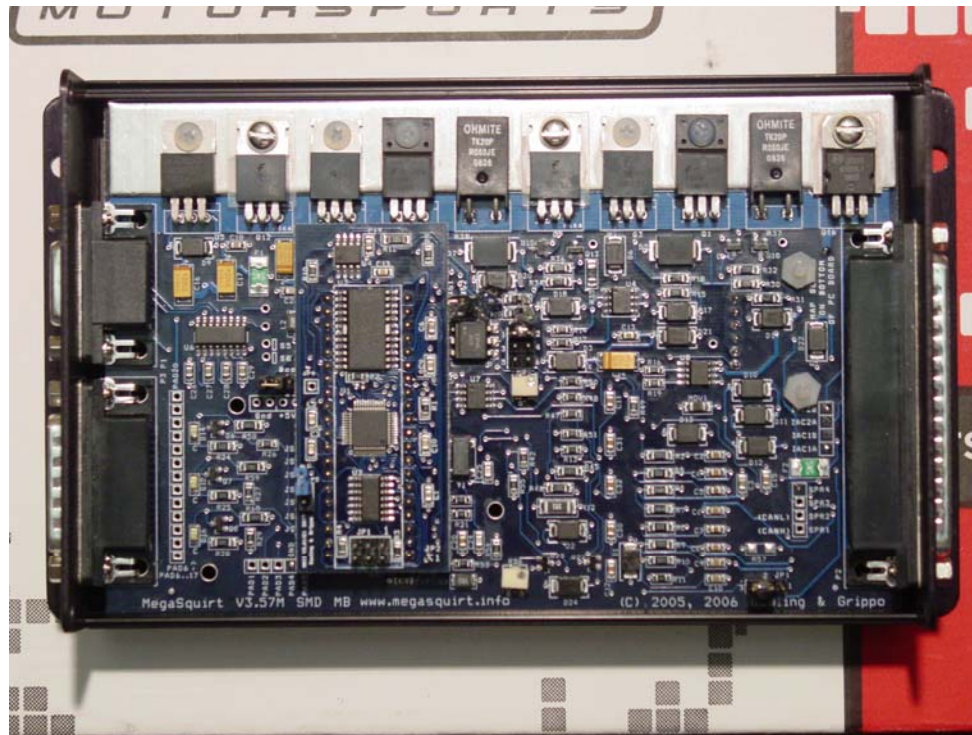
Software

- XUubuntu ('nuf said)
- MMS (www.mymediasystem.org)
 - (L)user-friendly interface to media players
 - Audio / Video/DVD / Pictures / Radio / TV / Games
 - Keyboard / LIRC / Touchscreen friendly
- MegaTunix (megatunix.sourceforge.net)
 - *nix control software for MegaSquirt ECU

MegaSquirt

www.megamanual.com

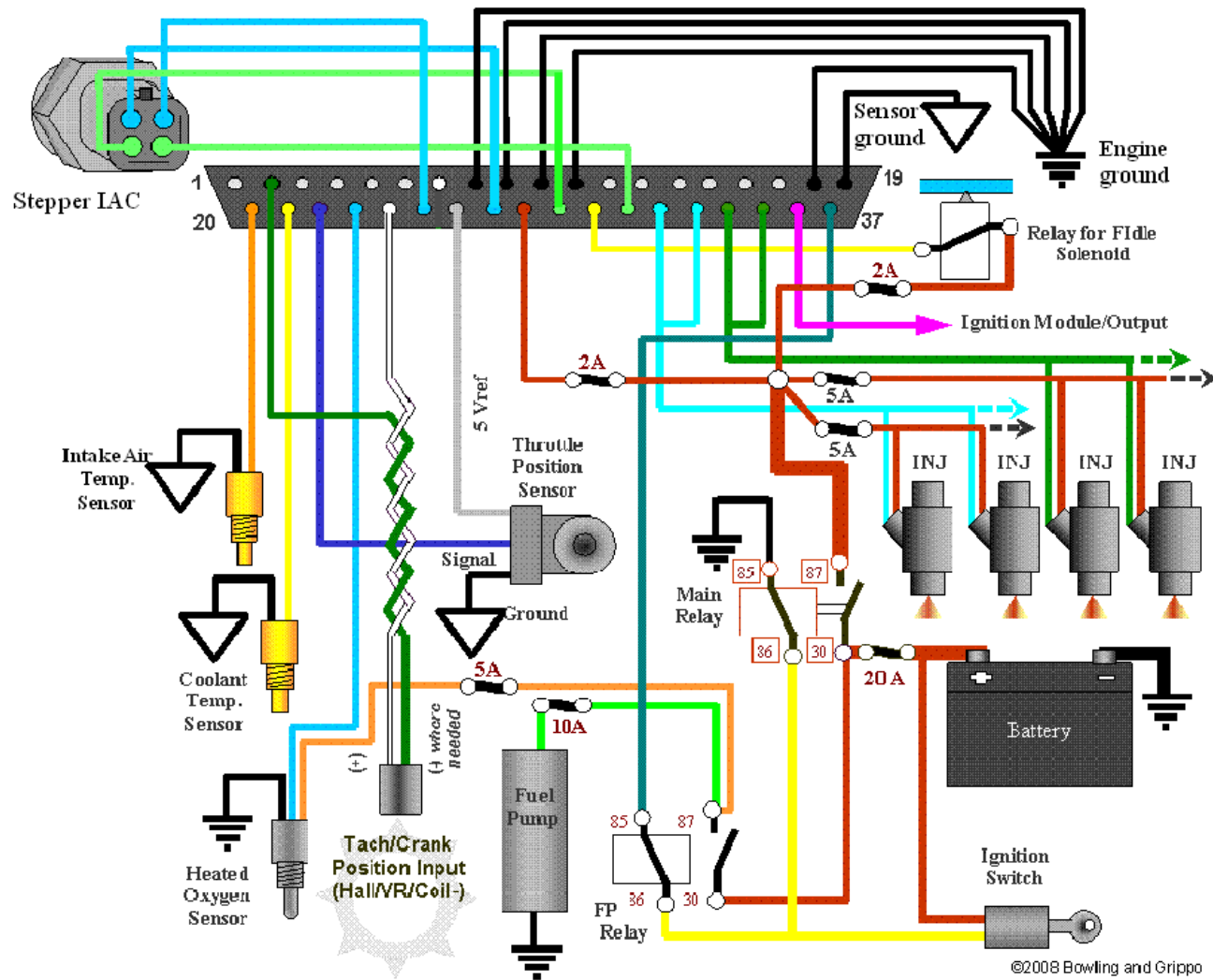
- Open-source hardware and software ECU
 - Controls fuel injection and ignition spark
 - Highly configurable
 - Active development
 - Etc...
 - Etc...
 - Etc...



MegaSquirt

www.megamanual.com

MegaSquirt V3.0 Main Board
External Wiring Diagram



MegaTunix

- Full MS-II Control
- Visualization:
 - Gauges
 - Live 3D maps

MegaTunix 0.9.7, Ready...

File Tuning View Tools Help

MegaSquirtnSpark Extra Spark Tables

Spark Table 1 Spark Table 2

MAP Bins Kpa

140	10.4	10.4	8.0	10.4	14.3	18.5	18.5	18.5	18.5	18.5	18.5	18.5
130	10.4	10.4	9.4	11.5	15.3	19.6	22.4	22.4	22.4	22.4	22.4	22.4
120	10.4	10.4	10.4	12.5	16.4	20.6	23.4	23.4	23.4	23.4	23.4	23.4
110	10.4	10.4	11.5	13.6	17.5	21.7	24.5	24.5	24.5	24.5	24.5	24.5
100	10.4	10.4	12.5	14.6	18.5	22.7	25.6	25.6	25.6	25.6	25.6	25.6
90	10.4	10.4	12.5	14.6	18.5	22.7	25.6	25.6	25.6	25.6	25.6	25.6
80	10.4	10.4	12.5	14.6	18.5	22.7	25.6	25.6	25.6	25.6	25.6	25.6
70	10.4	10.4	12.5	14.6	18.5	22.7	25.6	25.6	25.6	25.6	25.6	25.6
60	10.4	10.4	12.5	14.6	18.5	26.6	27.7	27.7	27.7	27.7	27.7	27.7
50	10.4	10.4	12.5	14.6	19.6	27.7	29.8	29.8	29.8	29.8	29.8	29.8
40	8.7	8.7	10.4	14.6	20.6	29.8	31.9	31.9	31.9	31.9	31.9	31.9
30	8.7	8.7	10.4	14.6	21.7	31.9	36.1	36.1	36.1	36.1	36.1	36.1

RPM Bins

3D View

500 700 1300 2000 3000 4000 5000 6000 6100 6200 6300 6400

Temporary Timing Offset Controls

Trim Angle Fixed Angle -10.00

0.00 Trigger Angle 60.21

Tracking option

Focus follows Vertex with most "Weight"

Rescale Subset of Table

Rescale by what % 100 Rescale

SPORT-COMP RPM 23000

SPORT-COMP Throttle Pos. ADC

SPORT-COMP MAP KPa

SPORT-COMP SPARK ANGLE * BTDC

SPORT-COMP Air/Fuel Ratio

Commands

Get Data from ECU Permanently Store Data in ECU



To-Do

- Install it in a car. ;^)
- Decrease boot-time (Ubuntu 8.10?)
- Smoke Loseke's truck (with Linux!)