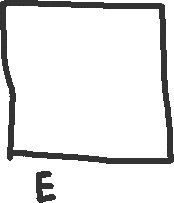
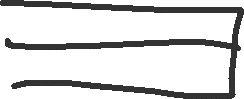
Lanos 2006

ECM: KDAC with ZXJN

Protocol: ALDL 5v 8192

Circuit



Communication Method

PC: l2ChipTuner Program + TTL to USB device

Arduino

Arduino Send: F4 57 01 00 B4 (all hex)

ECM response: 64 Byte

1. Header: 3 byte (F4 92 01)
2. Payload: 60 Byte
3. CRC: 1 Byte

Payload:

Frameware Virsion

1- \_promid 1=07

2- \_promid 1=41

------------------------------------------------

fault codes (Each code is encoded with one bit)

3- \_malffw1=01

4- \_malffw2=07

5- \_malffw3=41

6- \_malffw4=00

--------------------------------------------

COOLANT TEMPERATURE = N \* .75 - 40 [degrees C]

7-\_cooldeg=00

-----------------------------------------------------

Mat (manifold temperature)= N \* .75 - 40 [degrees C]

8- \_matdeg=00

-----------------------------------------------------

ADMAP A/D RESULT FROM MANIFOLD PRES. SENSOR INPUT

VOLTS = 5N/255

(kpa = (N + 28.06)/2.71)

9- \_admap=00

-------------------------------------------------------

10- not used

-------------------------------------------------------

11-not used

-------------------------------------------------------

12- TPS voltage ADTHROTT A/D RESULT FROM TPS INPUT

VOLTS = 5N/255

\_adthrot

-------------------------------------------------------

13- NTRPMX RPM VARIABLE SCALED 25 RPM / BIT

N = RPM / 25

RPM = N \* 25 [rpm]

Engine speed

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14-o2 Sensor Voltage

V=N/255

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15-Speed in Miles per hour

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16- not used

-------------------------------------------------------

17-not used

-------------------------------------------------------

18- not used

-------------------------------------------------------

19-not used

-------------------------------------------------------

20- BATTERY VOLTS = N \* .1 [Volt] On

ADBAT TRANSMISSION IGNITION VOLTAGE VARIABLE

VOLTS = N/10

-----------------------------------------------------

21- not used

------------------------------------------------------

22 SAP SPARK ADVANCE RELATIVE TO TDC (MSB)

23 SAP+1 SPARK ADVANCE RELATIVE TO TDC (LSB)

double byte value in 2's complement representation

If Bit 7 of MSB = 0 then result is positive

value = ([N33]\*256 + [N34])

If Bit 7 of MSB = 1 then result is negative

value = 65536 - ([N33]\*256 + [N34])

DEGREES = VALUE \* 90/256

Two bytes for the ignition timing in degrees to TDC.

UOZ = (256 \* MSB + LSB)) \* 90/256

If the seventh bit in MSB is equal to one, then this corresponds to a negative lead angle (lag):

UOZ = -1 \* (65536 - 256 \* MSB + LSB) \* 90/256

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24- iDLE AIR CONTROL DESIRED MOTOR POSIRTION

DESIRED IAC POSITION

N = IAC STEPS

Desired position of idle speed controller.

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25- IAC motor's current position

N = IAC STEPS

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26- DESSPD DESIRED ENGINE SPEED

RPM = N\*12.5\*\* 0.5

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27-36 NOT USED

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37-38

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39-AIRFUEL AIR FUEL RATIO

A/F RATIO = N/10

AFR = N \* .1

--------------------------------------------

40- BLM BLOCK LEARN MULTIPLIER

41- BLMCELL BLOCK LEARN CELL (0 or 1 ONLY)

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42-INT CLOSED LOOP INTEGRATOR

N = COUNTS

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58-o2 SENSOR READY

n=0x01 TRUE

ELSE FALSE

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#define MALF1\_EST 0x01 // Electronic Spark Timing. Firing point control

#define MALF1\_HIMAP 0x02 // High manifold pressure

#define MALF1\_EGR 0x04 // Exhaust Gas Recirculation Circuit

#define MALF1\_SPEED 0x08 // No signal from speed sensor

#define MALF1\_HIMAT 0x10 // High manifold air temperature

#define MALF1\_HITPS 0x20 // High signal from Trotle Position Sensor

#define MALF1\_LOCOLTEMP 0x40 // Low collant temperature

#define MALF1\_O2 0x80 // Oxygen sensor circuit

#define MALF2\_ESTASHORT 0x01 // Electronic Spark Timing A shorted at BAT+

#define MALF2\_ESTASHORTGND 0x02 // Electronic Spark Timing A shorted at ground

#define MALF2\_IMMOB 0x04 // Immobilizer no connection

#define MALF2\_OCTANE 0x08 // Octane corrector

#define MALF2\_KNOCK 0x10 // Knock sensor

#define MALF2\_ECU1 0x20 // ECU Error

#define MALF2\_O2REACH 0x40 // O2 Sensor reach

#define MALF2\_O2LEAN 0x80 // O2 Sensor lean

#define MALF3\_LOTPS 0x01 // Low signal from Trotle Position Sensor

#define MALF3\_HICOLTEMP 0x02 // High collant temperature

#define MALF3\_IAC 0x04 // Idle Air Control

#define MALF3\_KPS 0x08 // Crank position sensor

#define MALF3\_ECU2 0x10 // ECU Error

#define MALF3\_INJECTOR 0x20 // Injector

#define MALF3\_ESTBSHORT 0x40 // Electronic Spark Timing A shorted at BAT+

#define MALF3\_ESTBSHORTGND 0x80 // Electronic Spark Timing A shorted at ground

#define MALF4\_LOMAP 0x02 // Low manifold pressure

#define MALF4\_LOMAT 0x10 // Low manifold air temperature