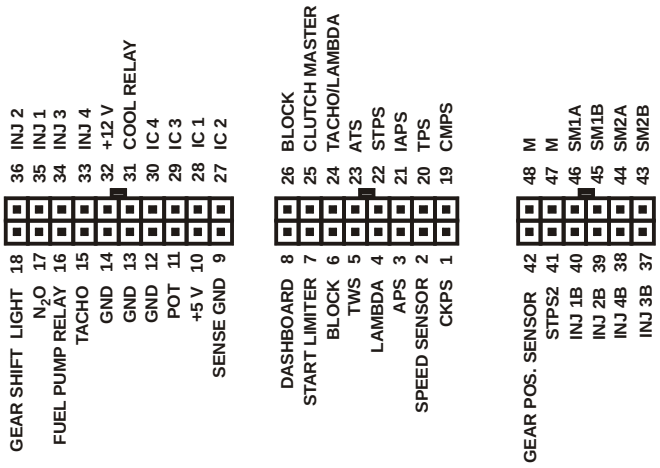
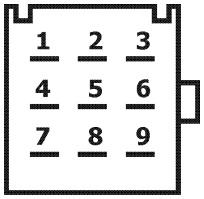
IGNIJET_2007
- Detailed description

1. Hardware

Wiring of the main connector (IGNIJET_2007 unit view):



Wiring of the secondary connector (on the conductor bundle):



1	GEAR SHIFT LIGHT	6	CLUTCH MASTER
2	N_2O	7	TACHO/LAMBDA
3	START LIMITER	8	LAMBDA
4	POTENTIOMETER	9	SENSE GND
5	+5V		

1. Crankshaft position sensor CKPS.
An input for standard pickup sensors used on motorbikes as CKPS.
One outlet of the CKPS should be connected to connector (1) and the other one should be connected to SENSE GND (pin 9) following the chart.

2. SPEED SENSOR.
An input for standard Hall speed sensors used on motorbikes.
SPEED SENSOR is powered from supply + 5 V (10) and SENSE GND (9). Output should be connected to pin (2).

3. Air pressure sensor APS.
An input for various APS sensor types used on motorbikes. Input voltage can be from 0 V to 5 V. Proper sensor data is set according bike type in software IGNIJET_2007.EXE. It is also possible to change this by software IGNIJET_2007.EXE.
APS is powered from supply + 5 V (10) and SENSE GND (9). Output should be connected to pin (3).
If there is no APS in the bike system the air pressure sensor feature will be provided by IAPS (measures AP at switching on. In case there is neither APS nor IAPS the unit will adjust air pressure to 100 kPa.

4. LAMBDA.
Two type of Lambda sensor can be used.
One is standard lambda sensor used in cars and bikes (voltage for stechiometric air-gasoline mixture is 0.4 to 0.8 V). Another is linear lambda sensor with converter (UEGO, Wideband). Input is designed for input voltage from 0 V up to 5 V.

One outlet of LAMBDA sensor should be connected to connector (pin 4) and the other one should be connected to SENSE GND (pin 9). Lambda sensor is not used for lambda control of injection. Output from Lambda is on monitor and can be used for auto tuning injection time.

5. Water temperature sensor TWS.
Input for standard thermo sensors used on motorbikes. Proper sensor data are set according bike type in software IGNIJET_2007.EXE . It is also possible to change this by software IGNIJET_2007.EXE. One outlet of the TWS should be connected to connector (5) and the other one should be connected to SENSE GND (pin 9).

6. Inhibit input BLOCK.
One outlet of BLOCK (e.g. from stand switch) should be connected to (6) and the other one should be connected to SENSE GND (pin 9) or GND (12, 13, 14). If BLOCK switch is activated, the unit blocks ignition. Blocking can enabled or disabled in software IGNIJET_2007.EXE.

7. START LIMITER input.
One outlet of START LIMITER switch should be connected to connector (pin 7) and the other one should be connected to SENSE GND (pin 9) or GND (12,, 13, 14). If START LIMITER switch is activated, the unit adjusts limiter and after deactivation START LIMITER initiates N_2O injection delay. Reverse polarity of the START LIMITER switch can be configured within IGNIJET_2007.EXE software.

8. DASHBOARD.
Output for connection to serial communication with the dashboard. Information on the engine temperature (all SUZUKI and YAMAHA bikes) and speed (YAMAHA) is sent via serial communication to the dashboard, where it is displayed. To ensure proper display function the immobilizer should be disabled.
DASHBOARD (pin 8) output should be connected with dashboard according to the chart.

9. SENSE GND ground for sensors.
SENSE GROUND (pin9) is used for connection and supply of sensors.

10. Reference voltage + 5 V.
Reference voltage +5V (pin 10) is used for the power supply of sensors.

11. Input for POTENCIOMETER.
Voltage from potentiometer can be used for correction of injection time or advance or start limiter revolution. Input voltage can be from 0V to 5 V. It is set in software IGNIJET_2007.EXE for what is used potentiometer voltage.
Potentiometer is powered from supply + 5 V (10) and SENSE GND (9). Output should be connected to pin (11).

12. 13. 14. Ground (GND).
Power ground (GND) Output should be connected to pins (12, 13, 14).

15. Revolution indicator output TACHO.
The revolution indicator output is compatible with major part of board devices used on motorbikes. Pulse number for one revolution is set within software IGNIJET_2007.EXE. Tacho can be supplied by 12V voltage and GND. Tacho output should be connected to connector (pin 15).
When TACHO/LAMBDA switch is activated LAMBDA sensor voltage is displayed on the tachometer.

16. FUEL PUMP RELAY output.
Fuel relay activates for about 4 s after the unit is switched on and remains active while the motor is running. One fuel pump relay outlet should be connected to connector (pin 16) and the other one should be connected to key switched + 12V. Connect the switched fuel pump relay circuit following the diagram. !!!BE AWARE OF THE FUEL PUMP POLARITY!!!

17. N_2O injection output.
Maximum Injection valve output current is 10 A (just for a short period of time - about 30 s). The N_2O is injected only if "N2O enable" in program IGNIJET 04.EXE is checked, TPS > 85 %, start limiter isn't active and revolution is greater than 2000 rpm. N_2O injection settings as well as delay after ignition are adjusted within IGNIJET 04.EXE software. Together with N_2O supply so-called RETARD is activated – advance reduction. RETARD and its delay settings after ignition are adjusted within IGNIJET 04.EXE software. One N_2O injection valve outlet should be connected to connector (pin 17) and the other one should be connected to key switched + 12V.

18. GEAR SHIFT LIGHT indicator.
The indicators maximum output current is 5 A (bulb up to 50 W). Gearshift indicator revolution is set by IGNIJET_2007.EXE software.
One Gearshift indicator outlet should be connected to connector (pin 18) and the other one should be connected to key switched + 12V.

19. Crankshaft position sensor CMPS.
An input is ready for standard pickup sensors used on motorbikes as CKPS.
One outlet of the CKPS should be connected to connector (19) and the other one should be connected to SENSE GND (pin 9) following the chart. Some bike has Hall sensors as CMPS. Adaptor for this sensor is in adaptor cable for certain bike.

20. Throttle position sensor TPS.
An input is ready for standard TPS sensors used on motorbikes. It is designed to bear voltage up to 5 V. Particular sensor settings for individual motorbike types are included in IGNIJET_2007.EXE software.
TPS is powered by referential voltage + 5 V (10) and SENSE GND (9). Sensor outlet will be connected to connector (20).

21. Induction air pressure sensor IAPS.
The sensors are the same as APS, but they measure induction manifold pressure instead of atmospheric pressure. The value is needed to determine fuel dosage for idle and small engine load or in cases when there is no TPS in the system (is malfunctioning). In case there is no IAPS in the system, the unit determines the dosage using TPS only. Sensor characteristic can by set software IGNIJET_2007.EXE
IAPS is powered by referential voltage + 5 V (10) and SENSE GND (9). Sensor outlet should be connected to connector (21).

22. Exhaust servo position sensor STPS.
There is a exhaust servo drive on some bikes. It has mostly dc motor. There is mostly no exhaust valve and no exhaust servo on racing bikes.
An input is ready for sensors used in standard servos on motorbikes. It is designed for input voltage from 0 V to 5 V. Servo settings are included in IGNIJET_2007.EXE software.
TPS is powered by referential voltage + 5 V (10) and SENSE GND (9). Sensor outlet should be connected to connector (22).
Motor outlets should be connected to pins 47 and 48.

23. Air temperature sensor ATS.
An input is ready for standard thermo sensors used on motorbikes. Resistance/temperature function is mostly the same as with water temperature sensors. Proper sensor data is set according bike type in software IGNIJET_2007.EXE . It is also possible to change this by software IGNIJET_2007.EXE.
One outlet of the ATS should be connected to connector (pin 23) and the other one should be connected to SENSE GND (pin 9) following the chart.
Warning!!! Kawasaki ZX12R uses different sucked-air temperature sensor – it is necessary to replace it with another one (from different type of motorbike) or not to use it (to disconnect it from the connector).

24. TACHO/LAMBDA switch input.
One TACHO/LAMBDA outlet of should be connected to connector (pin 24) and the other one should be connected to SENSE GND (pin 9) or GND (12, 13, 14). If TACHO/LAMBDA switch is activated, the unit displays actual air-fuel ratio (AFR) on the tachometer (instead of revolution) Displayed sensitivity can be configured by IGNIJET_2007.EXE software. Reverse polarity of the switch can be also configured by IGNIJET_2007.EXE software. (Tab sheet Bike)

25. CLUTCH MASTER input.
One outlet of CLUTCH MASTER switch should be connected to connector (pin 25) and the other one should be connected to SENSE GND (pin 9) or GND (12, 13, 14). If CLUTCH MASTER switch is activated, the unit blocks ignition for a defined period of time. This provides for higher gearshift without clutch and gas shut-off, thus minimizing the time losses during gear shifting. Blocking time can be adjusted within IGNIJET_2007.EXE software. Reverse polarity of the CLUTCH MASTER switch can be configured within IGNIJET_2007.EXE software.

26. FALL SENSOR.
One outlet of FALL SENSOR should be connected to connector (pin 26) and the other one should be connected to SENSE GND (pin 9) or GND (12, 13, 14). If FALL SENSOR switch is activated, the unit blocks ignition. Reverse polarity of the fall sensor can be configured within IGNIJET_2007.EXE software. Honda motorbikes have the fall sensor included in the unit power supply.

27. 28. 29. 30. Induction coils IC 1, IC 2, IC 3, IC 4.
Induction coils outputs are ready for standard types, designed for inductive ignition and used on injection-type motorbikes (primary coil resistance approx. 1 to 2 Ohm).
One outlet of induction coils should be connected to key switched + 12 V and the other one should be connected to corresponding connector pin IC 1 (28), IC 2 (27), IC 3 (29), IC 4 (30).
In line engine configuration applies only to motors with cylinders order 4, 3, 1, 2. For two-cylinder motors IC 1 and IC 4 is for the front cylinder and IC 2 and IC 3 the back cylinder.

31. COOL RELAY switch output.
The cooling relay should be connected following the wiring diagram. One relay outlet should be connected to cooling output COOL RELAY (pin 31) and the other one should be connected to key switched + 12V. Connect the switched relay circuit

following the diagram. When the unit is switched on this output will switch for about 1 s and make the fan turn. This serves the purpose of fan function check. Switching temperature can be changed by software IGNIJET_2007.EXE.

32. Supply voltage +12 V.
Nominal Supply voltage is 14 V. It must be within 8 – 16 V range. In this range the unit is able to provide optimal control of all the processes. Supply voltage is connected by positive outlet to +12 V (pin 32) .

33. 34. 35. 36 Main injectors INJ 1, INJ 2, INJ 3, INJ 4.
Injector outputs are ready for standard injector types used on motorbikes (coil resistance approx. 13 Ohm).
One outlet of injectors should be connected to key switched + 12 V and the other one should be connected to corresponding connector konektoru - INJ 1 (35), INJ 2 (36) , INJ 3 (34), INJ 4 (33).
In line engine configuration applies only to motors with cylinders order 4, 3 , 1, 2. For two-cylinder motors INJ 1 and INJ 4 is for the front cylinder and INJ 2 and INJ 3 the back cylinder.

37. 38. 39. 40 Secondary injectors INJ1B, INJ2B, INJ3B, INJ4B.
Injector outputs are for standard injector types used on motorbikes (coil resistance approx. 13 Ohm).
One outlet of injectors should be connected to key switched + 12 V and the other one should be connected to corresponding connector pin - INJ1B (40), INJ2B (39) , INJ3B (38), INJ4 (37).
In line engine configuration applies only to motors with cylinders order 4, 3 , 1, 2. For two-cylinder motors INJ 1B and INJ 4B is for the front cylinder and INJ 2B and INJ 3B the back cylinder.

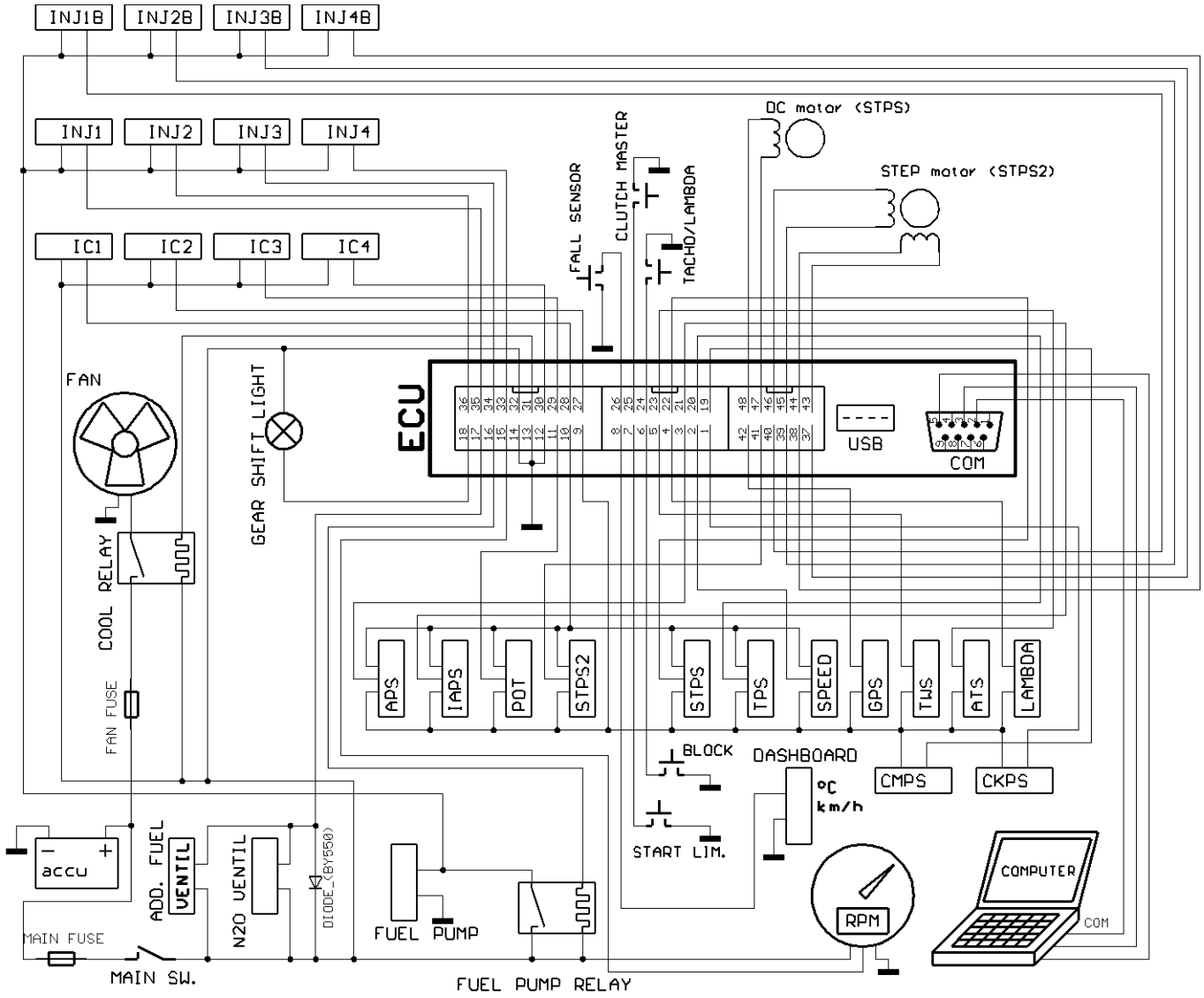
41. Intake servo position sensor STPS2.
There is a intake valve on some bikes. It has dc motor or step motor. Input is for voltage from 0 V to 5 V. Servo is set by software IGNIJET_2007.EXE.
TPS2 is powered by referential voltage + 5 V (10) and SENSE GND (9). Sensor outlet should be connected to connector (41). Motor outlets should be connected to pins 43, 44, 45, 46.

42. GEAR POSITION SENSOR.
Input is for standard sensors used on bikes. Proper sensor data is set according bike type in software IGNIJET_2007.EXE . It is also possible to change this by software IGNIJET_2007.EXE.
One outlet of the GEAR POSITION SENSOR should be connected to connector (42) and the other one should be connected to SENSE GND (pin 9).

43. 44. 45. 46 Outputs for intake servo motor SM1A, SM1B, SM2A, SM2B.
Outputs are for dc motor (pins 43, 44) or step motor (one coil pins 43, 44 and other pins 45, 46) .

47. 48. Outputs for exhaust servo motor.
Outputs are for dc motor.

Standard wiring of injection system using IGNIJET_2007 unit:



1. Software IGNIJET_2007

Pull down menus

File

New - default settings (serial adjustment)
Attention!!! This set automatically most of the parameters for certain bike but it may not be optimal. Some parameters special injection maps are necessary to optimize.

New for actual page - default settings (serial adjustment) for data at actual page only
Open - opens data file
Open from exe dir - opens data file from dir where is program IGNIJET_2007.EXE
Open for actual page - opens data file for data at actual page only
Save - saves data file
Save to exe dir - saves data file to dir where is program IGNIJET_2007.EXE
Print - prints the current settings
Exit - exits the program

Com

Com1 - Com20 - selection of communication port
Com Auto -searches out port where is working unit connected.

Ignition

Read - read parameters from unit
Verify - compares data in PC with data in the unit
Program - sends data from PC to the unit and make verification

Jet 1234 - includes items for work with TP injections maps
Separate - Separate work with map 1, 2, 3, 4)
Coupled - changes in map 1 is made also in maps 2, 3, 4)
1=2=3=4 - all maps are the same

Tools

Minus - take off parameters in maps on actual page by one
Plus - increase parameters in maps on actual page by one
Undo - Changes one step back
Redo - Changes one step forward

Language

English
German
Czech

Help

Contents - open file “manual_ignijet_2007_en.pdf” if it is in the same dir as program IGNIJET_2007.EXE
About - open window with info about program IGNIJET_2007.EXE

Icons menu

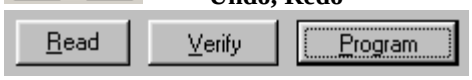
 **- New**

 **- Open**

 **- Save**

 **- Print**

 **- Undo, Redo**



- Read, Verify, Program

- communication don’t work. (You should check cable, supply of unit and com port setting)

Tab sheet Bike

Motorbike type - setting of bike type. Many parameters are set according bike type. Software offer also default setting of parameters (same as "New" order)

Memo - place for customers note

Fall sensor enable - enable or disable work of fall sensor

Blocking enable - enable or disable work of side stand booking

Activation by Switch on - setting of input - if box is checked switching input to ground activates function.

Limiters - setting of limiters revolution etc.
Start limiter -
Start limiters is activated by start limiter input (7). Revolution are set by value "Start limiter 1".
It is also possible to change this revolution by potentiometer. Function of potentiometer is set on page "Sensors".
If potentiometer function is set to control start limiter. Revolution is set according voltage on potentiometer input.
"Start limiter 1" value for 0V, "start limiter 2" value for 5V and linear change between.

Cooling - temperature of switching on fan.

RPM - set number of pulse per revolution and correction.

Lambda on RPM –
Set dependence rpm and AFR when function Lambda on RPM is active.
This function is activated by input "tacho/lambda" (24). If this input is switched to ground and check box in field "Activation by Switch on" is not checked than lambda is on tacho instead rpm.

Tab sheet Advance

Advance map has 15 colons (rpm) and 10 rows (TPS). When motor is running, value nearest to actual rpm and TPS is green.
When the check box "All " is not checked, it is possible to change this field by arrow in the bottom of sheet or by keys F4, F5.
When the check box "All " is checked it is possible to change all map by this arrow or keys.
Value basic advance is to be set to value of advance by start. This value is determined by mechanical position of rotor and pickup. Field in the bottom of sheet can correct advance of individual cylinder.

Tab sheet Inj. 1, Inj. 2, Inj. 3, Inj. 4

This map has 15 colons (rpm) and 10 rows (TPS). It is for setting injectin time by middle and high load.
Field in bottom of sheet Inj.1 determine where are this Inj. maps active where is Iap map active and where both map (linear change of rate).
If the IAP sensor is not connected are only Inj. map active.
When motor is running, value nearest to actual rpm and TPS is green if only this map is active, yellow if is active this map and TP map.
When the check box "All " is not checked, it is possible to change this field by arrow in the bottom of sheet or by keys F4, F5.
When the check box "All " is checked it is possible to change all map by this arrow or keys.
Maps can display % of basic injection time or ms.

Tab sheet Inj. B

Map determine ration between injection time of main and secondary jets.
0% only main jet inject.
50 % both jets have half of time.
100% only secondary jets inject.
This map has 15 colon (rpm) and 10 row (TPS).
When motor is running, value nearest to actual rpm and TPS is green.
When the check box "All " is not checked, it is possible to change this field by arrow in the bottom of sheet or by keys F4, F5.
When the check box "All " is checked it is possible to change all map by this arrow or keys.

Tab sheet Inj. IAP

This map has 15 colons (rpm) and 10 rows (IAP). It is for setting injectin time by low load and by idle.
If the TPS sensor is not connected are only Inj. map active.
When motor is running, value nearest to actual rpm and IAP is green if only this map is active, yellow if is active this map and Tp map.
When the check box "All " is not checked, it is possible to change this field by arrow in the bottom of sheet or by keys F4, F5.
When the check box "All " is checked it is possible to change all map by this arrow or keys.
Maps can display % of basic injection time or ms.

Tab sheet Position

Determine position of injection. Position is defined as degree before TOP of active stroke.
It can be determined beginning or middle or end of injection.
Value nearest to actual rpm is green.
When the check box "All " is not checked, it is possible to change this field by arrow in the bottom of sheet or by keys F4, F5.
When the check box "All " is checked it is possible to change all map by this arrow or keys.

Tab sheet Correction

Starting correction [%]
- Determine correction (increase) of injection time by cold engine start. Characteristic is for –10 °C. For temperature 80 °C and higher is no increase (100%). Between –10 °C and 80 °C is linear dependence.

Start injection - asynchronous injection into all cylinder at time of engine start for temperature 80 °C. Injection for lower temperature is accordingly longer.

Acceleration injection - asynchronous injection into all cylinder if TPS increases faster then is set value.
Threshold - min value of TPS increase speed for asynchronous injection.
Size - time of injection (period is 10 ms)

Temperature corrections of injection
Coolant - correction according engine temperature (100 % means serial setting at 80°C)
Inlet Air - correction according air temperature (100 % means serial setting at 50°C)

Acceleration inj. correction
- Determine correction of injection time at change TPS and time constant of decreasing this correction.

Display of actual value of all injection correction:

Starting corr.	Correction after start
U correction	Correction according supply voltage [us]
TW correction	Correction according water temperature [%]
AT correction	Correction according air temperature [%]
AP correction	Correction according barometric pressure [%]
POT correction	Correction according potentiometer voltage [%]
ACC correction	Acceleration correction [%]

Display of actual value of all advance correction:

TW correction	Correction according water temperature [°]
POT correction	Correction according potentiometer voltage [%]
IDLE correction	Correction by idle regulation

Temperature corrections of advance
- correction according engine temperature

Tab sheet Sensors

TPS - Setting voltage for beginning and end of TPS [mV]
beginning from 0V to 2.5V
end from 2.5V to 5V

Set TPS 0 - set actual TPS voltage as beginning of TPS (0 % TPS) (communication is running)

Set TPS 100 - set actual TPS voltage as end of TPS (100 % TPS)

Pressure sensor - AP - set characteristic of air pressure sensor in two points.
Intake pressure sensor - IAP
-set characteristic of intake air pressure sensor in two points

Characteristic of temperature sensors
Water - Set characteristic of water temperature sensor in 9 points.
Air - Set characteristic of air temperature sensor in 9 points.

Potentiometer –
Control of
-No -potentiometer has not any function
-Injection -potentiometer makes injection correction in range set below
-Advance -potentiometer makes advance correction in range set below
-Start limiter -potentiometer makes start limiter rpm setting between values start limiter 1, 2 (tab sheet bike)

Tab sheet Intake servo

This map has 15 colon (rpm) and 10 row (TPS).
Value nearest to actual rpm and TPS is green.
When the check box "All " is not checked, it is possible to change this field by arrow in the bottom of sheet or by keys F4, F5.
When the check box "All " is checked it is possible to change all map by this arrow or keys.

Servo enable - switch on or off servo
Percent - Servo can run to desired voltage or to desired percent of opening. Servo muss has stops for mode percent.
Mode
R + T - Rpm and Tps
RPM - Rpm only
Tps - Tps only
Hysteresis - It define accuracy of servo position. Attention!!! If we set to low value servo can vibrate.
(We don't recommend value below 200).
Step motor - Dedermine if servomotor is dc or step.
Period - Determine speed of servomotor. (Higher value is for lower speed)
Excitation - Determine excitation of servomotor.

Tab sheet Exhaust servo

This map has 15 colons (rpm) and 10 rows (TPS).
Value nearest to actual rpm and TPS is green.
When the check box "All " is not checked, it is possible to change this field by arrow in the bottom of sheet or by keys F4, F5.
When the check box "All " is checked it is possible to change all map by this arrow or keys.

Servo enable - switch on or off servo
Percent - Servo can run to desired voltage or to desired percent of opening. Servo muss has stops for mode percent.
Mode
R + T - Rpm and Tps
RPM - Rpm only
Tps - Tps only
Hysteresis - It define accuracy of servo position. Attention!!! If we set to low value servo can vibrate.
(We don't recommend value below 200).

Tab sheet Idle

It will be added later.

Tab sheet N_2O

N_2O enabled - switch on or off N_2O

N_2O
N2O initial - initial flow of N_2O
N2O final - final flow of N_2O
Delay - time from start limiter input is not active to start of flow N2O
Build up time - time from initial flow to final flow
Correction Inj. initial - initial correction of injection time
Correction Inj. final - final flow of N_2O

Retard
Retard initial - initial retard
Retard final - final retard
Delay - time from start limiter input is not active to start of retard
Build up time - time from initial retard to final retard

Tab sheet Race

Clutch mode - method of clutch master
No ignition - stop of ignition for set time
Retard - retard for set time

Min clutch RPM - clutch master is on about this revolution only
Clutch inj. - correction of injection at clutch time
Clutch advance - advance at clutch time

Setting according gear - Some parameters can by set according gear.
Pilot light - Two level indication. First level blinking. Second light.
Clutch master - Time of clutch master operation.
Clutch master pause - Time after operation when clutch master cannot be start.

Tab sheet Gear

Determining of gear - setting of method for gear recognition
Voltage - according GPS - gear position sensor voltage
Ration Rpm Speed - according Rpm/Speed manual setting
Automatic (ratio Rpm Speed) - according Rpm/Speed automatic setting
No

Number of gear - it number of gear on bike muss be set here

Voltage of gears - Setting of voltage for particular gears. Measured gear voltage can be set manually to the fields by buttons.
Ratio Rpm/speed - Setting ration Rpm/Speed. Measured ratio can be set manually to fields by buttons.

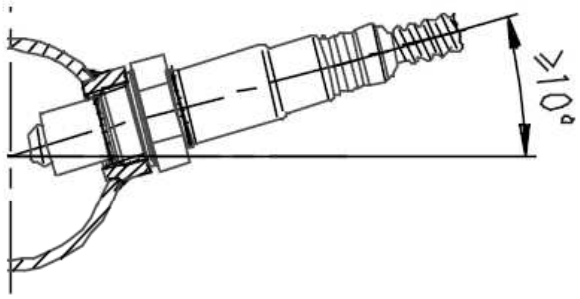
Automatic from ratio RPM/Speed - parameters for automatic setting of gear
Min Time - min time of ratio measurement
Min Rpm
Min TPS
Zone - permissible deviation for certain gear recognition

Correction per gear - correction according gear
Advance
Injection

Setting of speedometer - setting of relation between speed pulses period and speed
Pulse over 1s for 100 km/h - used mostly for sensor in gearbox.
Distance - used for long period – sensor on wheel

Tab sheet Tuning

It is intended to set parameters for automatically adjusting the fuel maps using feedback on lambda probe. Lambda probe must be properly fitted into the exhaust pipe according to the following figure, about from 300 to 700mm from the exhaust valve.



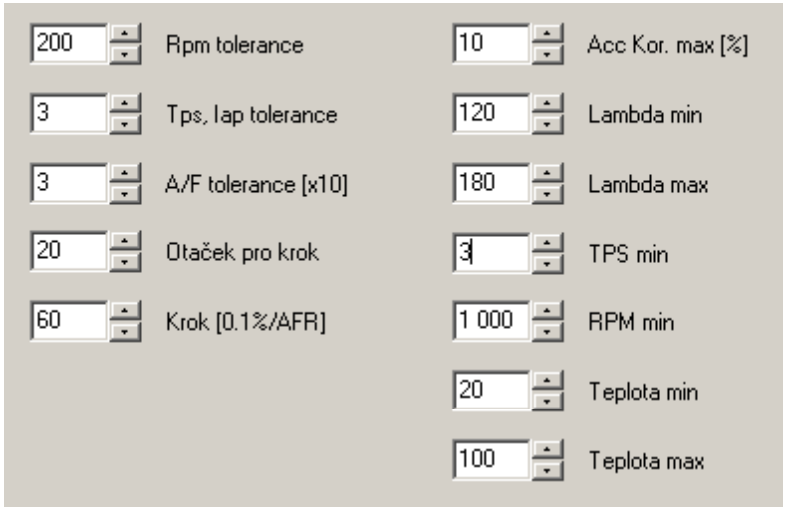
Signal from lambda probe must be connected to control unit for proper function of auto-tuning. Signal from lambda probe can be processed by transducer between unit and probe for example if probe is UEGO type (wideband). Type of lambda probe is set a in PROBES TAB depending on type of lambda probe. Values are necessary to edit by concrete lambda probe which we use. so that the values **mV** and **AFR** (air / fuel ratio [kg / kg]) were true.

There are map of "Request of AFR" at right side of tab-sheet. Value of AFR is multiplied by x 10. Actual AFR request is calculated from actual revolution and throttle position (next only TPS). There is implemented an interpolation between particular points. Example: actual request AFR 14.0 (14kg of air on 1kg fuel) is represent by number 140 in the tab on above mentioned example.

Tuning on - function "auto-tuning" is activated when we check the box, or press the F6 button on PC.
Tuning on from tacho/lambda switch - function "auto-tuning" is activate at the same time with activate function TACHO/LAMBDA when we term this box and program the unit. (Displaying actual AFR by tachometer, proportions of display on tachometer was necessary to set on bookmark "Motorcycle - lambda on RPM".)
Tuning on from tacho/lambda switch - only tuning - function "auto-tuning" is activate at the same time with activate input TACHO/LAMBDA when we term this box and program the unit. But there isn't display the AFR ratio by tachometer in this choice.

Way of tuning.
In points - tuning is performed on only one point in active fuel map in this mode. Under the assumption that it's satisfied neither of restrictive conditions (see description below).
Everywhere - tuning is perform from four neighboring points in active fuel map with a proportion, which corespond approach the point and real value, Under the assumption that it's satisfied neither of restrictive conditions (see description below). Conditions "RPM tolerance" and "TPS, IAP tolerance" are not used and invisible.

Rescrictive conditions:
Auto-tuning could be rescrit by a few conditions:



RPM tolerance - if engine rotates are away from active rotates column more than in our case 200 RPM the "auto-tuning" won't work. This limitation applies only for way of tuning "in points".
TPS IAP tolerance - if the position of TPS, respectively IAP pressure (absolute intake manifold pressure) far more than in our case of 3% or 3 kPa the "auto-tuning" won't work. This limitation applies only for way of tuning, "in points".
AFR tolerance - it's the value of AFR deviations (in tenths AFR) whe the tuning is ON, recpectively OFF.
Acc Kor. max - if the acceleration correction value (see. bookmark, "correction") is greater than the value in our case 10%. Auto-tuning won't work.
AFR min - if the actual measured value of AFR (lambda sensor) is less than 12.0 AFR in our case. Auto-tuning won't work.
AFR max - if the actual measured value of AFR (lambda sensor) is greater than 18.0 AFR in our case. Auto-tuning won't work.
TPS min - if the actual measured value of TPS (throttle potentiometer) is less then 3% in our case. Auto-tuning won't work.
RPM min - if the actual engine rotates is less than 1000 RPM (revolution per minute) in our case. Auto-tuning won't work.
Min temperature - if the actual measured value of the engine temperature is lower than 20℃ in our case. Auto-tuning won't work.
Max temperature - if the actual measured value of the engine temperature is higher than 100℃ in our case. Auto-tuning won't work.

Regulation proportions:
Rotates for step - This value tells over how much engine revolution will be implemented regulation interventions in to the fuel maps. Regulatory intervention will be implemented every 20 engine revolutions in our case. From a practical point of view generally hold, the step 10 - 30 revolutions for step, it's pisible to use lambda probe if lambda probe is situated in exhaust collector. If is lambda probe plug into the exhaust by the intake tube it's should be taken account a transport delay of measured gas and set the value in the range of about 40 - 100 revolution per step. This contraction isn't adequate, because it protract necessary time for setting a fuel maps and it brings risk of adverse effect on the measurement AFR by surrounding air. Especially with one-cylinder or two-cylinders large-volume engines, especially with lower work revolutions. Next it must be borne in mind, that incommodious count of revolutions per step will have oscillate process result, and excessive count of revolutions per step will have lengthy fine-tuning process.

Step [0,1%/AFR] - this values tells how many tenths of percent as opposed to one AFR made correction in one step. This value is 60 tenghts of percent in our case, or if 6% as opposed one AFR. From the foregoing, that the greater deviation the greater step. This results is in faster setup process.
Example: if will be calculated desired value AFR 13 and actual measured value AFR 14 will be added 6% of injection time per step in appropriate cell of active fuel map.
Another example: if will be calculated desired value AFR 13 and actual measured value AFR 16 will be added 18% of injection time per step in appropriate active fuel map cell (difference 3 AFR x 6% = 18%).
Another example: if will be calculated desired value 13 AFR and actual measured value AFR 11 will be subtract 12% of injection time per step in appropriate active fuel map cell (difference -2 AFR x 6% = -12%).
Last example: if will be calculated desired value 13 AFR and actual measured value AFR 12,5 will be subtract 3% of injection time per step in appropriate active fuel map cell (difference -0,5 AFR x 6% = -3%).

In practical terms, the constant Step [0,1% / AFR] will take values ~ 30-60 (3-6% / AFR). The theoretical maximum value is 70 (7% / AFR). Next it must be borne in mind that incommodious constant Step [0,1% / AFR] will have lengthy fine-tuning process result, and excessive constant Step [0,1% / AFR] will have oscillate fine-tuning process result.

Fine-tuning individual map:
System of automatic fine-tuning fuel maps, also allow setting maps for individual cylinders. In header "Injection 1234" must be set "Injection apart" then appears in the tab "Tuning" the box "Step", box "Channel", which defines for which channel will relates cover function "Tuning". Next it must be borne in mind that the lambda probe is in the relevant exhaust.

Tab sheet monitor

Injection - injection time of all jets
Position - position of beginning of injection in degree befor TOP
Inj. according TPS - how many percent of injection is according TPS map (rest is according IAP map)
N2O - if N2o is running
Input to ground - if input is switch to ground
Potentiometer - potentiometer voltage
Start limiter - if start limiter is active
Limiter by ignition - if limiter by ignition is active
Limiter by injection - if limiter by injection is active
Limiter by retard - if limiter by retard is active
Tacho/Lambda - What is on tacho display (tacho or Lambda)
Gear shift light - if gear shift light is off , twinkle or on
Clutch master - if **c**lutch master is active
Advance - Advance of all cylinders
Setting of Lambda bar graph - setting of bar graph on PC display
Detailed representation - more detailed display with mV etc.

Monitor

Monitor is in the bottom of program window.

RPM - revolution of motor [1/min]
TP - position of throttle position sensor [%]
LAMBDA - A/F of Lambda sensor
TW - temperature of motor (water) [°C]
AT - temperature of inlet Air [°C]
AP - atmospheric pressure [kPa]
IAP - intake pressure [% from AP]
U - supply voltage of injectors [V]
Advance - advance of ignition [°]
Max injection - coefficient of time charging of injection [%]
Injection time A - injection time of main injectors [µs]
Injection time B - injection time of secondary injectors [µs]
Pick-up CKPS - detection of pulse on crankshaft sensor
Pick-up CMPS - detection of pulse on camshaft sensor
Fall sensor - if blocking of fall is active
Blocking - if blocking of blocking sensor is active
Speed - speed
Programming after change - automatic programming of unit at every change of parameters in PC
No reading - it not possible to read parameters from unit
Gear - gear
Intake servo - desired / measured value of servo position sensor [mV]
Exhaust servo - desired / measured value of servo position sensor [mV]
Cooling - if cooling is active

3. Connections on particular bikes

Standard model uses – connector MULTILOCK 20 + 16 + 12 pins. There are cable reductions for particular bikes. It connect unit IGNIJET_2007 with connector on bike.

IGNIJET_2007 unit is produced in two software versions:

A) FULL VERSION - contains all function described in this document.
B) BASIC VERSION - don't contains additional racing function (CLUCH MASTER, START LIMITER, TACHO/LAMBDA, GEAR SHIFT LIGHT, N2O). Limiter cannot be adjusted above to value of original unit.

BASIC VERSION is possible to upgrade to FULL VERSION (for additional payment).

Additional information on assembly to various bike types:

Immobilizer has to be disconnected when using IGNIJET_2007 unit on YAMAHA R6 and R1 bikes in order to ensure functional display of motor temperature and bike speed.