www.zeeltronic.com
info@zeeltronic.com

updated 20.01.2012
program version: 20.250711

USER MANUAL
PSR-R01 PROGRAMMABLE CDI IGNITION

Very important!
Resistor spark plugs must be used, because they produce less electromagnetic disturbances.

TECHNICAL DATA

Limit values:

- minimum revs	500 RPM
- maximum revs	20000 RPM
- minimum supply voltage	8 Volts
- maximum supply voltage	16 Volts
- max. supply voltage for 1 minute	35 Volts
- current draw	25 mAmp
- maximum continuous current for shift light output	1 Amp
- peak current for shift light output	5 Amp

Circuit is protected against reverse supply voltage (wrong connection).

Features:
- CDI charged from hi voltage charging coils (generator)
- does not require battery supply
- one input for magnetic pickup
- store and load function for 2 ignition maps
- external switch for changing ignition map while riding
- shift light output
- power jet output
- quick shift (shift kill)
- tachometer output
- advance/retard whole ignition curve
- rev limit
- timing compensation curve
- fast processing for high accuracy - delays from 1us

1. HOW TO ENTER MENU

PCDI must be connected to power supply. Connect **programmer** to **PCDI** and wait few seconds for activation of **programmer** and then press [enter]. With pressing [+] or [-] you can move through menu and select with pressing [enter] .
Exit menu with selecting ***Exit.***

2. MENU ORGANISATION

Load Ign. Curve	- load previously saved ignition curve set (from #1 to #2)
Save Ign. Curve	- save new ignition curve set (from #1 to #2)
Set Ign. Curve	- ignition curve parameters submenu
Advance	- advance/retard whole ignition curve
Shift Light	- shift light
Power Jet	- power jet
Shift Kill Time	- shift kill time
Rev Limit	- rev limit
Static Angle	- static angle (stator position)
Compensation	- signal delay compensation (from pickup to spark plug)
Ign. Map SW	- activating/deactivating external switch
Pulses Per Rev	- number pulses per rev from pickup
Exit	

3. LOAD IGN. CURVE

Enter menu and move to ***Load Ign. Curve*** with pressing [+] or [-] and then press [enter] .
Now you can select position number of previously saved ignition curve set, with pressing [+] or [-] and then press [enter] .

4. SAVE IGN. CURVE

Enter menu and move to ***Save Ign. Curve*** with pressing [+] or [-] and then press [enter] .
Now you can select position number to which you want to save your ignition curve set, with pressing [+] or [-] and then press [enter] .

5. Change IGNITION CURVE

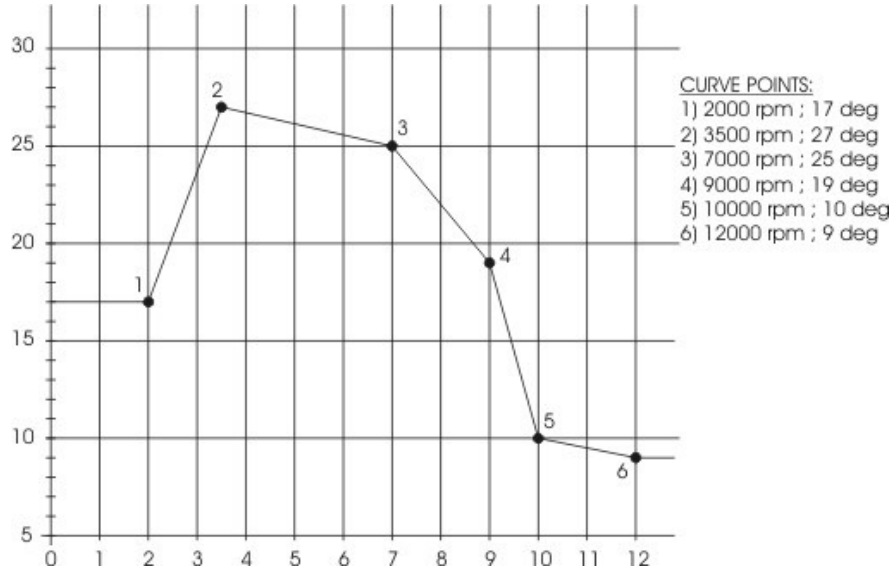
Enter menu and move to ***Ignition Curve*** with pressing [+] or [-] and then press [enter] .
Now you are in submenu for setting ignition curve.

Submenu organisation:

Nr. of Points	- number of ignition curve points (from 4 to 16)
1)	- first ignition curve point
2)	- second ignition curve point
...	...
...	...
Exit Curve	- exit submenu

Important!
To avoid wrong processing, don't make unreasonable curve course.
Every time you make any changes to ignition curve, it is automatically saved to #0 position.
Later you can save it to any other position number from #1 to #2.

Curve Example with six curve points:



5.1. Change NUMBER OF IGNITION CURVE POINTS

Move to ***Nr. of Points*** with pressing [+] or [-] and then press [enter] .
Now you can select number of ignition points, with pressing [+] or [-] and then press [enter] .

5.2. Change PARAMETERS OF IGNITION CURVE POINT

Move to point you want to change, with pressing [+] or [-] and then press [enter] .

Now you can change rev point with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .
Now you can change advance angle with pressing [+] or [-] (in 0.1deg steps) and then press [enter] .

6. Set ADVANCE

With this setting is possible to advance or retard whole ignition curve. When setting is positive then ignition curve is advanced and when setting is negative than ignition curve is retarded. With ***Advance 0.0deg***, ignition curve is unchanged.
Enter menu and move to ***Advance*** with pressing [+] or [-] and then press [enter] .
Now you can set advance with pressing [+] or [-] (in 0.1deg steps) and then press [enter] .

7. Set SHIFT LIGHT

Enter menu and move to ***Shift Light*** with pressing [+] or [-] and then press [enter] .
Now you can change rev point with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .

8. Set POWER JET parameters

Enter menu and move to ***Power Jet*** with pressing [+] or [-] and then press [enter] .
Now you are in submenu for selecting ***Power Jet*** parameters.

Submenu organisation:

Power Jet ON RPM	- revs for activating power jet
Power Jet OFF RPM	- revs for deactivating power jet
Exit	- exit submenu

Example:
Power jet ON (RPM) = 8000rpm
Power jet OFF (RPM) = 10000rpm

Power jet is switched on, when revs are above 8000rpm.
Power jet is switched off, when revs are above 10000rpm.

8.1. Set POWER JET ON RPM

Enter menu and move to ***Power Jet ON RPM*** with pressing [+] or [-] and then press [enter] .
Now you can change rev limit with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .

8.2. Set POWER JET OFF RPM

Enter menu and move to ***Power Jet OFF RPM*** with pressing [+] or [-] and then press [enter] .
Now you can change rev limit with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .

9. Set SHIFT KILL TIME

Enter menu and move to ***Shift Kill Time*** with pressing [+] or [-] and then press [enter] .
Now you can change kill time with pressing [+] or [-] (in 10 ms steps) and then press [enter] .

10. Set REV LIMIT

Enter menu and move to ***Rev Limit*** with pressing [+] or [-] and then press [enter] .
Now you can change rev limit with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .

11. Set STATIC ANGLE

Enter menu and move to ***Static Angle*** with pressing + or - and then press enter .
Now you can set static angle with pressing + or - (in 0.1deg steps) and then press enter .
More information's about static angle you can find in section 15.

12. Set COMPENSATION

It is compensation of signal delay from pickup to spark plugs. You can check this delay with stroboscope lamp. Without this compensation, ignition advance angle decreasing with rising revs.
This compensation helps that advance angles in ignition curve are real (more accurate).
How to check, if compensation is correct:
First you must set flat ignition curve. Then measure with stroboscope lamp, if mark at flywheel moving when changing revs. If mark moving, then you must change compensation delay.
Change Compensation:
Enter menu and move to ***Compensation*** with pressing + or - and then press enter .
Now you can change compensation delay with pressing + or - and then press enter .

13. Set Ign. Map SW

Enabling or disabling external switch for changing ignition curves while riding.

Enter menu and move to ***Ign. Map SW*** with pressing [+] or [-] and then press [enter] .
Now you can enable or disable external switch with pressing [+] or [-] and then press [enter] .

14. PULSES PER REV

It is number of pulses per rev from pickup coil and is important for correct rev reading.
Setting is 2 for all twins with wasted spark ignition system.
Enter menu and move to ***Pulses Per Rev*** with pressing + or - and then press enter .
Now you can change nr. of pulses per rev with pressing + or - and then press enter .

15. MECHANICAL SETTINGS (Static Angle)

Static Angle is ignition advance angle, set with stator (generator).
Measure this angle with dial gauge. This measured **Static Angle** is your maximum advance angle you can set with **PSR**.
Example:
*Measured **Static Angle** = 39.2deg (this angle you must enter in PSR)*
Calculating mm to deg or vice versa:

α = ignition advance in degrees
T = ignition advance in mm
R = engine stroke divided by 2 in mm
L = conrod length in mm

$$P = R + L - T$$

$$\alpha = \cos^{-1}\left(\frac{P^2 + R^2 - L^2}{2 \cdot P \cdot R}\right)$$

$$T = L + R \cdot (1 - \cos\alpha) - \sqrt{L^2 - (R \cdot \sin\alpha)^2}$$

16. MONITORING

Connect red wire to the + battery supply, or start the engine.
Connect **programmer** to **PSR-R01** and wait few seconds for activation of **programmer.** Fist information displayed on the **programmer** is software version.

With **programmer** you can watch revs, calculated advance ignition angle and loaded ignition map.

Information!
You can connect, or disconnect **programmer** any time you want, without any harm. It is not important, if motor running, or not and if power supply is connected, or not.

Important!
Do not use too much force when connecting, or disconnecting **programmer** unit!