www.zeeltronic.com
info@zeeltronic.com

updated 25.04.2017
program version: 30.170421

USER MANUAL
PDCI-22 PROGRAMMABLE CDI IGNITION AND ATAC CONTROLLER

PDCI-22 was specially designed for Honda NS400R to control ignition advance and ATAC solenoid.

Limit values:
- minimum revs	200 RPM
- maximum revs	20000 RPM
- minimum supply voltage	7 Volts
- maximum supply voltage	17 Volts
- recommended power supply voltage	12÷15 Volts
- stand-by current draw	< 0.05 Amp
- current draw at 1300 RPM	< 0.4 Amp
- current draw at 12000 RPM	< 2.4 Amp
- maximum continuous current for shift light and power jet output	1 Amp
- peak current for shift light and power jet output	5 Amp
- constant spark energy from idle to 14000 RPM	>35mJ

Features:
- fast power-up
- full power starting spark energy already at 7Volts power supply
- 2 isolated inputs for pickups
- 3 independent ignition coil outputs
- store and load function for two ignition maps
- external switch for changing ignition map while riding
- ATAC solenoid output
- shift light output
- power jet output
- quick shift (shift kill)
- soft rev limit (three stage rev limit)
- tachometer output
- easy and fast programming on the field, via hand held programmer
- PC-USB programming
- programming while machine running - you can immediately see effects
- each curve can be set in 4 to 12 curve points
- signal delay compensation
- instant monitoring of rev's and angle, via hand held programmer and PC
- timing calculation for every 1 RPM change (1000, 1002, .. , 9805, 9806, ...)

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

<u>Danger of electric shock!</u>
Avoid connecting PDCI to 12V power supply, before connecting it to ignition coil. High voltage is generated and touching free wires can cause electric shock, or damage the unit.

1.   HOW TO ENTER MENU

Connect **handheld programmer** to **PDCI** and wait few seconds for activation of **handheld programmer** and press ENTER to continue. Move through the menu with pressing + , or - and choose with pressing ENTER .
Exit menu with choosing *Exit.*

2.   MENU ORGANISATION

Load Ign. Map	- load (select) ignition map (from #1 to #2)
Save Ign. Map	- save new ignition map (from #1 to #2)
Set Ignition Map	- ignition map parameters submenu
Advance	- advance/retard whole ignition map on both ignition coil outputs
ATAC open	- ATAC solenoid
Gear Shift Light	- shift light
Quick Shift	- quick shift settings
Rev Limit	- rev limit
Static Angle	- static angle (stator position)
Compensation	- signal delay compensation (from pickup to spark plug)
Power Jet	- power jet
Ign. Map SW	- activating/deactivating external switch for selecting ignition map
Ignition Test	- test ignition spark
Exit	

3.   LOAD IGN. MAP

Enter menu and move to *Load Ign. Map* with pressing + , or - and press ENTER to continue.
Select number of saved ignition map, with pressing + , or - and press ENTER to continue.

4.   SAVE IGN. MAP

Enter menu and move to *Save Ign. Map* with pressing + , or - and press ENTER to continue.
Select number to which you want to save your ignition map, with pressing + , or - and press ENTER to continue.

5.   SET IGNITION MAP

Enter menu and move to *Set Ignition Map* with pressing + , or - and press ENTER to continue.
...you entered submenu for setting ignition map.

Submenu organisation:
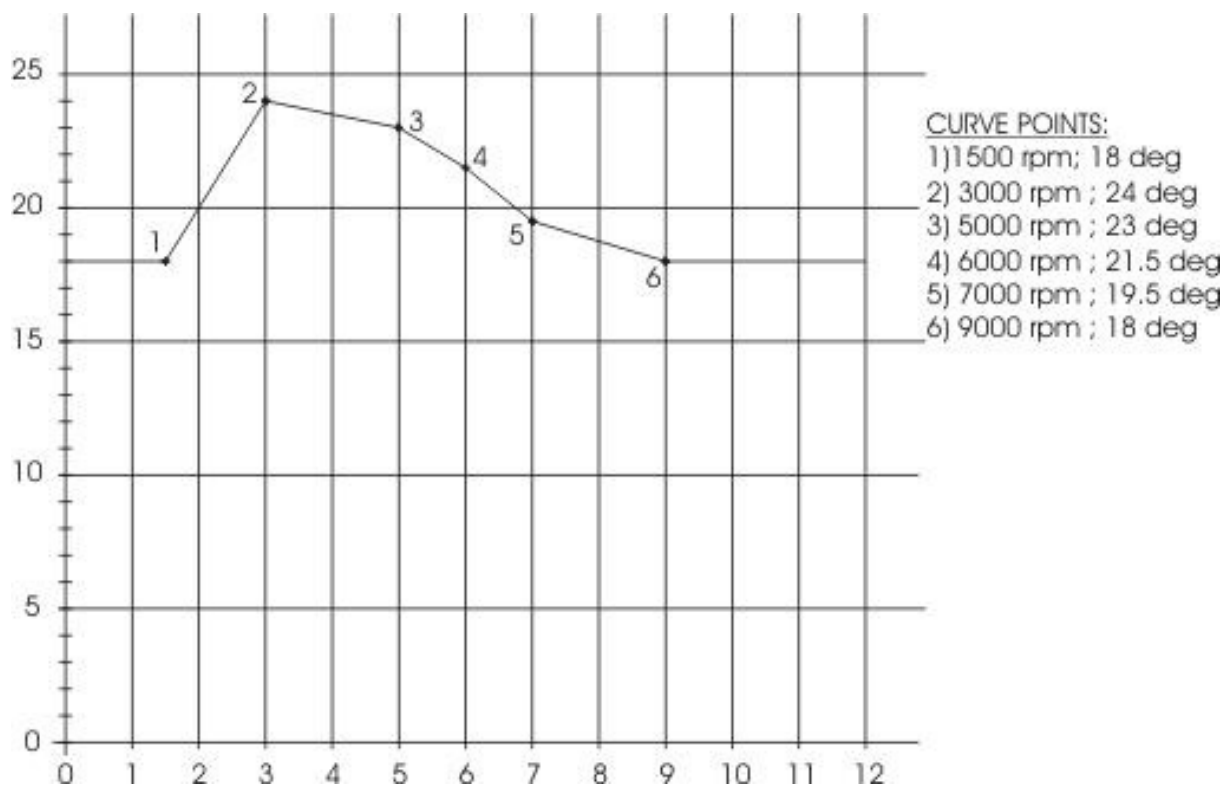*Nr. of Points*   - number of ignition curve points (from 4 to 12)
1)   - first ignition curve point
2)   - second ignition curve point
...   ...
...   ...
Exit   - exit submenu

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 number #0.
Later you can save it to any other number #1 or #2.

Curve Example with six curve points:

CURVE POINTS:
1)1500 rpm; 18 deg
2) 3000 rpm ; 24 deg
3) 5000 rpm ; 23 deg
4) 6000 rpm ; 21.5 deg
5) 7000 rpm ; 19.5 deg
6) 9000 rpm ; 18 deg

5.1.   Change NUMBER OF IGNITION CURVE POINTS

Move to *Nr. of Points* with pressing + , or - and press ENTER to continue.
Select number of ignition points, with pressing + , or - and press ENTER to continue.

5.2.   Change PARAMETERS OF IGNITION CURVE POINT

Move to point you want to change, with pressing + , or - and press ENTER to continue.
Change rev point with pressing + , or - (in 100 rpm steps) press ENTER to continue.
Change advance angle with pressing + , or - (in 0.1deg steps) and press ENTER to continue.

6.   ADVANCE

With this setting is possible to advance, or retard whole ignition map. When setting is positive, then ignition map is advanced and when setting is negative, than ignition map is retarded. Ignition map advance is unchanged, with setting *0.0deg*.

Move to *Advance*, with pressing + , or - and then press ENTER to continue.
Set advance with pressing + , or - (in 0.1deg steps) and press ENTER to continue.

7.   ATAC open

Enter menu and move to *ATAC open* with pressing + , or - and then press ENTER to continue.
Change revs with pressing + , or - (in 100 rpm steps) and press ENTER to continue.

8.   GEAR SHIFT LIGHT

Enter menu and move to *Gear Shift Light* with pressing + , or - and then press ENTER to continue.
Change revs with pressing + , or - (in 100 rpm steps) and press ENTER to continue.

9.   QUICK SHIFT

Enter menu and move to *Quick Shift* with pressing + , or - and then press ENTER to continue.
...you entered submenu for quick shift settings.

Submenu organisation:
Shift Kill Time   - basic kill time
Smart Shift   - activating/deactivating automatic kill time for different revs
Exit   - exit submenu

9.1.   SHIFT KILL TIME

Enter *Quich Shift* menu and move to *Shift Kill Time* with pressing + , or - and then press ENTER to continue.
Change kill time with pressing + , or - (in 10 ms steps) and press ENTER to continue.

9.2. SMART SHIFT

Smart shift function automatically adjusts kill time for different revs. Shift kill time must be always set, as basic kill time.
Enter *Quich Shift* menu and move to *Smart Shift* with pressing + , or - and then press ENTER to continue.
Enable, or disable function with pressing + , or - and press ENTER to continue.

10. REV LIMIT

Enter menu and move to *Rev Limit* with pressing + , or - and then press ENTER to continue.
Change rev limit with pressing + , or - (in 100 rpm steps) and press ENTER to continue.

11. STATIC ANGLE

Enter menu and move to *Static Angle* with pressing + , or - and then press ENTER to continue.
Set static angle with pressing + , or - (in 0.1deg steps) and then press ENTER to continue.

12. COMPENSATION

Delay compensation is compensation of signal delay from pickup to spark plugs.
Compensation ensures that ignition advance is same as programmed (accurate).
How to check, if compensation is correct:
- program flat ignition curve
- measure ignition advance with strobe light at low and at high revs
- if advance at low and high revs is not same, then compensation delay must be adjusted

Change Compensation:
Enter menu and move to *Compensation* with pressing + , or - and press ENTER to continue.
Change compensation delay with pressing + , or - and press ENTER to continue.

13. POWER JET

Enter menu and move to *Power Jet* with pressing + , or - and press ENTER to continue.
...you entered submenu for setting *Power Jet* parameters.

Submenu organisation:
Invert Polarity   - enable/disable invert operation of power jet
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 between 8000-10000rpm, otherwise power jet is switched off.

13.1.   POWER JET ON RPM

Enter menu and move to *Power Jet ON RPM* with pressing ` + `, or ` - ` and press ` ENTER ` to continue.
Change *Power Jet ON RPM* with pressing ` + `, or ` - ` (in 100 rpm steps) and press ` ENTER ` to continue.

13.2.   POWER JET OFF RPM

Enter menu and move to *Power Jet OFF RPM* with pressing ` + `, or ` - ` and press ` ENTER ` to continue.
Change *Power Jet OFF RPM* with pressing ` + `, or ` - ` (in 100 rpm steps) and press ` ENTER ` to continue.

14.   IGN. MAP SW

Enabling, or disabling ignition map switch. With ignition map switch is possible to change ignition map while riding.

Move to *Ign. Map SW* with pressing ` + `, or ` - ` and press ` ENTER ` to continue.
Enable, or disable external switch with pressing ` + `, or ` - ` and press ` ENTER ` to continue.

15.   IGNITION TEST

Spark execution test without running engine. Spark can be optically checked, with removed spark plug connected to plug cup and to the ground.

Enter menu and move to *Ignition Test* with pressing ` + `, or ` - `. With pressing ` ENTER ` multiple spark will occur, for about 1s.

16.   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 **PDCI**.

Calculating mm to deg or vice versa:

$$\alpha = \text{ignition advance in degrees}$$
$$T = \text{ignition advance in mm}$$
$$R = \text{engine stroke divided by 2 in mm}$$
$$L = \text{conrod length in mm}$$
$$P = R + L - T$$
$$\alpha = \cos^{-1}\left(\frac{P^2 + R^2 - L^2}{2 \cdot P \cdot R}\right)$$
$$T = L + R \cdot (1 - \cos\alpha) - \sqrt{L^2 - (R \cdot \sin\alpha)^2}$$

17.   MONITORING

Connect **programmer** to **PDCI** 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, TPS position...depends on setting in the menu.

Information!
You can connect or disconnect **PDCI** unit from **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!