zeeltronic

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USER MANUAL
PPV-RZ PROGRAMMABLE POWER VALVE CONTROLLER
(PROGRAMMABLE EXHAUST VALVE CONTROLLER)

PPV-RZ is designed to work with original Yamaha RZ350 PV servo motor. It also work with other exhaust valve servo motors: RD500, TZR125/250, DT125, RGV250, RS250, CR250R. Servo motor must have potentiometer(resistor) position sensor.
For rev reading, **PPV** must be connected to PV out on RZ CDI's or to primary side of HT coil.

TECHNICAL DATA

Limit values:
minimum supply voltage	8 Volts
maximum supply voltage	20 Volts
max. supply voltage for 1 minute	40 Volts

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

Features:
- ten custom programmable curves
- store and load function for ten custom curves
- easy and fast programming on the field, via hand held programmer
- programming while machine running - you can immediately see effects
- each curve can be set in 2 to 8 curve points
- programmable deviation
- programmable max close and max open positions
- instant monitoring of valve position, via LCD(handheld programmer)
- fast processing for high accuracy
- self test on power-up
- error detecting (position sensor failure, servo motor failure)
- short connection on servo motor output, cant damage controller

## 1.	HOW TO ENTER MENU

PPV unit must be connected to power supply. If machine running or not is not important. Connect **PPV** to **handheld programmer** and wait few seconds for activation of **handheld programmer** and then press | enter |. With pressing | + | or | - | you can move through menu and with pressing | enter | you can choose.
You can exit menu with choosing *Exit Settings.*

## 2.	MENU ORGANISATION

Load Settings	- load previously saved curve (from #1 to #10)
Save Settings	- save new curve (from #1 to #10)
Set PV Curve	- valve curve parameters
Deviation +-	- deviation of valve position
Close Position	- max close valve position
Open Position	- max open valve position
Pulses Per Rev	- number pulses per rev
PV test	- valve position test
Exit Settings

## 3.	Load Settings

Enter menu and move to *Load Settings* with pressing | + | or | - | and then press | enter | .
Now you can select position number of previously saved curve with pressing | + | or | - | and then press | enter | .

## 4.	Save Settings

Enter menu and move to *Save Settings* with pressing | + | or | - | and then press | enter | .
Now you can select position number to which you want to save your curve with pressing | + | or | - | and then press | enter | .

## 5.	Set PV Curve

Enter menu and move to *Set PV Curve* with pressing | + | or | - | and then press | enter | .
Now you are in submenu for setting valve curve.

Submenu organisation:
Nr. of Points	- number of valve curve points (from 2 to 8)
1)	- first valve position point
2)	- second valve position point
...	...
...	...
Exit Curve	- exit submenu

<u>Important!</u>
To avoid wrong processing, don't make unreasonable curve course.
Every time you make any changes to valve curve, it is automatically saved to #0 position.
Then you can save it to any other position number from #1 to #10.

5.1. Change Number of Curve Points

Move to *Nr. of Points* with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Now you can select number of curve points, with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.

5.2. Change Parameters of Valve Position Curve Points

Move to point you want to change, with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Now you can change rev point with pressing $\boxed{+}$ or $\boxed{-}$ (in 100 rpm steps) and then press $\boxed{\text{enter}}$.
Now you can change valve position from 0% to 100%, with pressing $\boxed{+}$ or $\boxed{-}$ (in 1% steps) and then press $\boxed{\text{enter}}$.

6. Deviation

Enter menu and move to *Deviation* with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Now you can change deviation from 2% to 20% with pressing $\boxed{+}$ or $\boxed{-}$ (in 1% steps) and then press $\boxed{\text{enter}}$.
Deviation means how accurate valve is moved to calculated position. If deviation is too low then servo motor wont be stabile – it will always search for calculated position in small movements. Default setting is +-5% and should meet in most cases.

7. Max Close Position

Enter menu and move to *Close Position* with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Now you can set close position with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Max close position is when curve is set to 0%. This close position can be moved to any desired position. For RZ350 default close position is 240. Max close position can be moved to deeply closed or less closed position.

8. Max Open Position

Enter menu and move to *Open Position* with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Now you can set open position with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Max open position is when curve is set to 100%. This open position can be moved to any desired position. For RZ350 default open position is 512. Max open position can be moved to more open or less open position.

9.   PULSES PER REV

It is number of pulses per rev of PV input signal 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⎤ .

10.   PV Test

Enter menu and move to *PV Test* with pressing ⊞ or ⊟ and then press ⎡enter⎤ .
Now you can set valve position with pressing ⊞ or ⊟ and then press ⎡enter⎤ .
PV test can be used for testing or measuring valve position. Valve can be moved to any position from 0% to 100%, without motor running.

11.   MONITORING

Connect **PPV** unit to **handheld programmer** and wait few seconds for activation**.** Fist information displayed is software version.

With **handheld programmer** you can watch revs and calculated valve position.

Information!
You can connect or disconnect **handheld programmer** from **PPV** unit 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!

12.   ERROR REPORTS

Four errors can be displayed:
Program Memory Error - when program memory is corrupted. With this error present, function of program could be faulty. *Service is needed!*
EEPROM Error - when eeprom memory is corrupted. All programmable data are stored in eeprom memory(curve...). With this error present, function of program could be faulty. *You must check all your settings and correct changed.*
error 1 – position sensor error or servo motor disconnected
error 2 – servo motor error (short connection)

13.   WIRING DIAGRAM

RZ350, RD/RZ500:

PV servo

B/R	V
B/Y	Y
W/R	W
W/B	Bl
Y/Bl	O
	Y/G

to PV out on CDI

PPV-RZ

to +12V

| R | Br |

| B | B |

to GROUND

B/R - black/red   V - violet
B/Y - black/yellow   Y - yellow
W/R - white/red   W - white
W/B - white/black   Bl - blue
Y/Bl - yellow/blue   O - orange
Y/G - yellow/green   R - red
Br - brown   B - black