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PROGRAMMING MANUAL ZeelProg PDCI-25V

Supported control units: **PDCI-25V**

ZeelProg is PC application for programming ZEELTRONIC engine *control units*.
For programming special PC-USB programmer is needed.

- **ZeelProg** automatically detects PC-USB programmer connection and enables all functions (without PC-USB programmer, **ZeelProg** application is locked).
- **ZeelProg** automatically detects type of engine *control unit* connected to PC-USB programmer.

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***ZeelProg* SOFTWARE INSTALLATION GUIDE**

CD content:

- driver (USB programmer driver)
- NET Framework
- ZeelProg

Software can be also downloaded from web site:

<http://www.zeeltronic.com/page/zeelprog.php>

ZeelProg application can be installed on Windows XP/Vista.

"NET Framework 3.5" needs to be installed.

Installation:

- ① Insert CD-ROM and browse content.
- ② Install USB programmer driver with running "CDM20600.exe" from CD-ROM "driver" directory.
- ③ Install ***ZeelProg*** with running "setup ZeelProg.exe" from CD-ROM "ZeelProg" directory.

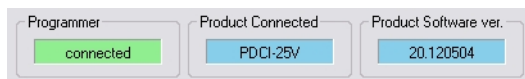
If ***ZeelProg*** does not start, install "NET Framework" from CD-ROM "NET Framework" directory.

***ZeelProg* USER INTERFACE**

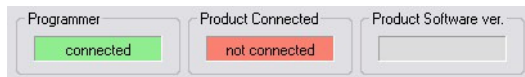
Auto detection

Zeelprog automatically detects USB-Programmer and type of *control unit*.

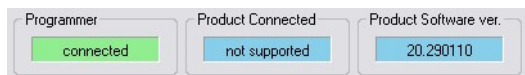
⇒ Programmer connected, product (*control unit*) connected:



⇒ Programmer connected, product (*control unit*) not connected:



⇒ Programmer connected, product (*control unit*) not supported:



⇒ Programmer not connected, product (*control unit*) not connected:



Menu structure

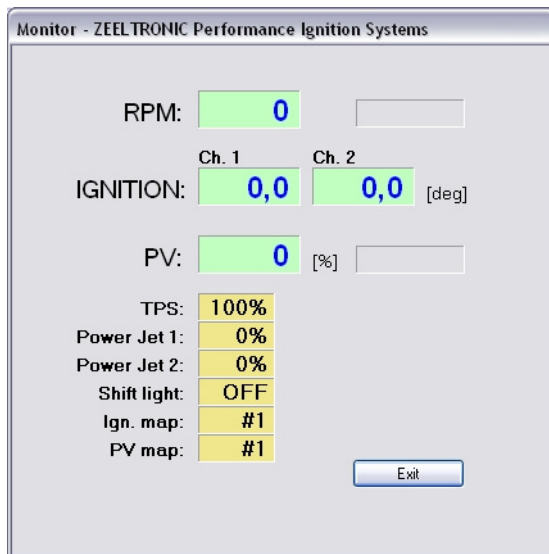


⇒ **File menu** is active when PC-USB programmer is connected



- Open** → Open an existing *.zee file
- Save As** → Save all parameters to *.zee file

⇒ **Monitor** is active when *control unit* is connected to PC-USB programmer.
Clicking on the **Monitor** opens Monitor window.



⇒ Clicking on **About** opens About window and show some basic information about **ZeelProg** application.



Ignition Map #1

Ignition Map #1

15 **Nr. of Points**

TPS 100%

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	Point 9	Point 10	Point 11	Point 12	Point 13	Point 14	Point 15	RPM
	1500	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	13000	13000	13000	<input type="button" value="↑"/> <input type="button" value="↓"/>
Ch.1	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	<input type="button" value="+"/> <input type="button" value="-"/> deg
Ch.2	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	<input type="button" value="+"/> <input type="button" value="-"/> deg

TPS 66%

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	Point 9	Point 10	Point 11	Point 12	Point 13	Point 14	Point 15	RPM
	1500	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	13000	13000	13000	<input type="button" value="↑"/> <input type="button" value="↓"/>
Ch.1	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	<input type="button" value="+"/> <input type="button" value="-"/> deg
Ch.2	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	<input type="button" value="+"/> <input type="button" value="-"/> deg

TPS 0-33%

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	Point 9	Point 10	Point 11	Point 12	Point 13	Point 14	Point 15	RPM
	1500	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	13000	13000	13000	<input type="button" value="↑"/> <input type="button" value="↓"/>
Ch.1	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	<input type="button" value="+"/> <input type="button" value="-"/> deg
Ch.2	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	<input type="button" value="+"/> <input type="button" value="-"/> deg

- ⇒ **Nr. of Points** for each ignition map can be set from 4 to 15.
- ⇒ **RPM** of each ignition point can be set from 100rpm to 20000rpm in 100rpm steps.
- ⇒ **Ch. 1**...advance curve for ignition channel 1 can be set from 0deg to 85deg in 0,1deg steps
- ⇒ **Ch. 2**...advance curve for ignition channel 2 can be set from 0deg to 85deg in 0,1deg steps
- ⇒ **'+', '-' deg**... increase, or decrease advance of all ignition points in whole ignition curve
- ⇒ **TPS 100%** ... ignition map for fully opened throttle
- ⇒ **TPS 66%** ... ignition map for 66% opened throttle
- ⇒ **TPS 0-33%** ... ignition map for 0-33% opened throttle

Ignition map is 3D interpolated for any throttle position between 33-100% opened throttle.

Ignition Map #2

Settings for ignition map #2 are same as for ignition map #1.

PV Parameters

PV Parameters

PV map #1

4
Nr. of Points

Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
8000	8800	9500	10100	13000	13100	13200	13300	RPM
0	60	60	100	100	100	100	100	%

PV map #2

4
Nr. of Points

Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
8000	9000	10500	11100	13000	13100	13200	13300	RPM
0	40	60	100	100	100	100	100	%

☒ **Power-up Test**
☐ **PV Map Switch**

1 **Select PV Map**

390 **Close Position** Test Close

670 **Open Position** Test Open

2 **Deviation +-**

- ⇒ **Nr. of Points** for each PV map can be set from 2 to 8.
- ⇒ **RPM** of each PV point can be set from 100rpm to 20000rpm in 100rpm steps.
- ⇒ **%...PV position** of each PV point can be set from 0% to 100% in 1% steps.
- ⇒ **Power-up Test**...enables, or disables PV test at switching on power supply.
- ⇒ **PV Map Switch**...enables, or disables PV map switch. PV map can be selected with switch, when function is enabled.
- ⇒ **Select PV Map**...selecting active PV map.
- ⇒ **Close Position** of PV servo. Close position is 0% on PV map.
- ⇒ **Open Position** of PV servo. Open position is 100% on PV map.
- ⇒ **Test Close**...clicking on **Test Close** button, opens Test Close window. Function is active when PC-USB programmer and *control unit* are connected.
- ⇒ **Test Open**...clicking on **Test Open** button, opens Test Open window. Function is active when PC-USB programmer and *control unit* are connected.
- ⇒ **Deviation**...prevents 'hunting' of PV servo.

PV position between programmed points is linearly interpolated (ramp).

6

Power Jet 1, 2 Parameters

Power Jet

Power Jet 1

TPS 67-100%								
Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
2000	10600	11500	12900	13000	13100	13200	13300	RPM
0	0	0	0	0	0	0	0	%

TPS 34-66%								
Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
2000	10600	11500	12900	13000	13100	13200	13300	RPM
0	0	0	0	0	0	0	0	%

TPS 0-33%								
Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
2000	10600	11500	12900	13000	13100	13200	13300	RPM
0	0	0	100	0	0	0	0	%

Power Jet 2

TPS 67-100%								
Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
2000	10600	11500	12900	13000	13100	13200	13300	RPM
0	0	0	0	0	0	0	0	%

TPS 34-66%								
Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
2000	10600	11500	12900	13000	13100	13200	13300	RPM
0	0	0	0	0	0	0	0	%

TPS 0-33%								
Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
2000	10600	11500	12900	13000	13100	13200	13300	RPM
0	0	0	100	0	0	0	0	%

☐ Invert Polarity of Power Jets

- ⇒ **RPM** of each Power Jet point can be set from 100rpm to 20000rpm in 100rpm steps.
- ⇒ **%...** operation of each Power Jet point can be set from 0% to 100% in 1% steps.
- ⇒ **Invert Polarity of Power Jets...** when checked, operation of power jets is inverted.

Power Jet operation is pulsed (duty cycle). Value of Power Jet operation between programmed points is linearly interpolated (ramp).

Misc Parameters

The screenshot shows the 'Misc' parameters configuration window. It includes the following sections and settings:

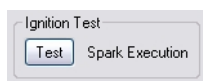
- Ign. Map Switch:**
 - ☐ Ign. Map Switch
 - 1 Select Ignition Map
 - 1 Nr. of Pickups
 - 1 Pulses per Rev
 - 32.0 Static Angle [°]
 - 0.0 Advance [°]
 - 0.0 Advance Out 1 [°]
 - 0.0 Advance Out 2 [°]
 - 30 Delay Compensation [us]
 - 16000 Rev Limit [rpm]
 - 12000 Shift Light [rpm]
 - ☐ TCT mode
- Throttle Position Sensor:**
 - ☒ TPS Enable
 - ☒ 3D Ignition Map
 - Calibrate 220 TPS closed (0%)
 - Calibrate 945 TPS opened (100%)
- Quick Shift:**
 - ☒ Smart Shift
 - 70 Kill Time [ms]
- Stop Switch Mode:**
 - ☒ Low Level Stop
 - ☐ High Level Stop
- Spark Energy:**

Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	RPM
8000	9000	10000	11000	12000	13000	14000	15000	
100	100	100	100	100	100	100	100	%

- ⇒ **Ignition Map Switch**...enables, or disables ignition map switch. Ignition map can be selected with switch, when function is enabled.
- ⇒ **Select Ignition Map**...selection is active only when **Ignition Map Switch** is not enabled.
- ⇒ **Nr. of Pickups**...set to 1 when one pickup is used to fire both cylinders at the same time. Set to 2 when two pickups are used.
- ⇒ **Pulses per Rev**...set to 1 for twin cylinder with 1, or 2 pickups and single cylinder, set to 2 for wasted spark twin cylinder with 1 pickup.
- ⇒ **Static Angle** is pickup advance position from TDC (Top Dead Centre)
- ⇒ **Advance**...advances, or retards whole ignition map from -10deg to 10deg in 0,1deg steps. Positive value advances and negative value retards.
- ⇒ **Advance out 1**...advances, or retards ignition output 1 for -10deg to 10deg in 0,1deg steps. Positive value advances and negative value retards.
- ⇒ **Advance out 2**...advances, or retards ignition output 2 for -10deg to 10deg in 0,1deg steps. Positive value advances and negative value retards.
- ⇒ **Delay Compensation**...ensure correct ignition angle through whole revs. Default value is 30us.
- ⇒ **Rev limit**...limits maximum revolutions. Set to maximum 20000rpm in 100rpm steps.
- ⇒ **Shift light**...activate shift light output above programmed revs. Set to maximum 20000rpm in 100rpm steps.
- ⇒ **TCT mode**... Throttle Close spark Termination mode, reduces number of sparks above 8000rpm (spark is active every third revolution), when throttle is closed. TCT mode ensure better engine cooling. This setting is primarily for race use, for normal road use the recommended setting is 'DISABLED'. If you have errors on the rev counter 'DISABLE' this setting.
- ⇒ **TPS Enable**... enable, or disable TPS (Throttle Position Sensor).
- ⇒ **3D Ignition Map**... enable, or disable 3D Ignition Map.
- ⇒ **TPS closed [0%]**... for correct TPS operation, TPS close position must be calibrated!
- ⇒ **TPS opened [100%]**... for correct TPS operation, TPS open position must be calibrated!

- ⇒ **Smart Shift...** enable, or disable Smart Shift. Smart shift function automatically adjusts kill time for different revs. Shift kill time must be always set, as basic kill time.
- ⇒ **Kill Time...** for shifting without using clutch - shift sensor is required. Function is disabled with setting to 0ms.
- ⇒ **Stop Switch Mode: Low Level Stop...** engine stops with low level signal (stop switch connected to the ground)
- ⇒ **Stop Switch Mode: High Level Stop...** engine stops with high level signal (stop switch is opened)
- ⇒ **Spark Energy** can be programmed with the points as a curve. Each point is defined with RPM and % of spark energy. Spark energy between programmed points is linearly interpolated (ramp).

Ignition Test



Push test button to activate spark test. Spark will be generated for few seconds on each output separately.

PROGRAMMING AND SETTING NEW PARAMETERS

- ⇒ While programming or reading, *control unit* does not need to be connected to power supply, because it is supplied through PC-USB programmer.

Changing control unit parameters

- ① Read parameters from connected *control unit*, by pressing **Read** button.



Progress bar indicate read and verify process.

Successful reading is indicated as:



Error while reading is indicated as:



If error occurs, then repeat reading.

- ② Change parameters
- ③ Program parameters to connected *control unit*, by pressing **Program** button.



Progress bar indicate program and verify process.

Successful programming is indicated as:



Error while programming is indicated as:



If error occurs, then repeat programming.

Make new *.zee file without connecting control unit

- ① Connect PC-USB programmer to PC.
- ② Set parameters
- ③ Save parameters by clicking **Save As** from **File menu**.



TPS Close Position [0%]

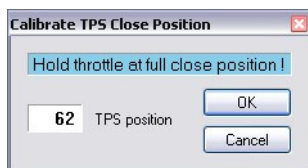
For correct operation of TPS function, TPS close position must be calibrated!



TPS close position can be set manually by entering number, or calibrated by clicking on **Calibrate** button.

Using **Calibrate** function is more recommended.

Clicking on **Calibrate** button opens **Calibrate TPS Close Position** window.



⇒ to finish calibration: hold throttle at full close position and press **OK** button

⇒ to cancel calibration: press **Cancel** button

TPS Open Position [100%]

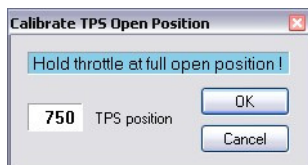
For correct operation of TPS function, TPS open position must be calibrated!



TPS open position can be set manually by entering number, or calibrated by clicking on **Calibrate** button.

Using **Calibrate** function is more recommended.

Clicking on **Calibrate** button opens **Calibrate TPS Open Position** window.



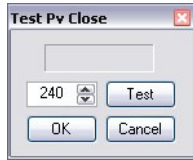
⇒ to finish calibration: hold throttle at full open position and press **OK** button

⇒ to cancel calibration: press **Cancel** button

Set PV close position



- ⇒ Clicking on **Test Close** button opens Test Close window.
Function is active when PC-USB programmer and *control unit* are connected.

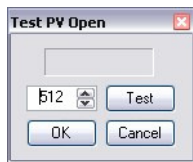


- ⇒ PV servo close position can be tested before confirming... PV servo moves to close position, after clicking on **Test** button.
- ⇒ If PV servo can't move to close position then **error 1** will occur. To clear **error 1** change close position and click on **Test** button.
- ⇒ Click on **OK** button to confirm close position, or **Cancel** to keep old close position.

Set PV open position



- ⇒ Clicking on **Test Open** button opens Test Open window.
Function is active when PC-USB programmer and *control unit* are connected.



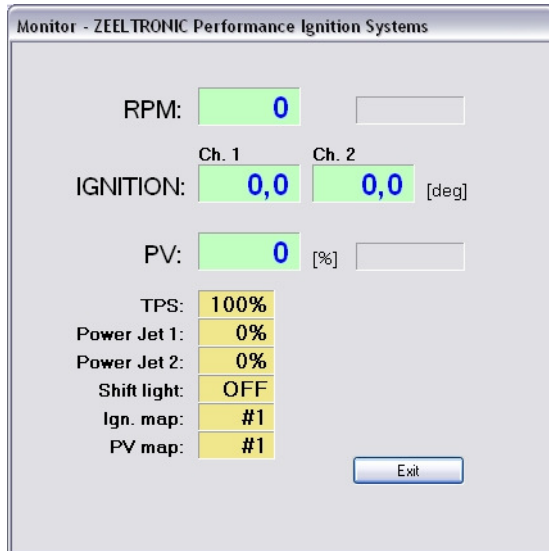
- ⇒ PV servo open position can be tested before confirming... PV servo moves to open position, after clicking on **Test** button.
- ⇒ If PV servo can't move to open position then **error 1** will occur. To clear **error 1** change open position and click on **Test** button.
- ⇒ Click on **OK** button to confirm open position, or **Cancel** button to keep old open position.

MONITOR FUNCTION

⇒ **Monitor** function is active when *control unit* is connected to PC-USB programmer.



Clicking on **Monitor** opens Monitor window.



- ⇒ Monitor show engine revolution, ignition advance angle for each channel, PV position, TPS position, selected ignition map, selected PV map, shift light operation, rev limit operation, power jet 1 and 2 operation, duty solenoid operation, PV error
- ⇒ **PV error 1**...when PV servo can't move to position (mechanical problem, or wrong connection, worn PV servo position sensor).
- ⇒ **PV error 2**...when too high current on PV servo output.