digital controlled devices

dicodes

dicodes no 6

manual

01 dicodes no 6

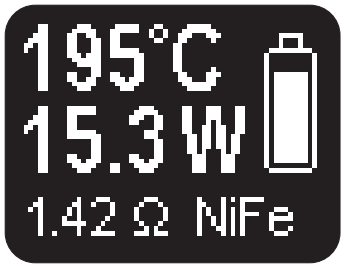
The dicodes no 6 is an electronically controlled MOD to be used with various atomizers of different sizes and diameter. It is prepared to use one battery of size 26650, providing a much longer vaping time with one charging compared to standard 18650 batteries.
Mechanically the mod has a very ergonomic soft touch design and is equipped with three buttons on the slender long side for menu operations and firing, a big easy readable OLED display and a sophisticated construction of an adjustable center pin made of copper beryllium.
The body is manufactured inhigh quality anodised aluminum and offered in several colors. The head and bottom pieces are made of solid stainless steel.
Electrically, dicodes no 6 allows vaping with up to 60W and, beside 4 different operation modes, provides temperature controlled vaping with many different kinds of wire-materials (dicodes-wire, nickel, titan, stainless steel, and others).
We recommend the dicodes-wire (NiFe30, RESISTHERM) for optimal performance and unique liquid flavor.
By means of a separately purchasable charging holder, the battery can be charged inside the mod with up to 3A charging current.

02 Features

- 5 to 60W with one Li-Ion battery 26650
- Adjustable battery discharge level (2.5-3V)
- Up to 12V output voltage
- Up to 20A output current
- Temperature controlled vaping mode with various wire-types
- Mechanical MOD mode (protected)
- 10 Power boost modes
- 10 Heater protection modes
- Atomizer resistance range 0.05 to 5 Ohms, total
- Atomizer resistance 0.15-2.4 Ohms (60W)
- Reverse battery protection
- Versatile menu structure
- Individual user preferences selection
- spring loaded center pin made of copper beryllium
- charging contact on the bottom (requires charge holder)
- 2 Years warranty

03 Display Operation

The MOD is equipped with a graphical OLED display which provides all important information about the status during the vape and/or for 4 seconds after each vape (see display mode setting).



Temperature during the vape in TC-Mode, coil resistance in other modes

Actual Power applied to the coil (in TC-mode and Bypass-mode). Power setting in standard-mode.

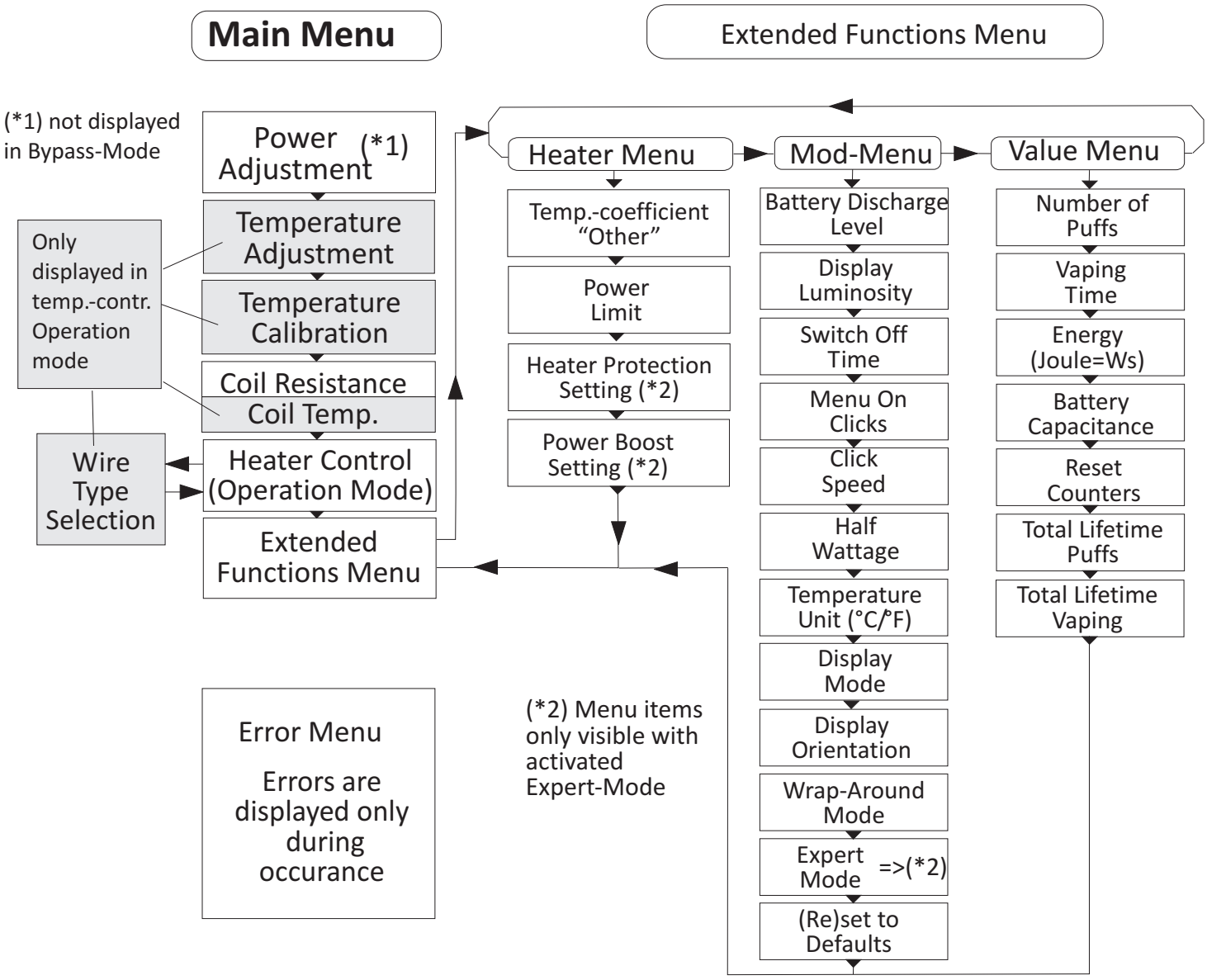
Battery status (including voltage drop during vape). Starts blinking at low bat and power reduction (see text)

Chosen wire type for checking

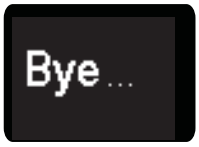
TC-mode: Coil-Resistance during the vape (including temperature dependent change). Battery voltage in other modes

TC=temperature controlled

04 Menu Overview



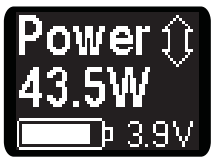
05 Main Menu (Page 1)



Switching On/Off, Key Locking and Menu-Operation

The dicodes no 6 mod has three buttons: The bigger vape/fire button positioned directly below the atomizer and a plus- and minus button below the fire button.
The mod is switched on by shortly pressing any button 5 times. The display shows “dicodes” and the user is led to the main menu. For actively switching off the mod the fire button is to be pressed shortly 5 times and the display shows “Bye..”
Important Note: The dicodes no 6 differentiates between active switch off and the automatic switch off after the switch-off-time. When the mod was switched off driven by the automatic timer, the menu is entered by clicking MonClk (Menu On Clicks) times the plus or minus button or by pressing the vape-button longer for immediate vaping. I.e. the user can vape immediately, even when the mod was completely powered down.
To avoid an unintended vape or change of settings, for example during transportation in a pocket, the buttons can be locked by pressing the plus- and minus button simulteanously: “KeyLock” is dsplayed. To unlock the buttons, agagin both buttons need to be pressed at the same time, indicated by “UnLock” shown on the display.

By means of the plus and minus buttons it is possible to navigate through the menu, as well as to increase and decrease values of a parameter after a short waiting until the value is displayed inverted (black on white). The waiting time from navigation mode to the entry mode is adjustable by means of the parameter “Speed” in the extended functions menu.
Beside waiting, it is also possible to get from navigation to value entry mode (and back) by **shortly** pressing the fire button, i.e. skipping the waiting time. Thus a quick change of adjustments is possible.
In the extended functions menu, the short pressing of the fire button also enables the fast stepping between the selection of one of the three different sub menues, again skipping the waiting time until the desired menu is displayed. At this point the fire button also acts as an escape option from the extended funtions menu, by holding the button for a longer time and releasing it. Note that during the extended functions menu display vaping is disabled.



Changing the Power Setting

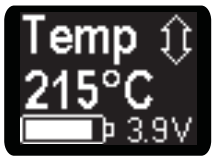
In the Power menu the power setting can be changed by means of the plus/minus buttons in steps up to the Power-Limit (PLim) value or down to 5W repectively.
If the wrap-around is activated, the setting rolls over at the PLim/5W border.
When wrap-around is disabled, further increase or decrease is blocked at the borders.

The Power-Limit value is adjusted in the Extended Functions Sub-Menu “Heater” and provides a protection feature for atomizers which are not prepared for high wattage or to reduce the power range intentionally. The wattage step size is 1 Watt below 20W, 2W from 20W to 40W and 5W above 40W, but can be set to 0.5W, 1W and 2.5W respectively in the mod-menu with “Half Watt=1”.

In the operation mode “Bypass” (mechanical mod), changing the power setting is not available, because the power is defined by the battery voltage and coil resistance. The menu “Power” is not displayed in this case, but the value display during and after the vape shows the actual power output to the coil..

With temperature controlled vaping activated, the power setting is the power limit for the temperature regulator. If the power level is smaller than the value needed to achieve the selected temperature, the operation changes from a temperature regulator to a temperature limiter. If the power level is sufficiently high, it sets the heating up speed of the coil until the set-point temperature is reached.
When the battery voltage decreases, power is reduced starting from the voltage set by the parameter UbatMin (EF-mod menu) plus 0.5V and ending at 10W at UbatMin. E.g. UbatMin=2.5V and Power=40W => Full 40W until battery voltage is at 3.0V, and then reduced to 34W at 2.9V, 28W at 2.8V and so forth.
When the power is reduced, the battery symbol oin the display starts blinking. We recommend to set UbatMin between 2.5 and 2.7V.

05 Main Menu (Page 2)



Setting the Temperature

This Menu item is ***only available and displayed if temperature controlled vaping is selected*** (see Heater-Control menu item below). So the menu structure adapts to the selected operation mode.

The Temperature Up/Down menu sets the setpoint for the coil temperature during vaping. The temperature setpoint can be selected from 120°C to 280°C (250°F- 540°F) in steps of 5°C (10°F). To achieve a high precision temperature control, a correctly performed reference measurement (TempCal Init) is mandatory, see next item.

Manual Coil Temperature Calibration

This Menu item is ***only displayed if temperature controlled vaping is selected*** (see Heater Control menu item below). For the use of temperature controlled vaping, the calibration measurement is a very important part of it.

The Temperature calibration measures the coil resistance at room temperature (20°C) as the reference for temperature controlled vaping. This together with the wire's temperature coefficient enables the mod to calculate the coil's temperature. The calibration must be confirmed in a second step to avoid accidential activation. After confirmation the display shows "process" until the calibration completed. It is extremely important to understand, that, if the calibration is performed at a temperature other than 20°C, the control will regulate a constant temperature, but with an offset deviation. So take the ambient temperature during the temperature adjustment in to account. Similiar, if a wrong temperature coefficient was adjusted, the actual temperature might deviate dramatically from the set-point (here it is a factor and not an offset). Always perform a calibration, when a new atomizer is attached, even if it is made from the same coil material.

For further information about this topic, please read the "Appication Note for Temperature Controlled Vaping", available on the dicodes-mods website.

Coil Resistance and Coil Temperature

This is a display only menu item. The coil resistance is displayed in a range from 0.00 to 9.90 Ohms. If temperature controlled vaping is selected, the current measured coil temperature is also displayed, if not, the display shows T ---.

If the display does not show 20°C even with cooled down atomizer, it is recommeded to perform a manual calibration again.

Note that for coils with very low resistance, like Nickel-coils, a slight mechanical rearrangement (tightening the atomizer) can lead to drastical changes in the temperature control due to the change of contact resistances. We therefore rcommend to use other than Nickel coils, e.g. The NiFe30 (RESISTHERM) wire from dicodes.

05 Main Menu (Page 3)

Heater Control (Operation modes)

The mod can be used in up to 5 operation modes. The mode can be selected in this menu:
The default operation is either standard (0, power setting) or temperature controlled vaping (1).
With the “Expert Mode” (Extended Functions Mod-Menu) enabled, additional operation modes are Heater Protection (2), Power Boost (3), and Bypass (4, mechanical mod).
With Expert Mode disabled, the menu options 2..4 are masked out.

0. Standard Mode
In the standard operation mode the wattage selected in the power setting menu is applied to the coil, unless the voltage would be greater than 12V or the current greater than 20A, which depends on the coil resistance.

For example with a coil resistance of 4 Ohms and a power setting of 40W, the required voltage at the coil is 12.7V. With 4 Ohms the maximum wattage is 36W ($(12V)^2/4R=36W$).
Or, if the coil resistance is 0.1 Ohm the maximum power is 40W, because $(20A)^2*0.1Ohm=40W$.
As can be seen from the examples, with high coil resistance the power is limited by the maximum voltage of 12V and with low resistances by the maximum current of 20A. The fact is also reflected in the feature list: A power of 60W is guaranteed from 0.15 to 2.4 Ohms.
Resistances of 0.05 to 5 Ohms are possible but with a reduced power.

1. Temperature controlled vaping

In this mode the mod will regulate the temperature of the coil to the pre-set value, except the power setting is too low to achieve the temperature. So please note to adjust the power setting to a value high enough, if you choose temperature controlled vaping. Otherwise the temperature regulation changes to a temperature limitation mode.
When HCtrl is set to 1, the menu directly jumps to the selection of the wire type. Here the user can select between dicodes-wire (NiFe30), Nickel 200 (Ni), Titan(Ti), Tungsten (W, Wolfram), Stainless Stell (Inox) and “Other”. With “Other” selected, the temperature coefficient defined in the Extended Functions Menu under item “Tmp. Cof” is used. The value of the selected coefficient is displayed behind “Wire”.
For commonly used wires, the predefined coefficents are: NiFe30=320, Nickel200=620, Titanium=350, Tungsten=440 and Stainless Steel=105. Note that there are different alloys for Titanium and Stainless Steel on the market, so the predefined values can deviate from the actual wire-value you use.In those case it is preferable to choose “Other” as the wire type and set the value of the wire in the extended functions heater menu “TempCof”. The range for the coefficient is 050 to 650.

If you use the dicodes wire (RESISTHERM) it is guaranteed that the wire will always have the same coefficient, because the wire was especially designed for temperature regulation purposes. The regulation accuracy is best then, as the combination of resistivity and high coefficient is very good.
Note for using Nickel wire: Nickel has a high and always precise temperature coefficient (Ni200). But Nickel is not so easy to handle, because it is quite soft and it leads to very low resistance coils, because of it’s high conductivity. For the regulation accuracy smallest changes of contact resistances due to atomizer movements (tightening) or mechanical thermal elongations lead to poor regulation accuracy.

05 Main Menu (Page 4)

Main Menu

Parameter

Extended Functions Heater Menu

2. Heater Protection Mode (only when Expert Mode=1)

The heater protection mode is a periodic interruption of the power applied to the coil. The duration and the repetition rate of the interrupts is selected by means of the parameter “Heater Prot” in the extended functions mod-menu. The repeated power interrupt helps to avoid a break in liquid flow and thus an increase in temperature.

The table below shows the relation between power interrupt and appliance time in dependence of the parameter “Heater Prot”:

Value Heater Prot	On-Time [ms]	Off-Time [ms]	Powerfactor
1	400	100	0.80
2	600	100	0.86
3	800	110	0.88
4	1000	120	0.89
5	1350	150	0.90
6	2000	200	0.91
7	2000	180	0.92
8	2000	150	0.93
9	2000	100	0.95
10	2000	80	0.96

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3. Power Boost Mode (Only with Expert Mode =1)

The Power Boost Mode enables an initial short term high power pulse applied to the coil (boost). The boost power is the value of the parameter “Power Limit”. Beside 3 selectable initial boost lengths, further options generate a periodic boost pulse with different length and repetition rate. An initial boost is for quick coil heat-up. The periodic boost lets the coil temperature pass a certain range all the time. In this case different flavours within the liquid, which all develop their taste at different temperatures, are all addressed by the varying temperature.

Main Menu

Parameter

Extended Functions Heater Menu

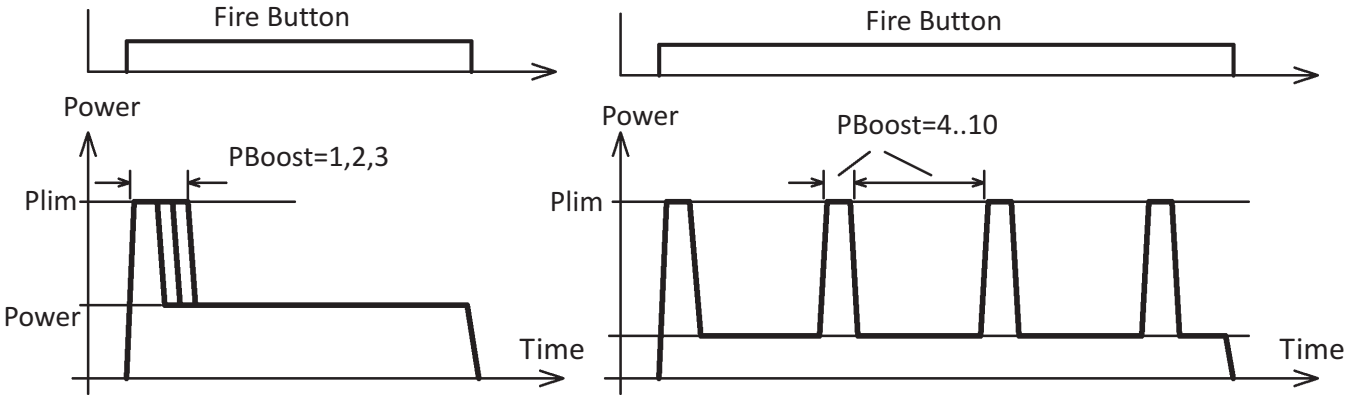
We recommend to set the normal power (not the boost) to much lower values, when using the periodic boost, because the average power is increased by the boosts and temperature gets higher therefore.

Wert Power Boost	Boostzeit [ms]	Zeit auf Nennleistung [ms]	Effektive Leistung (bei 5W Nennleistung)
1	300	-	Start-Boost
2	450	-	Start-Boost
3	600	-	Start-Boost
4	50	500	6.18
5	80	600	6.53
6	120	700	6.9
7	160	800	7.17
8	200	900	7.36
9	250	1000	7.6
10	300	1000	8.0

Note: If the power setting equals the power limit value, the boost has no function, as it is limited to that value as well. For a graphical diagram showing the boost operation see next page.

05 Main Menu (Page 5)

Diagram for Boost-Function



Extended Functions Menu

The Extended Functions Menu provides three logically grouped sub-menues:

Heater Menu ➡ Settings related to the heater or coil
Mod Menu ➡ Settings related to the individual usage and appearance
Value Menu ➡ Provides several statistics of vaping

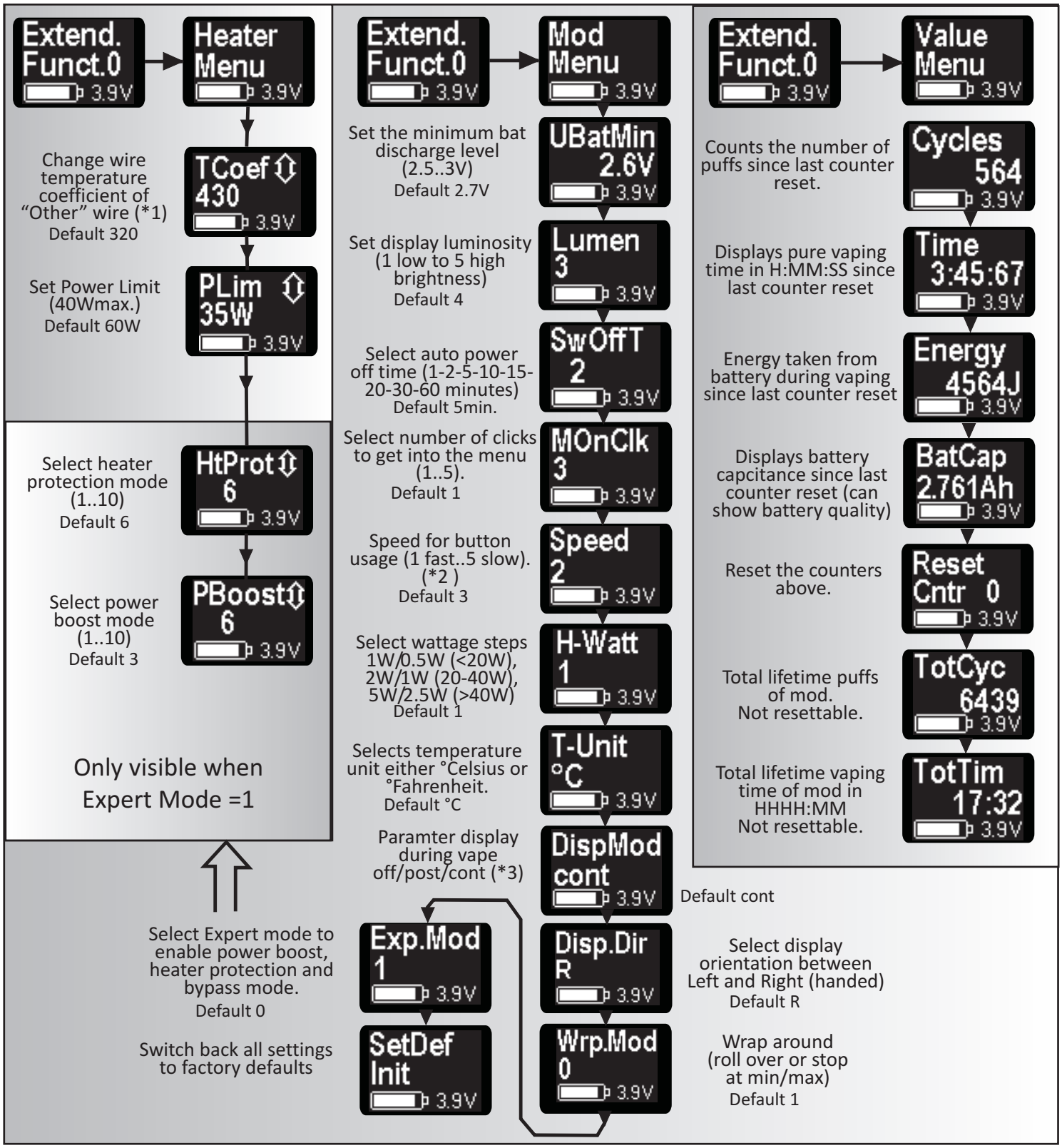
The Extended Functions Menu offers a lot of setting options of the mod, to provide the highest possible flexibility for the user to individually adjust it to whatever preferences. Normally, once the settings were made, the user will need to change the parameter rarely. In order to keep the main menu as short as possible, the extended functions menu was created.
The many options may frighten some of the users initially. But without the extended functions menu the mod would not be able to address all different customer requirements. Please take a bit of time to get familiar with the menu. We are sure, as soon as you have gained an overview, the individual setup is a walk-over.

Error Messages

If an error occurs, the mod directly jumps to the error menu and displays the error number and a mnemonic (short-term) description.
The possible error messages are:

0 OvrVolt: The input voltage is too high. The dicodes no G is prepared for the use of one battery. If the input voltage exceeds 4.5V this error message is displayed. Reduce the input voltage to the specified range.
1 ChkAtom: No atomizer detected or open coil.
2 TempRef: A problem during the temperature reference measurement occured
3 HighR: The resistance of the coil is too high for the selected output power. The maximum output voltage is 12V and current is 20A. This specification together with a maximum output power of 60W leads to a resistance range of 0.15-2.4 Ohms. Also see “8 LowR”. Higher and lower resistances are possible, but the power has to be reduced accordingly.
Example 1: With a 4Ohm coil the maximum power is $(12V)^2/4$ Ohm=36W.
Example 2: With a 0.12Ohm coil the maximum power is $(20A)^2$*0.12 Ohm = 48W. Note that for resistances >2.4 Ohm the ouput voltage is the limiting factor, whereas for resistances <0.15 Ohms it is the current.
4 OverCur: Short on coil or coil breakdown (open)
5 LowBat: The battery voltage under load (with current drained from it) has reached the minimum discharge level, defined with parameter UbatMin in the extended function mod-menu.
6 EleHot: The electronics have heated up too much and needs to cool down. This error will not occur with normal usage of the mod.
7 TimeOut: The maximum puff-time is limited depending on power. For a power <20W it is 20 seconds. Above 20W it decreases by 0.5seconds per Watt, above 40W it is 10seconds.
8 LowR: The coil resistance is too low for the selected power, please see “3 HighR”.

06 Extended Functions Menu (Page 1: Overview)



(*1) The temperature coefficient selects the type of wire material, range 050 to 650: When TC-mode is selected (Main menu HCtrl=1), the user must select the wire type to be NiFe30 (dicodes wire), Ni200, Titanium, Tungsten (Wolfram), Stainless Steel (Inox) or "Other". The value for "Other" is adjusted here. The values of the predefined wire-types are 320=dicodes-wire, 620=Nickel, about 105=Stainless Steel, 350=Titanium (varying literature values, danger: fire harzard), 440=Tungsten (Wolfram). Value to select = Literature-value*10E5 K.
Example: Ni 6.2E-3*1/K * 10E5*K => 620

(*2) Setting 1 (fastest) up to3 without animation (visual shift effect), setting 4 slowest 4 with shift animation

(*3) When temperature controlled vaping mode is selected and with diplay mode=post/cont, the current values of "Power", "Temperature" and "Wire-Resistance" can be observed 4 seconds after/during the vape. In standard mode, the battery voltage, power and resistance is displayed. In Bypass mode the calculated power is displayed. With display mode =off no parameters are displayed after or during the vape

06 Extended Functions Menu

Additional Explanation to several menu items, page 1

In the following paragraphs, explanations are given for those parameters and items, which are not self explanatory or which have inter-dependencies with other parameters or functions.

The selection of the correct wire-temperature-coefficient is very important for the correct operation of the mod, when temperature controlled vaping is selected.
As soon as TC-mode is selected, a multiple choice list of commonly used wires types with provides predefined coefficients is displayed and the wire type “Other”.
The coefficient of this “Other” wire is adjusted in this menu item. Note that stainless steel wires and also titanium wires often have not well defined coefficients, depending on their exact alloy composition.
The TCoef item in the menu is visible, even if the operation mode is not selected to temperature controlled vaping.

The Power Limit has an effect on several functions of the mod:
1. Power Limit defines the adjustment range of the power in the main menu. As stated in the main menu already, the limit value sets the roll-over or stop point of the menu “Power”. The power limitation makes sense especially in the standard vaping mode and the use of small atomizers or coils, to avoid a coil break.
2. Power Limit sets the power during the boost-phase in the Power Boost Mode.

All dicodes devices have a functionality to adjust the minimum discharge level of the battery between 2.5V and 3.0V (older models 3.5V). Almost all available batteries on the market specify the minmum discharge level of 2.5V to 2.7V. If the user is unsure, whether her/his specific battery meets this specification, the level should be set to 2.7V.
The selected voltage is the voltage at the poles of the battery when current is drained from it (the current drained depends on the power at the coil). In contrast to other available tube- and box-mods on the market, which stop operation already at 3.4V, the lower discharge level on dicodes mods lead to a better battery utilization (about 20%).
Note that at UBatMin+ 0.5V a power reduction is activated depending on the actual power setting.

The time to automatic power off of the mod can be selected between 1 minute up to 60 minutes. We recommend to choose 2 or 5 minutes, because the mod is always immediately on and ready to vape, when the fire button is pressed. This provides the best utilization of the battery.
Note that if the mod was actively switched off by the user (5 times fast clicking of the fire button), the instant power on is not available. In this case the mod has to be switched on with 5 clicks first.

The display mode switches on and off the dynamic display of several parameters during and after the puff. The setting “cont” (continous) will display values during and seconds after the vape. With “post” the values are displayed only after the puff and off disables the display.
The values shown depend on the operation mode: In temperature controlled mode, the parameters are the temperature, coil resistance, temperature regulating power and a battery symbol.
For the modes standard, boost and heater protection, the selected power (static, no change), the coil resistance and the battery voltage are displayed. When Bypass mode is selected, the coil resistance and the battery voltage dependent, calculated power is displayed, as there is no fixed power setting in bypass mode.

06 Extended Functions Menu

Additional Explanation to several menu items, page 2

The dicodes no 6 can be used in 5 different modes. But in order to keep the menu as short and simple as possible, 3 of the 5 modes are only available, if the Expert-Mode is set to 1. The name is Expert-Mode, because the use of the additional operation modes requires additional knowledge about their functionality.

The additional modes available with Expert Mode set to 1 are “Power Boost”, “Heater Protection” and “Bypass”.

Here again the modes in an overview:

1. Standard: Vaping with a constant power setting. The selected power is applied to the coil, unless the coil’s resistance affords a different power setting.
2. Temperature Control: The power applied to the coil is calculated by a temperature controller which keeps the coil’s temperature constant. Important to note: Set the correct temperature coefficient and perform a calibration at room temp.
3. Power Boost: The coil is quickly heated up initially. Moreover an repetitive boost can be selected. Note not to set the power limit to a value too low and use lower normal power setting.
4. Heater Protection: The power to the coil is repetively interrupted to enable a liquid flow und to limit the temperature.
5. Bypass: The mod behaves like a mechanical mod, i.e. the battery voltage is directly applied to the coil. This with the restriction, that the maximum current is limited 20A. Note that the vape now depends on the charging level of the battery, and the coil should not be very low in resistance as then 20A is the limiting factor.

With “Set Defaults” it is possible to reset all settings to the delivery status.
The reset is initiated by selecting the menu an pressing a button. To avoid unintended resetting the user has to confirm the procedure by again pressing the button when “confirm” is displayed. “Process” shows that the rest is performed.

Most of the defaults are listed in the overview diagram of the Extended Functions Menu.
Those settings missing there are:

Power:	10W
Temperature:	210°C
Heater Control Mode:	1 (Standard, normal VW)
Wire Type:	NiFe (320)

06 Extended Functions Menu

Additional Explanation to several menu items, page 3

The Extended Functions Menu has another sub-menu showing several statistical values. There are two types of value-counters, either re-settable to zero or not.
The statistic counters are saved whenever the mod is automatically or manually switched off. In contrast, if the battery is removed from the mod before switching off, the changes of the counters since the last switching on are lost.

The following statistical values are stored:

- Cycles Number of puffs. The counter can be reset to 0.
- Time The timespan during which power was applied to the coil, i.e. vaping time. The counter can be reset to 0.
- Energy This is the energy consumption during vape in Joules=Watt-Seconds. This value is the true integrated vape power over time. It is the power integral, because during temperature controled vaping (and also in bypass mode) the power is not constant, but varies a lot over time due to the regulation. The counter can be reset to 0.
- BatCap This is a quite interesting counter: If it is reset imemdiately after the insertion of a fully charged battery, and checked before a new battery is inserted, it shows the batteries capacity. With this function the user can check, whether the battery has a capacity as declared by the manufacturer or whether the battery is wear-out. This counter can be reset to 0.
- TotCycl "Total Cycles" is the number of puffs throughout the entire mod's life. It cannot be reset.
- TotTime "Total Time" is the total time of vaping (not stand by) in a format HHHH:MM that is 4digits of hours and 2 for minutes. It cannot be reset.

The menu item **Reset Cntr**, i.e the resetting of the counters, is intentionally positioned between resettable counters and thos which cannot be reset. So it is easier to remember, which are reset.

07 Remarks and Notes

Battery
Always use batteries with high drain or very high current capability, flat top, unprotect from high quality manufacturers. Avoid to use no-name products. Using low quality batteries will void the warranty. Insert the battery with the plus terminal in the direction towards the atomizer and in angular position.

Warranty
Opening the device, other than the battery cap, to change the battery, will void the warranty!

Electronic cigarettes
Electronic cigarettes are NOT healthy. But so far all studies indicate, that they are less harmful compared to tobacco- cigarettes. Electronic cigarettes are an alternative to tobacco-products, but should not be regarded as an dehabituation to smoking. Electronic cigarettes are not suited for children and youngster below 18years of age, non-smokers, pregnant women, persons with allergies against Nicotine, Propylene Glycol and persons with cardiovascular disease. Selling to persons below 18years of age prohibited!

Battery Disposal
You bought a rechargable battery powered product. The rechargable battery lasts long, but wears out nevertheless. Li-Ion batteries may not be disposed in houshold waste. Customers are obligated by law to dispose wear out batteries to apporiate gathering points.

Mod Disposal
The symbol below indicates that this product should not be treated as household waste, but according to WEEE (waste electrical/electronical equipment) should be reused or recycled. Thank You!

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