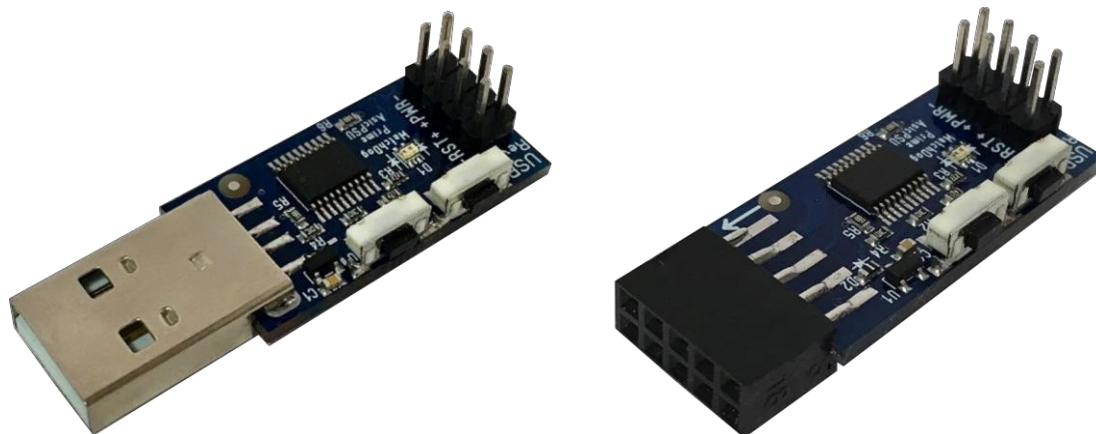


DOCUMENTATION FOR PC EMERGENCY CONTROL DEVICE “USB WATCHDOG TIMER”

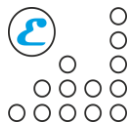


1. General

USB WatchDog Timer (the Device) is designed to restart and shutdown/turn on the PC in case of hanging or overheating of its individual nodes (CPU and/or GPU). The device is a compact solution that monitors the status of a PC via USB interface. In the case of an unresponsive computer program (Device GPU) will cease to send a signal that will trigger the alarm system reboot or shutdown (or both of them, depending on the setting. Also, the timer will give a reset signal in the case of GPU failure, CPU overheating and/or graphics cards or their small load. In addition, the device provides a system for updating the firmware to fix errors and expand the functionality.

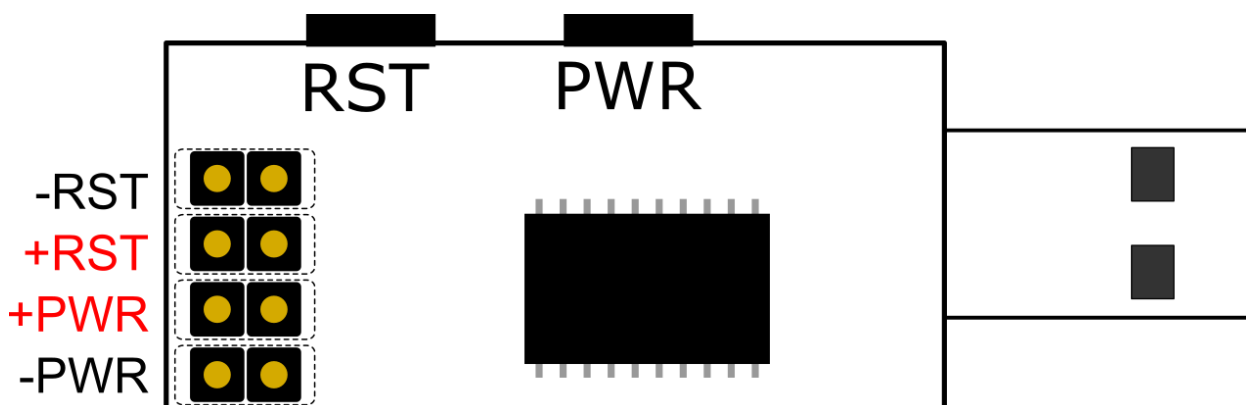
2. First start

To operate the Device on a PC, you need to install the WatchDog Utility program, which is included with the timer, available for download from the Website esonics.ru. Then you need to connect the Device to the PC and wait for the operating system's message about the successful installation of the drivers. Since on some PCs the drivers are installed in two steps, it may be necessary to reconnect the device. Next, you need to run the executable file of the utility WatchDogUtility.exe. The software will automatically search for the connected WatchDog and configure it for further operation. If the installation is successful, the green circle lights up in the status bar. Device settings are saved and will be automatically transferred to the device when the software is started.



3. Connect to Power and Reset line

The Device has 8 contacts: four duplicating contacts – to connect the POWER and RESET to the front panel of the PC and, possibly, to the motherboard. A schematic representation is given below. The contact are additionally signed on the Device board.



4. Modes of operation

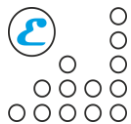
By default, the device is configured so that after three minutes, the PC button will be closed one time. If there is no response from the Device software within three minutes, the PC button will once again shut down, etc. This option is entered so that the device can automatically turn on the PC, for example, in case of an emergency power failure.

The following options can be activated in the Device software:

Reset options:

– reset the PC after the set time. Varies from 1 to 10 minutes with a discreteness of 30 seconds, set using the slider. Performs an emergency reset of the PC, if the specified time does not receive a response from the software (the PC is frozen). When you move the slider with the option selected, the option is cleared, the corresponding tick must be set after the final time selection. If the emergency shutdown option of the PC is disabled, it will reset the PC at the specified frequency until a response is received from the software; otherwise, after an emergency reset, it will perform an emergency shutdown after a specified period of time and repeat the cycle until a response is received from the software.

– reset the PC as a result of damage to the GPU. In some cases, there are situations when the Device software and the Device itself are working properly,



but any GPU has stopped working normally, which will negatively affect other processes. The option is designed to protect against this situation.

– Reset the PC in case of low average GPU load. It is intended for those cases when the calculating software has failed and has completed its work, but the PC is functioning properly. To avoid temporary loss, the device will reboot the PC after a specified time, if the average load of the video cards does not rise above the specified threshold. Time varies from 3 to 10 minutes with a discreteness of 30 seconds, average workload - from 50 to 100% in 10% increments. The average load, as well as the remaining time before resetting, is displayed in the status bar at the bottom.

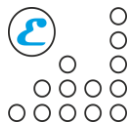
Also this option can be supplemented by setting or unchecking the "Reset if only low ping" checkbox. It happens that the calculations are terminated due to the loss of the Internet – in this case, the reset is impractical. This option will be described in more detail below.

Shutdown/power on options:

– disconnecting the PC after the set time. Varies from 1 to 10 minutes with a discreteness of 30 seconds, set using the slider. Forcibly turns off the PC and turns it on again after 15 seconds, if the specified time does not receive a response from the software. If the emergency reset option of the PC is disabled, it will perform an emergency shutdown/power on of the PC at the specified frequency until a response is received from the software; Otherwise it will shutdown and turn on after an emergency reset after a specified period of time and repeat the cycle until a response is received from the software.

– shutdown PC in case of CPU and/or GPU overheating. The temperature varies from 50 to 95 degrees Celsius with a discreteness of 5 degrees. In the status bar below, the maximum temperature of the processors and video cards detected in the system is displayed. If the maximum temperature exceeds the threshold, the device will shutdown the PC. The activation will occur depending on the option below.

– power on the PC after cooling. It varies from 5 to 60 minutes with a discreteness of 5 minutes. If the PC was shutdown as a result of overheating, the Device will give a command to turn on after the specified time, after natural cooling of internal nodes. If this option is not selected, the user is responsible for resetting the device's emergency state and power on the PC.



Other options:

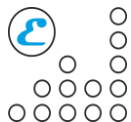
– The connection checking option (found in the “Connection” tab). It is used to check the availability of the specified node (you can enter both the IP address and the symbol name). If this option is enabled, the ping time (in ms) will be displayed in the status bar at the bottom. When this option is activated, the reset option is only available in case of low ping. If the resource is available, but the calculations do not go - a problem in the PC, and a reboot is required..

!!!To save power to the USB connectors after shutdown the PC, activate the corresponding option in the BIOS!!!

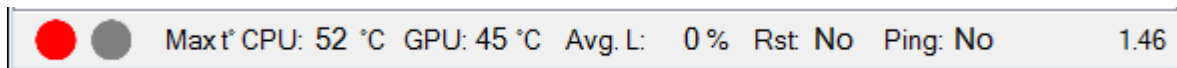
5. Indication

The device has two LEDs (red and green) to indicate the status of the device. Below is a table of states.

Red diode state	Green diode state	Description
Blink alternately		After power-on, the Device has not yet established a connection to the PC.
Off	On	When the PC is turned on, it means receiving signals from the PC and normal operation; When turned off - the fact of a recent shutdown of the PC and turning on in the next 15 seconds.
Blink	On	No PC signal and countdown to reset
Off	Blink	No PC signal and countdown to shutdown
Blink	Blink	Shutdown due to overheating
On	Off	Firmware update mode



The program has a status bar, with which you can evaluate the most important parameters:



From left to right:

- indicator of the presence of the device. Lights up either red (Device disabled) or green otherwise.

- maximum temperature of CPUs

- maximum temperature of GPUs

- GPUs average load

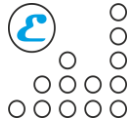
- time to reset (No – reset is disabled, ND – can't reset because Device is disconnected, JN – reset command has been send (Will only be visible if the Device is not connected to the motherboard reset line)).

- ping the selected network node (in milliseconds). No - the option is disabled, ERR! - an error (for example, an incorrect node name), long - the interval for the request was exceeded.

- software version.

6.General Device parameters

Parameter	Value
Length, mm	45
Width, mm	16
Height, mm	14
Connection to PC	USB Type A male or PBD-10
Maximum current, mA	60
Supported OS	Windows XP, Vista, 7, 8, 10



7. Firmware update

The device has a built-in bootloader that allows you to update the firmware without using special tools. To update the firmware you need:

- connect Device to the PC;
- start the Device software;
- go to the "About" tab and select "Firmware update";
- select file with firmware;
- confirm with the notification about the transition to boot-mode;
- make sure that the device has a red LED;
- allow some time (5-20 seconds) and make sure that the firmware has been successfully updated with the corresponding message;
- the Device will go into normal mode automatically, after the update is completed.