

Kernel driver w83793

Supported chips:

- Winbond W83793G/W83793R

Prefix: 'w83793'

Addresses scanned: I2C 0x2c - 0x2f

Datasheet: Still not published

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Module parameters

- reset int

(default 0)

This parameter is not recommended, it will lose motherboard specific settings. Use 'reset=1' to reset the chip when loading this module.

- force_subclients=bus,caddr,saddr1,saddr2

This is used to force the i2c addresses for subclients of a certain chip. Typical usage is

force_subclients=0,0x2f,0x4a,0x4b to force the subclients of chip 0x2f on bus 0 to i2c addresses 0x4a and 0x4b.

Description

This driver implements support for Winbond W83793G/W83793R chips.

- Exported features

This driver exports 10 voltage sensors, up to 12 fan tachometer inputs, 6 remote temperatures, up to 8 sets of PWM fan controls, SmartFan (automatic fan speed control) on all temperature/PWM combinations, 2 sets of 6-pin CPU VID input.

- Sensor resolutions

If your motherboard maker used the reference design, the resolution of voltage0-2 is 2mV, resolution of voltage3/4/5 is 16mV, 8mV for voltage6, 24mV for voltage7/8. Temp1-4 have a 0.25 degree Celsius resolution, temp5-6 have a 1 degree Celsius resolution.

- Temperature sensor types

Temp1-4 have 2 possible types. It can be read from (and written to) temp[1-4]_type.

- If the value is 3, it starts monitoring using a remote thermal diode (default).
- If the value is 6, it starts monitoring using the temperature sensor in Intel CPU and get result by PECI.

Temp5-6 can be connected to external thermistors (value of temp[5-6]_type is 4).

- Alarm mechanism

For voltage sensors, an alarm triggers if the measured value is below the low voltage limit or over the high voltage limit. For temperature sensors, an alarm triggers if the measured value goes above the high temperature limit, and wears off only after the measured value drops below the hysteresis value. For fan sensors, an alarm triggers if the measured value is below the low speed limit.

- SmartFan/PWM control

If you want to set a pwm fan to manual mode, you just need to make sure it is not controlled by any temp channel, for example, you want to set fan1 to manual mode, you need to check the value of temp[1-6]_fan_map, make sure bit 0 is cleared in the 6 values. And then set the pwm1 value to control the fan.

Each temperature channel can control all the 8 PWM outputs (by setting the corresponding bit in tempX_fan_map), you can set the temperature channel mode using temp[1-6]_pwm_enable, 2 is Thermal Cruise mode and 3 is the SmartFanII mode. Temperature channels will try to speed up or slow down all controlled fans, this means one fan can receive different PWM value requests from different temperature channels, but the chip will always pick the safest (max) PWM value for each fan.

In Thermal Cruise mode, the chip attempts to keep the temperature at a predefined value, within a tolerance margin. So if tempX_input > thermal_cruiseX + toleranceX, the chip will increase the PWM value, if tempX_input < thermal_cruiseX - toleranceX, the chip will decrease the PWM value. If the temperature is within the tolerance range,

the PWM value is left unchanged.

SmartFanII works differently, you have to define up to 7 PWM, temperature trip points, defining a PWM/temperature curve which the chip will follow. While not fundamentally different from the Thermal Cruise mode, the implementation is quite different, giving you a finer-grained control.

- Chassis

If the case open alarm triggers, it will stay in this state unless cleared by writing 0 to the sysfs file "intrusion0_alarm".

- VID and VRM

The VRM version is detected automatically, don't modify the it unless you *do* know the cpu VRM version and it's not properly detected.

Notes

Only Fan1-5 and PWM1-3 are guaranteed to always exist, other fan inputs and PWM outputs may or may not exist depending on the chip pin configuration.