

Kernel driver lm80

Supported chips:

- National Semiconductor LM80
Prefix: 'lm80'
Addresses scanned: I2C 0x28 - 0x2f
Datasheet: Publicly available at the National Semiconductor website
<http://www.national.com/>
- National Semiconductor LM96080
Prefix: 'lm96080'
Addresses scanned: I2C 0x28 - 0x2f
Datasheet: Publicly available at the National Semiconductor website
<http://www.national.com/>

Authors:

- Frodo Looijaard <frodol@dds.nl> ,
- Philip Edelbrock <phil@netroedge.com>

Description

This driver implements support for the National Semiconductor LM80. It is described as a 'Serial Interface ACPI-Compatible Microprocessor System Hardware Monitor'. The LM96080 is a more recent incarnation, it is pin and register compatible, with a few additional features not yet supported by the driver.

The LM80 implements one temperature sensor, two fan rotation speed sensors, seven voltage sensors, alarms, and some miscellaneous stuff.

Temperatures are measured in degrees Celsius. There are two sets of limits which operate independently. When the HOT Temperature Limit is crossed, this will cause an alarm that will be reasserted until the temperature drops below the HOT Hysteresis. The Overtemperature Shutdown (OS) limits should work in the same way (but this must be checked; the datasheet is unclear about this). Measurements are guaranteed between -55 and +125 degrees. The current temperature measurement has a resolution of 0.0625 degrees; the limits have a resolution of 1 degree.

Fan rotation speeds are reported in RPM (rotations per minute). An alarm is triggered if the rotation speed has dropped below a programmable limit. Fan readings can be divided by a programmable divider (1, 2, 4 or 8) to give the readings more range or accuracy. Not all RPM values can accurately be represented, so some rounding is done. With a divider of 2, the lowest representable value is around 2600 RPM.

Voltage sensors (also known as IN sensors) report their values in volts. An alarm is triggered if the voltage has crossed a programmable minimum or maximum limit. Note that minimum in this case always means 'closest to zero'; this is important for negative voltage measurements. All voltage inputs can measure voltages between 0 and 2.55 volts, with a resolution of 0.01 volt.

If an alarm triggers, it will remain triggered until the hardware register is read at least once. This means that the cause for the alarm may already have disappeared! Note that in the current implementation, all hardware registers are read whenever any data is read (unless it is less than 2.0 seconds since the last update). This means that you can easily miss once-only alarms.

The LM80 only updates its values each 1.5 seconds; reading it more often will do no harm, but will return 'old' values.