Kernel driver f71882fg

Supported chips:

- Fintek F71808E

  Prefix: 'f71808e'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Not public

- Fintek F71808A

  Prefix: 'f71808a'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Not public

- Fintek F71858FG

  Prefix: 'f71858fg'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Available from the Fintek website

- Fintek F71862FG and F71863FG

  Prefix: 'f71862fg'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Available from the Fintek website

- Fintek F71869F and F71869E

  Prefix: 'f71869'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Available from the Fintek website

- Fintek F71869A

  Prefix: 'f71869a'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Not public

- Fintek F71882FG and F71883FG

  Prefix: 'f71882fg'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Available from the Fintek website

- Fintek F71889FG

  Prefix: 'f71889fg'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Available from the Fintek website

- Fintek F71889ED

  Prefix: 'f71889ed'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Should become available on the Fintek website soon

- Fintek F71889A

  Prefix: 'f71889a'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Should become available on the Fintek website soon

- Fintek F8000

  Prefix: 'f8000'

Addresses scanned: none, address read from Super I/O config space

Datasheet: Not public

- Fintek F81801U

  Prefix: 'f71889fg'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Not public

  Note:
  > This is the 64-pin variant of the F71889FG, they have the same device ID and are fully compatible as far as hardware monitoring is concerned.

- Fintek F81865F

  Prefix: 'f81865f'

  Addresses scanned: none, address read from Super I/O config space

  Datasheet: Available from the Fintek website

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Description

Fintek F718xx/F8000 Super I/O chips include complete hardware monitoring capabilities. They can monitor up to 9 voltages, 4 fans and 3 temperature sensors.

These chips also have fan controlling features, using either DC or PWM, in three different modes (one manual, two automatic).

The driver assumes that no more than one chip is present, which seems reasonable.

Monitoring

The Voltage, Fan and Temperature Monitoring uses the standard sysfs interface as documented in sysfs-interface, without any exceptions.

Fan Control

Both PWM (pulse-width modulation) and DC fan speed control methods are supported. The right one to use depends on external circuitry on the motherboard, so the driver assumes that the BIOS set the method properly.

Note that the lowest numbered temperature zone trip point corresponds to the border between the highest and one but highest temperature zones, and vica versa. So the temperature zone trip points 1-4 (or 1-2) go from high temp to low temp! This is how things are implemented in the IC, and the driver mimics this.

There are 2 modes to specify the speed of the fan, PWM duty cycle (or DC voltage) mode, where 0-100% duty cycle (0-100% of 12V) is specified. And RPM mode where the actual RPM of the fan (as measured) is controlled and the speed gets specified as 0-100% of the fan#_full_speed file.

Since both modes work in a 0-100% (mapped to 0-255) scale, there isn't a whole lot of a difference when modifying fan control settings. The only important difference is that in RPM mode the 0-100% controls the fan speed between 0-100% of fan#_full_speed. It is assumed that if the BIOS programs RPM mode, it will also set fan#_full_speed properly, if it does not then fan control will not work properly, unless you set a sane fan#_full_speed value yourself.

Switching between these modes requires re-initializing a whole bunch of registers, so the mode which the BIOS has set is kept. The mode is printed when loading the driver.

Three different fan control modes are supported; the mode number is written to the pwm#_enable file. Note that not all modes are supported on all chips, and some modes may only be available in RPM / PWM mode. Writing an unsupported mode will result in an invalid parameter error.

- 1: Manual mode You ask for a specific PWM duty cycle / DC voltage or a specific % of fan#_full_speed by writing to the pwm# file. This mode is only available on the F71858FG / F8000 if the fan channel is in RPM mode.
- 2: Normal auto mode You can define a number of temperature/fan speed trip points, which % the fan should run at at this temp and which temp a fan should follow using the standard sysfs interface. The number and type of trip points is chip depended, see which files are available in sysfs. Fan/PWM channel 3 of the F8000 is always in this mode!
- 3: Thermostat mode (Only available on the F8000 when in duty cycle mode) The fan speed is regulated to keep the temp the fan is mapped to between temp#_auto_point2_temp and temp#_auto_point3_temp.

All of the automatic modes require that pwm1 corresponds to fan1, pwm2 to fan2 and pwm3 to fan3.