Kernel driver ltc4245

Supported chips:

- Linear Technology LTC4245

  Prefix: 'ltc4245'

  Addresses scanned: 0x20-0x3f

  Datasheet:

  http://www.linear.com/pc/downloadDocument.do?navId=H0,C1,C1003,C1006,C1140,P19392,D13517

Author: Ira W. Snyder <iws@ovro.caltech.edu>

Description

The LTC4245 controller allows a board to be safely inserted and removed from a live backplane in multiple supply systems such as CompactPCI and PCI Express.

Usage Notes

This driver does not probe for LTC4245 devices, due to the fact that some of the possible addresses are unfriendly to probing. You will have to instantiate the devices explicitly.

Example: the following will load the driver for an LTC4245 at address 0x23 on I2C bus #1:

```
$ modprobe ltc4245
$ echo ltc4245 0x23 > /sys/bus/i2c/devices/i2c-1/new_device
```

Sysfs entries

The LTC4245 has built-in limits for over and under current warnings. This makes it very likely that the reference circuit will be used.

This driver uses the values in the datasheet to change the register values into the values specified in the sysfs-interface document. The current readings rely on the sense resistors listed in Table 2: "Sense Resistor Values".

in1_input	12v input voltage (mV)
in2_input	5v input voltage (mV)
in3_input	3v input voltage (mV)
in4_input	Vee (-12v) input voltage (mV)
in1_min_alarm	12v input undervoltage alarm
in2_min_alarm	5v input undervoltage alarm
in3_min_alarm	3v input undervoltage alarm
in4_min_alarm	Vee (-12v) input undervoltage alarm
curr1_input	12v current (mA)
curr2_input	5v current (mA)
curr3_input	3v current (mA)
curr4_input	Vee (-12v) current (mA)
curr1_max_alarm	12v overcurrent alarm
curr2_max_alarm	5v overcurrent alarm
curr3_max_alarm	3v overcurrent alarm
curr4_max_alarm	Vee (-12v) overcurrent alarm
in5_input	12v output voltage (mV)
in6_input	5v output voltage (mV)
in7_input	3v output voltage (mV)
in8_input	Vee (-12v) output voltage (mV)
in5_min_alarm	12v output undervoltage alarm
in6_min_alarm	5v output undervoltage alarm
in7_min_alarm	3v output undervoltage alarm
in8_min_alarm	Vee (-12v) output undervoltage alarm
in9_input	GPIO voltage data (see note 1)
in10_input	GPIO voltage data (see note 1)
in11_input	GPIO voltage data (see note 1)

power1_input	12v power usage (mW)
power2_input	5v power usage (mW)
power3_input	3v power usage (mW)
power4_input	Vee (-12v) power usage (mW)

Note 1

If you have NOT configured the driver to sample all GPIO pins as analog voltages, then the in10_input and in11_input sysfs attributes will not be created. The driver will sample the GPIO pin that is currently connected to the ADC as an analog voltage, and report the value in in9_input.

If you have configured the driver to sample all GPIO pins as analog voltages, then they will be sampled in round-robin fashion. If userspace reads too slowly, -EAGAIN will be returned when you read the sysfs attribute containing the sensor reading.

The LTC4245 chip can be configured to sample all GPIO pins with two methods:

1. platform data -- see include/linux/platform_data/ltc4245.h
2. OF device tree -- add the "ltc4245,use-extra-gpios" property to each chip

The default mode of operation is to sample a single GPIO pin.