

# Kernel driver w1\_ds2438

Supported chips:

- Maxim DS2438 Smart Battery Monitor

supported family codes:

W1_FAMILY_DS2438	0x26
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## Description

The DS2438 chip provides several functions that are desirable to carry in a battery pack. It also has a 40 bytes of nonvolatile EEPROM. Because the ability of temperature, current and voltage measurement, the chip is also often used in weather stations and applications such as: rain gauge, wind speed/direction measuring, humidity sensing, etc.

Current support is provided through the following sysfs files (all files except "iad" and "offset" are readonly):

### "iad"

This file controls the 'Current A/D Control Bit' (IAD) in the Status/Configuration Register. Writing a zero value will clear the IAD bit and disables the current measurements. Writing value "1" is setting the IAD bit (enables the measurements). The IAD bit is enabled by default in the DS2438.

When writing to sysfs file bits 2-7 are ignored, so it's safe to write ASCII. An I/O error is returned when there is a problem setting the new value.

### "page0"

This file provides full 8 bytes of the chip Page 0 (00h). This page contains the most frequently accessed information of the DS2438. Internally when this file is read, the additional CRC byte is also obtained from the slave device. If it is correct, the 8 bytes page data are passed to userspace, otherwise an I/O error is returned.

### "page1"

This file provides full 8 bytes of the chip Page 1 (01h). This page contains the ICA, elapsed time meter and current offset data of the DS2438. Internally when this file is read, the additional CRC byte is also obtained from the slave device. If it is correct, the 8 bytes page data are passed to userspace, otherwise an I/O error is returned.

### "offset"

This file controls the 2-byte Offset Register of the chip. Writing a 2-byte value will change the Offset Register, which changes the current measurement done by the chip. Changing this register to the two's complement of the current register while forcing zero current through the load will calibrate the chip, canceling offset errors in the current ADC.

### "temperature"

Opening and reading this file initiates the CONVERT\_T (temperature conversion) command of the chip, afterwards the temperature is read from the device registers and provided as an ASCII decimal value.

Important: The returned value has to be divided by 256 to get a real temperature in degrees Celsius.

### "vad", "vdd"

Opening and reading this file initiates the CONVERT\_V (voltage conversion) command of the chip.

Depending on a sysfs filename a different input for the A/D will be selected:

vad:

general purpose A/D input (VAD)

vdd:

battery input (VDD)

After the voltage conversion the value is returned as decimal ASCII. Note: To get a volts the value has to be divided by 100.