

# Kernel driver w1\_ds2413

Supported chips:

- Maxim DS2413 1-Wire Dual Channel Addressable Switch

supported family codes:

W1_FAMILY_DS2413	0x3A
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## Description

The DS2413 chip has two open-drain outputs (PIO A and PIO B). Support is provided through the sysfs files "output" and "state".

## Reading state

The "state" file provides one-byte value which is in the same format as for the chip PIO\_ACCESS\_READ command (refer the datasheet for details):

Bit 0:	PIOA Pin State
Bit 1:	PIOA Output Latch State
Bit 2:	PIOB Pin State
Bit 3:	PIOB Output Latch State
Bit 4-7:	Complement of Bit 3 to Bit 0 (verified by the kernel module)

This file is readonly.

## Writing output

You can set the PIO pins using the "output" file. It is writable, you can write one-byte value to this sysfs file. Similarly the byte format is the same as for the PIO\_ACCESS\_WRITE command:

Bit 0:	PIOA
Bit 1:	PIOB
Bit 2-7:	No matter (driver will set it to "1"s)

The chip has some kind of basic protection against transmission errors. When reading the state, there is a four complement bits. The driver is checking this complement, and when it is wrong then it is returning I/O error.

When writing output, the master must repeat the PIO Output Data byte in its inverted form and it is waiting for a confirmation. If the write is unsuccessful for three times, the write also returns I/O error.