

NAME

gpioths - driver for DHTxx and AM320x temperature and humidity sensors

SYNOPSIS

To compile this driver into the kernel, place the following line in your kernel configuration file:

```
device gpioths
```

Alternatively, to load the driver as a module at boot time, place the following line in loader.conf(5):

```
gpioths_load="YES"
```

DESCRIPTION

The **gpioths** driver supports the DHTxx and AM320x family of temperature and humidity sensors. The driver automatically reads the values from the sensor once every 5 seconds, and makes the results available via sysctl(8) variables.

HARDWARE

The **gpioths** driver provides support for the following devices:

| | |
|--------|--------|
| DHT11 | DHT12 |
| DHT21 | DHT22 |
| AM3201 | AM3202 |

The supported devices are all similar to each other, varying primarily in accuracy and resolution. The devices require a single wire for data communications, using a custom protocol which is not compatible with Maxim's 1-wire(tm). The AM320x devices also support connection to an i2c bus, but this driver supports only the single-wire connection option.

SYSCTL VARIABLES

Sysctl variables are used to access the most recent temperature and humidity measurements.

dev.gpioths.<unit>.temperature

The current temperature in integer deciKelvins. Note that sysctl(8) will convert those units to display in decimal degrees Celsius.

dev.gpioths.<unit>.humidity

The current relative humidity, as an integer percentage.

dev.gpioths.<unit>.fails

The number of failed attempts to communicate with the sensor since the last good access. Cleared whenever a set of measurements is successfully retrieved.

FDT CONFIGURATION

On an fdt(4) based system, a **gpioths** device node is typically defined directly under the root node, or under a simplebus node that represents a collection of devices on a board.

The following properties are required in the **gpioths** device subnode:

compatible

Must be "dht11".

gpios A reference to the gpio device and pin for data communications.

Example of adding a sensor with an overlay

```
/dts-v1/;
/plugin/;
#include <dt-bindings/gpio/gpio.h>

/ {
    compatible = "wand,imx6q-wandboard";
};

&{/} {
    dht0 {
        compatible = "dht11";
        gpios = <&gpio5 15 GPIO_ACTIVE_HIGH>;
    };
};
```

HINTS CONFIGURATION

On a device.hints(5) based system, such as MIPS, these values are configurable for **gpioths**:

hint.gpioths.<unit>.at

The gpiobus(4) instance the **gpioths** instance is attached to.

hint.gpioths.pins

A bitmask with a single bit set to indicate which gpio pin on the gpiobus(4) to use for data communications.

SEE ALSO

fdt(4), gpiobus(4), sysctl(8)

HISTORY

The **gpioths** driver first appeared in FreeBSD 11.1.