

**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.